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## Preface

This special issue of the *Journal of the Scholarship of Teaching and Learning* seeks to highlight lessons learned from the Re-imagining the First Year (RFY) initiative carried out by the Association of American State Colleges and Universities (AASCU). RFY involved forty-four institutions across the United States. As George Mehaffy makes clear during his inspirational talks at the bi-annual meetings of AASCU, once institutions accept a student into their academic world, they are responsible for the success of that student. No matter the level of preparedness of a particular student, if you invite the individual to begin taking classes, you have or ought to have committed your institution to seeing that student through to graduation. Moreover, the types of students who attend AASCU-member institutions, particular those involved in the RFY initiative, represent, quite literally, the future of America. George Mehaffy and the association that he represents, reminds us of the importance of our daily work for the individual lives of our students as well as for the future of American life.

We are pleased to have had the opportunity to collaborate on this special issue with George Mehaffy and Jo Arney. We thank Cynthia O'Dell for enthusiastically supporting the idea of a JoSoTL-AASCU special issue focusing on RFY. Moreover, we are grateful that Bill McKinney agreed to write the foreword. The ten essays included in this volume represent eight of the forty-four institutions. Together they represent a commitment to student success and to the mission of higher education in the United States.

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## **Introduction**

### **Re-Imagining the First Year of College (RFY)**

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Massive changes have occurred to the context of American higher education over the past 50 years. The most impactful change has been the makeup of the student body. Increasing numbers of students are participating in higher education during a profound demographic change that is dramatically increasing diversity. Substantially greater numbers of students are coming to college without the background and preparation that were the hallmarks of an earlier generation. The typical question posed by this changing context is: how can these new students be prepared for college? However, for colleges and universities, a more compelling question is: how can colleges be prepared for this new generation of students?

This edition of the *Journal of the Scholarship of Teaching and Learning* (JoSoTL) reports on experiences and insights into practice when the commitment is to change institutions, rather than students. In 2016, the American Association of State Colleges and Universities (AASCU) began a three year project, Re-Imagining the First Year (RFY), funded by the Bill & Melinda Gates Foundation and Strada Education Network. RFY has as its core commitment the idea that student success can be dramatically enhanced by changes in institutions. We now have empirically tested programs, strategies and approaches that, if adopted, can significantly increase student success. Yet, far too often, institutions are slow to change, relying on outdated practices and assumptions that continue to produce failure instead of success. The forty-four AASCU member institutions involved in this project identified and tested a series of programs, strategies and tools that could increase retention rates and success for first-year students. The first year of college has emerged as the critical barrier to college success, the point at which colleges experience the greatest loss of students. RFY sought to inspire redesigned approaches that work effectively for all members of an increasingly diverse, multicultural, undergraduate student body, and to work toward eliminating the achievement disparities that have plagued American higher education for generations.

The forty-four AASCU campuses that were selected to participate in the initiative represented a diverse set of AASCU institutions that vary by size (2,400-64,000), student demographics, geographic location (25 states), and first-year retention rate (55-94%). Each participating institution was asked to develop a campus team made up of administrators, faculty members, student affairs professionals and students. Campus teams examined a collection of integrated strategies, programs and approaches to improve student success. The RFY campuses were required to undertake change in four different areas when developing their campus plans. The idea underlying this requirement is that institutional change requires substantive change in many different areas simultaneously. The first of the four areas was "Institutional Intentionality." This category required evidence of campus-wide commitment, such as changes in funding, administrative structures or the use of a campus-wide data system. Intentionality included paying attention to, and devoting resources toward, policies, initiatives, and structures that make it easier for first-year students to thrive. The second category, "Curriculum," included examining university-wide, program-wide, department-wide, and individual course curricula to find the

bottlenecks and roadblocks that impede student success. The third, “Faculty and Staff,” required campuses to consider how interactions with faculty and staff, both inside and outside of the classroom, could affect the student experience. The final category, “Students,” challenged campuses to consider the student experience on campus; areas of focus included student engagement, student belonging, and growth mindset. Though the specific interventions for first-year students varied by campus, each of these students encountered a landscape with newly designed elements to help them succeed. For example, many first-generation students at the University of Wisconsin-La Crosse were automatically enrolled in the first-year seminar. Many first-year students at Indiana University Kokomo received instruction on the concept of growth mindset. Students who struggled with academics at both institutions received newly revised probation letters written with student success in mind.

The articles in this edition of JoSoTL reflect work that was done across all four categories. One of the things RFY challenged faculty to do was consider the importance of data-informed decision-making related to courses. Data can tell an important story. Equity gaps often exist for first-generation students, low-income students, and students of color, even though a campus has relatively good overall retention or graduation success. On all of the RFY campuses, disaggregated data was shared with faculty and all members of the campus community. Campus leaders have consistently reported a growing awareness and acceptance of new strategies for helping students when disaggregated data is shared with faculty and staff. It turns out the “why” is important to faculty and staff. Without data, new efforts can feel like just one more initiative. Faculty and staff have been more motivated to engage in this work when they see the numbers.

It should come as no surprise that campus culture and leadership were also key factors that influenced change. The enthusiasm for this work has remained highest at campuses that have cultures that embrace teaching and learning and that have engaged multiple campus constituents in this work. Equally important, the RFY campuses that have had the most success implementing programs are those that already had strong leadership teams in place. They are campuses that have had a relatively positive relationship--between faculty and staff and administration, and between student affairs and academic affairs. Finally, they are campuses that place teaching and learning on par with faculty research.

Being a part of a national community can create an impetus for change. Time and again campus team leaders talked about how RFY gave them “permission” to do the work they already wanted to do. Being selected to be a part of a national initiative gave them credibility at home. The prestige of being selected and being a part of a national cohort also lent legitimacy to enact solutions that a campus might not have the social capital to enact on its own.

Lastly, what happens in the classroom can’t be overlooked. In talking with students, many team leaders reported student stories about the impact, either positive or negative, of a single professor. To underscore the importance of what happens in the classroom, with some of the RFY campuses we experimented with incorporating high-impact practices (HIPs) in the first-year classroom. Twenty of the RFY campuses were selected to use HIPs in the first-year classroom. Faculty members on each of the twenty campuses received professional development related to HIPs and brought these practices into their own first-year classrooms.

Like many campuses across the country, the RFY campuses have faced budget challenges and campus communities suffering from initiative fatigue. Yet they took on this challenge, recognizing that broad institutional change is hard but consequential work. The RFY campuses undertook a series of changes in programs, strategies and tools to increase success for first-year college students. Even at this early moment in what will be a long period of transformation, there is evidence of success on many of the participating campuses. Yet the unique work going on at each of the forty-four campuses underscores that there is no simple formula, no silver bullet. Each campus confronts a unique context

and set of circumstances. By working collectively, campuses can take strategies that have been used successfully in other settings, adapting them to increase student success on their own campus.

One other insight has emerged from this work. Focusing on student success, and considering how to change institutions to be more effective in working with a new generation of students, yields enormous benefits. Student success positively affects the trajectory of each student and his or her family. But student success is also critical to institutional success, as tuition increasingly pays the costs of operations. Student success also determines how effectively we compete in a global economy. Student success has a major impact on the strength and vitality of our democracy. Simply put, student success, for all students, will determine what kind of society we leave for future generations.

## Foreword

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Institutions such as the public colleges and universities represented in this volume are heir to my conceptualization of the great promise of American public higher education: Higher education exists to preserve and proliferate democratic values and economic opportunities; consequently, it also bears the responsibility for imparting those intellectual skills required to protect those values and provide those opportunities. Yet, in spite of this great promise of opportunity and in spite of what is now decades of effort, our public colleges and universities still have low graduation rates. According to the U.S. Department of Education, only 58.9% of the 2010 starting cohort graduated from public colleges and universities in their first six years. It is important to note that graduation rates, as well as first to second year retention rates, have risen slowly since the mid-1990s, as the six-year graduation rate for the 1996 cohort was 51.7%. Progress has been made, albeit very slowly.

Furthermore, while data have not been systematically compiled across the country, we know on our own campuses that our students leave us for myriad reasons including academic challenges, financial challenges, health issues, food/housing insecurity, and family responsibilities. One clear example of higher education's dedication to addressing these challenges and thereby to increasing student success and degree attainment is the transformative work of the American Association of State Colleges and Universities' (AASCU) Re-Imagining the First Year of College (RFY) project, comprised of a dedicated network of academic professionals, some of whom are represented in this volume. The work herein highlights the RFY as an important national effort to improve how our public comprehensive universities serve their students and, by extension, their communities.

I am honored to have been associated with the RFY from its very beginning. In fall 2015, I was attending the University Professional and Continuing Education Association (UPCEA) Central Region Conference in Madison, Wisconsin, where AASCU's Vice President for Academic Leadership and Change, George Mehaffy, was the keynote speaker. I have had the good fortune to work with George over many years, most notably on AASCU's Red Balloon Project to promote innovation on our campuses. I was in the process of starting my new job with Indiana University (IU), and it had been far too long since I chatted with my friend and mentor. As I explained my new role with IU, that of Senior Advisor for Regional Campus Affairs, and my responsibilities for cross-campus collaboration on pressing strategic issues such as retention and civic engagement, it was clear that George had an idea. He always has ideas – and they are always very good ideas.

George began describing the details of RFY – the assembly of a competitively-selected group of approximately 40 AASCU campuses who would operate as a nationwide learning community. Guided by AASCU and its team of consultants, this learning community would work together over the next three years to implement innovative means of dramatically improving student success in the first year of college. Since first to second year retention is a precursor to graduation, it stood to reason that dramatically improving student success in the first year, colleges and universities would have a greater chance to improve their graduation rates.

He further explained that what we face is not a knowledge problem—we know why our students leave us. In fact, we have not only identified why they leave us, we have also, in some ways, begun to address those problems. We have addressed them, however, in small ways. Small increases in graduation rates over the last two decades tell us that we know how to address low retention and graduation rates. What we do not do, however, is implement this knowledge in systematic and sustainable ways. What we face, George noted, is an implementation problem. That is, how do we make the best ideas work, not as pilot studies, but across our campuses, within our unique cultures, for the benefit of our students?

I was intrigued by this project, and when he informed me that AASCU was hoping that a state system would participate in the RFY, I knew immediately that, while not technically a state system, the five IU

regional campuses would be a perfect fit. During these past three years, the RFY has become embedded in our campus cultures and, consequently, our campuses have each benefited from increases in retention and graduation. RFY participation, through its focus on substantive and sustainable innovation, has also led to an energized entrepreneurial atmosphere on our campuses. What you will find in the pages that follow is the result of innovation and collaboration at its best on other campuses as well.

The editors of this special edition have done a commendable job selecting some of the very best work in the RFY over the last three years. They describe the implementation of various RFY projects at a wide range of AASCU institutions. The work falls into roughly three categories: Course/curriculum design/re-design, faculty development, and applied psychology.

The first category, focusing on course/curriculum design/re-design, is by far the most broad. The five articles in this category describe using the RFY as a catalyst for building collaborative learning communities in the major, fundamentally redesigning a writing program, and the continually improving Middle Tennessee State's summer bridge/early arrival program. What these articles, and the work they describe, have in common is a commitment to building a more learner-centered culture.

In the parlance of the RFY, to move toward a more learner-centered culture means moving away from the traditional teacher-centered culture that has always dominated higher education. This does not in any way, however, mean that the roles of faculty and staff are less important. Hence, as the second category of essays in this collection demonstrates, institutions that commit themselves to moving toward learner-centered cultures must simultaneously commit to a greater emphasis on faculty and staff development. This volume includes articles that run the range of highlighting experiential learning fellows at Indiana University Kokomo to a scholarship-focused approach to faculty development at Northern Arizona University. For centuries, scholars have focused their attention on the world outside of the academy, but these essays highlight how scholarly rigor turned inward and using the scholars' tools of analysis, synthesis, and critique only enhances the work we do for students.

The final category focuses on the student mindset and the application of cognitive and developmental psychology. From its inception, the RFY has made use of our increased understanding of our students' cognitive development, particularly the work of David Yeager and his colleagues. The articles herein demonstrate how gaining a greater understanding of precisely who our students are can yield positive results in student success metrics such as retention and persistence to graduation and, most importantly, how this understanding has been successfully implemented at St. Cloud State and Indiana University Northwest.

By improving retention and graduation rates, RFY campuses are fulfilling the great promise of American higher education by securing educational and economic opportunities for many more students. The RFY's transformative collaborative model has allowed many of these campuses to benefit from each other and become exemplars for other campuses across the country. I hope that, as you read the articles in this volume, your campus and your students benefit as well.



## Assessing Collaborative, Project-based Learning Models in Introductory Science Courses

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*Abstract: Collaborative, project-based learning models have been shown to benefit student learning and engagement in the STEM disciplines. This case study evaluates the use of highly collaborative project- and problem-based learning models in introductory courses in the geosciences and biology. In the geosciences, we developed project-based modules with a strong local focus. Student teams worked on three project-based laboratories dealing with the local geology/geomorphology, water quality of a local stream, and local flooding issues. These replaced traditionally taught laboratories on topographic maps and rivers and streams. Student teams presented project results in lieu of taking a traditional laboratory practical. In biology, we designed a collaborative learning model that incorporated three problem-based learning modules into a first-semester introductory biology course. Students were assigned topics in evolution, cell biology and genetics to research independently during the course of the semester, with each module culminating in a brief presentation on the topic. Modules were designed to mirror concepts being covered in the lecture. Preliminary results suggest that student performance and attitudes towards course material benefitted from this learning model. The authors consider outcomes, benefits, and challenges to students and instructors.*

*Keywords: collaborative learning, problem-based learning, project-based learning, introductory science, commuter campus, academic performance, DFW rates.*

## Introduction

Measurable student outcomes have become increasingly important in program evaluation, accreditation and funding in higher education. Institutions serving historically underserved communities, non-traditional populations, and commuter campuses face special challenges providing students with accessible, meaningful, and achievable education. Vital to the communities they serve, these institutions have historically realized lower persistence and graduation rates than many of their traditional, residential counterparts. The American Association of State Colleges and Universities (AASCU) supports initiatives that seek to strengthen quality, access, and foster inclusion for underserved populations (AASCU, 2018a). The goal of Re-Imagining the First Year (RFY) is to improve the quality of learning and the first year student experience at member institutions (AASCU, 2018b) through addressing student needs and removing obstacles to academic success. One set of initiatives involves increasing faculty pedagogical expertise and widely incorporating modern, evidence-based techniques into the freshman-level curriculum (AASCU, 2016).

An interdisciplinary group of faculty and administrators, originating mainly from the university's College of Arts and Sciences was of the first to address this RFY initiative. Organized by the dean of the college, the director of the campus's Center for Innovation and Scholarship in Teaching and Learning (CISTL) and faculty members from biology, English, geosciences, psychology, and sociology met regularly with the Dean. The group was dubbed, the Pedagogy Interest Group, and came to be known simply as "the PIG." The goal of the PIG was to provide an outlet for interested faculty to explore, discuss, and evaluate the use of modern, evidence-based pedagogy. Styled like a seminar, participants explored literature focused on modern philosophies and designs in pedagogy. Each week, one participant led a discussion on a technique, topic, or research study. As the PIG progressed, participants began to develop ways in which broad ideas could be adapted to benefit general education and freshman-gateway courses in their disciplines. Here, we present results from interventions developed for the geosciences and biology.

## Background

### *Collaborative Learning*

Collaborative learning encompasses a wide spectrum of techniques that have, at their core, the common element of students working together in groups to enhance learning (Dillenbourg, 1999). Collaborative learning has been recommended as a bedrock pedagogical practice for the undergraduate curriculum, especially in the first year (Boyer Commission, 1998). In line with the goals for the RFY initiative, collaborative learning has been demonstrated to increase first-to-second year retention (Loes et al., 2017).

There has been wide adoption of collaborative learning modalities in STEM classes. It has been successfully used in mathematics, building on the work of Treisman (1992) who observed increased success rates amongst underrepresented minority (URM) students in freshman college mathematics. Building upon this initial work, Berry notes that collaborative learning is a powerful tool to increase URM student success in the liberal arts curriculum (Berry, 1991). In biology, collaborative learning approaches have generated increased student performance in non-majors general biology (Tessier, 2007), freshman majors biology (Hacisalihoglu et al., 2018) and microbiology (reviewed in Rutherford, 2015).

### *Problem-based and Project-based Learning*

Problem- and Project-Based learning (PBL) refer to an active learning style that shifts the educational focus from finding the “right” answers, to asking questions and exploring an avenue of study that will further knowledge around complex issues. The educational strategy draws on constructivist theories of pedagogy (von Glaserfeld 1989; Savery and Duffy 1995).

In practice, PBL allows learners to develop understandings by engaging with a complex problem that may not have one single correct or ideal answer. These problems are most effective when they have relevance beyond an assigned task for the course grade. They should foster learner ownership over the problem and any potential solutions. The problem should seek to highlight rather than minimize complexity as it is reflected in authentic problems within the discipline or field. Ideally, PBL is reflexive, fostering thinking about both the solution to the problem and the process of learning to arrive at that solution.

Developed for use in medical education, the term problem-based learning is used to describe time spent in and out of the classroom around the attempt to solve a complex, often indeterminate problem with the potential for multiple answers (Schmidt 1983). It is related to, and sometimes used interchangeably with project-based learning. Project-Based learning employs the same strategies and focus. In project-based learning, student-directed inquiry is supported by collaboration and communication. Learning derives from formulating research questions, time management, gathering and analyzing data, interpreting results, drawing conclusions, negotiating value differences among group members, and preparing and communicating findings (Schneider et al., 2002; SERC, n.d.).

Both problem- and project- based learning reorganizes the roles and hierarchy of a traditional classroom. PBL is necessarily self-directed learning where the traditional classroom teacher takes on the role of facilitator rather than knowledge provider (Hmelo-Silver 2004). Critics have noted that the self-directed nature of PBL requires special attention to the construction of appropriate problems and learning resources (Duch, 1996; Woei 2009; Prince, et al. 2003), and that the design and scale are important factors affecting student achievement (Ruiz-Gallardo, et al., 2011).

PBL has been incorporated into a range of disciplines in post-secondary Arts and Sciences curricula (Helle, Tynjälä, and Olkinuora 2006). Examples include chemistry (Woods 1996), biology and physics (Allen, Duch, and Groh), sociology (Ross and Hurlburt 2004), and the geosciences (Moss, et al., 2018; Smith et al., 2018; Rye, et al., 2013; Kirk, 2007).<sup>1</sup>

Problems of local significance are well-suited for PBL in the natural sciences and are widely used in curricula that employ these learning strategies (Moss, et al., 2018; Smith, et al., 2018; Rye, et al., 2013; Ebenezer, 2011; Schneider, et al., 2002). Addressing local issues may help to foster engagement while providing an accessible resource for conducting scientific work.

### **Context**

Indiana University (IU) Northwest is a small (<6000 students) regional commuter campus of the IU system, serving a seven-county region in northwest Indiana and bordering Illinois. As of fall 2018, the

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<sup>1</sup> Perhaps the most sustained and integrated application of PBL in an undergraduate curriculum comes from the University of Delaware. A consortium of six faculty members from across a range of physical science departments (chemistry, physics, biology) have developed materials, problems, and evaluations for using PBL in undergraduate science courses (see <http://www.udel.edu/inst/>).

student population is overwhelmingly undergraduate (>90%), majority women (66%), and has large African-American (17%) and Hispanic (21%) populations reflective of the communities it serves. IU Northwest has a large population of non-traditional students (26%), first generation college students, and students who qualify for federal financial aid. Approximately half attend college full time, and about 70% of undergraduates seek degrees (Indiana University Office of Institutional Effectiveness and Research).

The introductory geoscience laboratory is a one-credit companion to the GEOL-G 101 Introduction to Earth Science lecture course. Students enroll and receive credit separately for the lecture and laboratory sections, and they are not required to enroll in the laboratory to enroll in the lecture course. Successfully completing both satisfies the 4-credit *science course that includes a laboratory* distribution requirement in the College of Arts and Sciences, and the majority of students enroll in the laboratory to satisfy this requirement. The laboratory is a requirement for geology majors, pre-service teachers working toward accreditation in Earth and Space Science, and serves as an elective for Physical and Life Science education majors.

Traditionally, the introductory geoscience labs have been taught with the aid of selected laboratories from the American Geological Institute/National Association of Geoscience Teachers (AGI/NAGT) publication. The laboratory space contains materials and equipment necessary to conduct the full laboratories, including mineral and rocks samples, testing equipment, and topographic maps that are standard in most college labs. In recent years, some activities from the Science Education Resource Center at Carleton College (SERC) have been adopted to supplement the AGI/NAGT laboratories, either on a trial basis or fully integrated into the laboratory by most instructors. Sections hold up to 24 students each and are usually taught by a combination of adjunct instructors, undergraduate TAs, and at least one regular tenure-track full-time faculty member. During the regular academic year, laboratories run in 15-week sessions, with 12 regular laboratory meetings and 3 meetings designated for laboratory practical-style evaluation. Laboratories meet once per week for two hours. Summer laboratories run in accelerated and abbreviated 6-week sessions, where students meet twice per week but the number of meetings is reduced by three. GEOL-G 102 laboratories that run during the regular academic year (fall and spring semesters) are the focus of this study.

Introduction to Biological Sciences I (BIOL-L 101) is one of the largest courses taught at our campus, with annual enrollment averaging approximately 138 students over the semesters included in this study. Two of the authors (PGA and MG) teach this course, offering two sections each fall, averaging nearly 97 total students, and a single section each spring that enrolls an average of 41 students. Most students are Biology majors (59.30%), with most non-majors taking the course either to satisfy their major requirements (Psychology, Chemistry majors) or to prepare for the Medical College Admissions Test (MCAT), Dental Admissions Test (DAT) or other health professions admissions exams.

Students who take the course enroll in three separate sections each semester: a 3 credit hour lecture that meets for 75 minutes twice a week, a 1 credit hour laboratory section that meets for 180 minutes once a week, and a discussion section that meets for 50 minutes once a week. In fall, two lecture sections, five laboratory sections and four discussion sections are offered. In spring, there is only one lecture section, two laboratory sections and two discussion sections. Students' grades are earned through quizzes taken in discussion sections, exams taken during lecture, and activities and assessments performed/taken during the laboratory. In addition, students complete homework exercises online every week that relate to the material covered in the lecture.

## Reformed Curriculum

### *Geosciences*

The GEOL-G 102 curriculum was reformed to include three new laboratories focused on water chemistry and water quality, stream processes, and topography and geomorphology of the local area, including a river and floodplain adjacent to the campus. These replaced traditional laboratories on topographic maps (formerly two lab periods), and a laboratory on rivers, streams, and floods (one lab period). The transformed laboratories incorporated similar concepts to those in the traditional laboratory, but differed in the following ways:

1. A new water chemistry/water quality laboratory was designed and implemented. This laboratory contained concepts not previously addressed in the GEOL-G 102 laboratory, and include a strong environmental geology component.
2. The new focus was entirely on local geology. Methods and concept application were geared toward identifying local geologic features, addressing local environmental issues, and drawing relationships related to local geology, natural processes, and human activity. Specifically, “local” was used as a way to engage students – to increase their awareness of local scientific work and to promote a sense that *they* could do this type of work, in *their* community, as a career (if they majored in geology or environmental science). For example, a local disaster became part of the laboratory on Stream Processes and Floods. In 2008, the campus was closed for more than two weeks in response to severe flooding. Flooding was also severe in the surrounding community, where many homes and businesses were damaged or destroyed. The current student population has good collective memory of the event, some having to be rescued from schools in boats, and others having flooded homes. This event was used as an opportunity to heighten interest, drive group interaction, and underscore the importance of scientific study. Lab instructors were encouraged to draw attention to local scientific work and jobs, and language was embedded in new laboratories outlining work of local agencies and scientists, and suggesting career paths to interested students.
3. The new laboratories are highly collaborative. Traditional laboratories encouraged group interaction by seating students in small groups (of four). However, the traditional design contained no *requirement* that students share information, use information provided by others in the group, or contribute to their group. Encouraging interaction was beneficial for many students, but also facilitated an “odd man out” mindset where slower students sometimes found themselves reporting information entirely provided by others. Additionally, students could opt to complete the work entirely on their own with no or minimal group engagement. Finally, there was an opportunity for some students to actively disengage from laboratory activities if they believed their lab group would provide them with enough information to complete the laboratory assignment.

In the reformed laboratories, students were grouped into 3-4 person teams that remained in place for the entire three week project. Students took on specific responsibilities within the group, and were responsible for working together to complete tasks. Each laboratory was treated as a single assignment; assignments were combined to form parts of the larger project. For individual laboratories, grades were assigned to individuals based largely on participation and task completion.

4. Embedded in the new laboratories were opportunities for teams to develop and test hypotheses, collect and interpret data, and evaluate larger datasets. Teams had opportunities to earn additional points by field-locating landmarks and features from topographic maps

(documented by a group “selfie” with the feature in question), and by providing additional analyses of small, outside of lab investigations.

The project-based nature of the new laboratories allowed deeper examination of topics, but did not allow coverage of as many topics. Some omitted topics were addressed in later laboratories. For example, producing a contour map based on spot elevations was eliminated from the new topography exercise, but contouring the water table from water well elevations was accomplished in a later groundwater laboratory. Still, some concepts covered in the traditional laboratories were omitted from the reformed curriculum.

A group presentation, emphasizing the process of communicating scientific results, replaced a traditional laboratory practical. Student teams were supplied with presentation instructions and an evaluation rubric. Students were also required to evaluate their own performance, the performance of others in their group, and the work of other groups. An individual student’s final grade for the unit was based on these factors and the instructor’s evaluation of the final presentation using the same rubric supplied to the students.

Reformed laboratories were developed in the summer of 2016 and implemented in individual laboratory sections beginning in fall, 2016. The new curriculum was tested piecemeal and as a pilot study in two laboratory sections in the summer of 2016. The full unit of project-based of laboratories and new evaluation was implemented in one section of the GEOL-G 102 laboratory in the fall 2016. Instructor evaluation of student engagement and performance, and feedback from students, informed further modifications to the laboratories. Revisions focused on addressing ambiguities in the activity instructions and modifying the number and length of activities (to better fit the time available). Later revisions focused also on flexibility in managing methods of sample collection during inclement weather, high river levels, frozen river surface, and road construction near river access points. The reformed curriculum was implemented in three laboratory sections in spring 2017 and in four laboratory sections in fall 2017. Spring 2017 targeted three laboratory sections, one taught by a full-time faculty member and developer of the reformed curriculum, and two sections run by undergraduate TAs. The week prior to implementation of each lab, instructors met to discuss purpose, content, address questions, and to offer (and gather) feedback. Instructional strategies related to engagement and content was also on the agenda. On the day of each lab, undergraduate TA instructors were assisted by the other two. In fall 2017, three of the four laboratory instructors (consisting of one undergraduate TA, one adjunct faculty member, and one full-time tenure track instructor) were new to the study. During that semester, implementation of the project-based, collaborative laboratories was slightly different. Scheduling issues necessitated individual meetings between the laboratory developer and instructors rather than group meetings. The level of assistance in each new instructors’ laboratories also dropped. Finally, some instructors made small changes to the revised laboratories to better suit their teaching style and syllabus schedule.

### *Biology*

In spring of 2016, the College of Arts and Sciences identified BIOL-L 101 as a target for a pedagogical intervention due to its high enrollment and the high percentage of students earning lower than a C- in the course (the DFW rate). Since 2013, the DFW rate in this course has ranged from 34.09% to 72.97%, with a mean value of 45.19% and a median value of 42.31%. Three of the authors (HEO, PGA, MG) developed interventions based on a collaborative learning model with the goal of reducing the DFW rate and increasing student success in the course.

The structure of the course is divided into three units – evolution, cell theory and molecular genetics. For the intervention, a set of questions was developed for each of the three units (see Table 1). In addition, students who worked together on question sets also worked together on a variety of

presentations that pertained to a particular area of each unit. For the evolution unit, student groups researched an example of human evolution and gave a formal presentation of their findings to the class. For cell biology, students were assigned a disease, studied how the pathology of that disease relates to defects in cellular function, and then performed a skit that communicated to their peers the information they learned about that disease and its relation to specific cellular functions covered in the lecture. Finally, in the molecular genetics unit, students investigated an inherited human disease and put together a short video about the inheritance and pathology of that disease.

The intervention was carried out over four consecutive semesters from fall 2016 to spring 2018. DFW rates were calculated and compared to historical rates from fall 2013 to spring 2016. To minimize variance, fall semesters were compared to fall semesters, and spring semesters to spring semesters. Students who received a grade of incomplete, or who were flagged as receiving an F due to non-attendance, were omitted from our analysis. Further, for all semesters of the intervention, a common final exam was given to compare improvements in student retention of material.

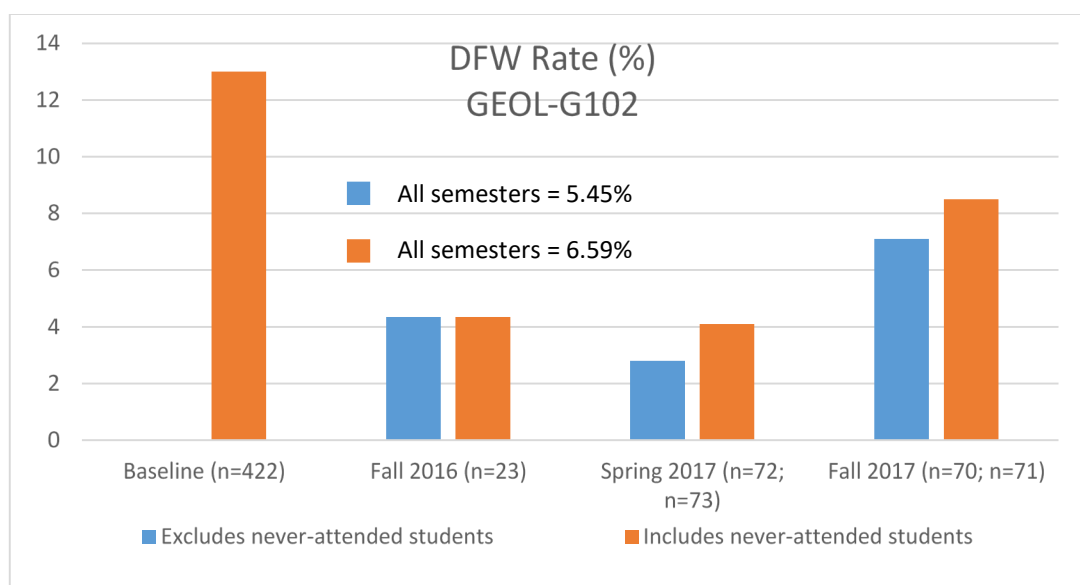
<b>Table 1. Summary of BIOL-L 101 Intervention for Cell Biology Unit.</b>			
Synopsis:	Student groups were assigned a lysosomal storage disorder (Danon disease, Niemann-Pick disease, Hurler disease, Fabry disease) or a mitochondrial insufficiency disorder (Barth syndrome, pyruvate dehydrogenase deficiency, dominant optic atrophy, Leigh syndrome) to study. Students were then tasked to work in groups to prepare a 5 minute skit that would communicate important aspects about the disease to their classmates.		
Learning Outcomes:	Students should demonstrate the ability to identify organelles inside eukaryotic, and in particular animal, cells.	Students should understand how organelles and the endomembrane system allow eukaryotic cells to undertake necessary metabolic tasks, including the importance of compartmentalization and membrane transport.	Students should explain the function of organelles in the context of cellular and organismal physiology.
Collaborative Learning Questions	The role of the lysosome is to chemically digest macromolecules in the cell. What are the basic types of macromolecules in the cell? What types tend to be digested by the lysosome? What materials in the lysosome allow it to perform this function?	Imagine if there were a garbage collectors' strike in your town. What would the consequences be to your community? How would your life be affected? What if the lysosomes in your cells "went on strike"? What would be the consequences to your cells? To your body?	Are there cells that depend more on their lysosomes than other cells? If so, which cells and why?

For this study, we examined students' performance on three lecture assessments: midterm exam grade (performance on the first two lecture exams), final exam grade, laboratory grade and final course grade (numerical and letter grades were both examined). Results were compared between the six semesters before the intervention (fall 2013-fall 2015 and spring 2014-spring 2016) and the four semesters during which the intervention was used (fall 2016-2017 and spring 2017-2018).

## Results

### *Geosciences*

DFW rates in GEOL-G 102 laboratory sections adopting the reformed laboratory curriculum are compared to historical DFW rates (Figure. 1). DFW rates are calculated in two ways. Those shown in blue exclude students who enrolled in the class, but never attended. DFW rates including never-attended students are shown in orange. While rates that include students who never attended the class are a poorer measure of the reformed curricula's effectiveness, they do facilitate closer comparison to baseline data and are included for that reason. Baseline data consists of the three semesters (excluding summer) prior to implementation.



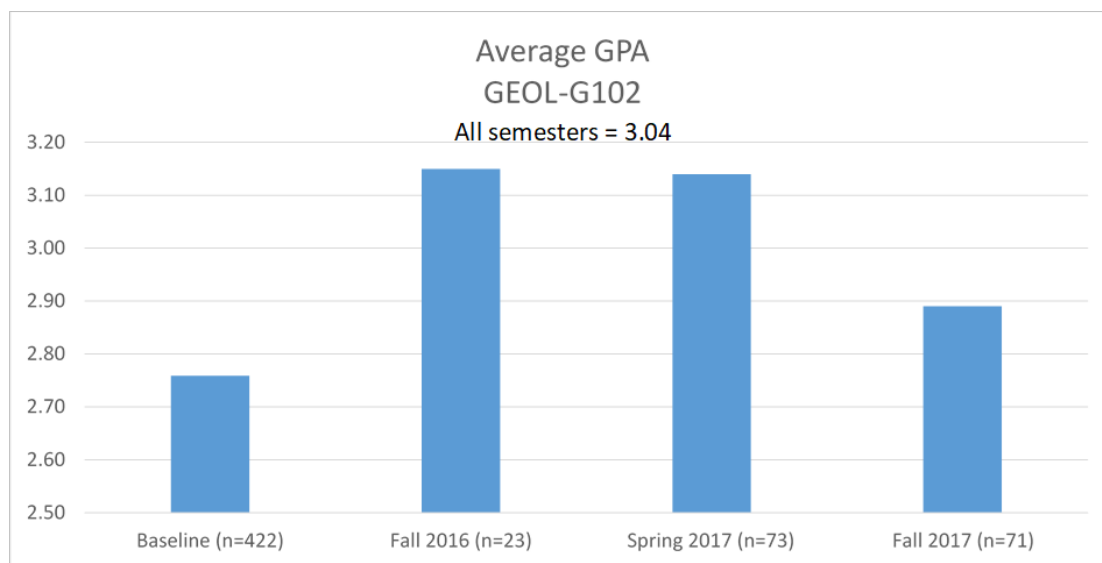
**Figure 1. DFW Rates (%) for Reformed GEOL-G102 Laboratory Sections.** Baseline DFW is derived from the three semesters preceding implementation of the reformed curriculum. DFW rates for all semesters are 5.45% (excluding students who never attended the lab), and 6.59% when never-attended students are included in the dataset.

There is a marked decrease in the DFW rate of reformed laboratory sections compared with historical baseline rates. Overall, DFW rates in reformed laboratory sections are 5.45% (6.59% including never-attended students) – half the historical DFW rate of 13%. The decrease occurs the first semester the reformed laboratories are adopted. In fall 2016, DFW rates are approximately one third that of the baseline (4.35% compared with 13%). The largest decrease in the DFW rate occurred in spring 2017, where students who collectively attended reformed laboratory sections experienced a



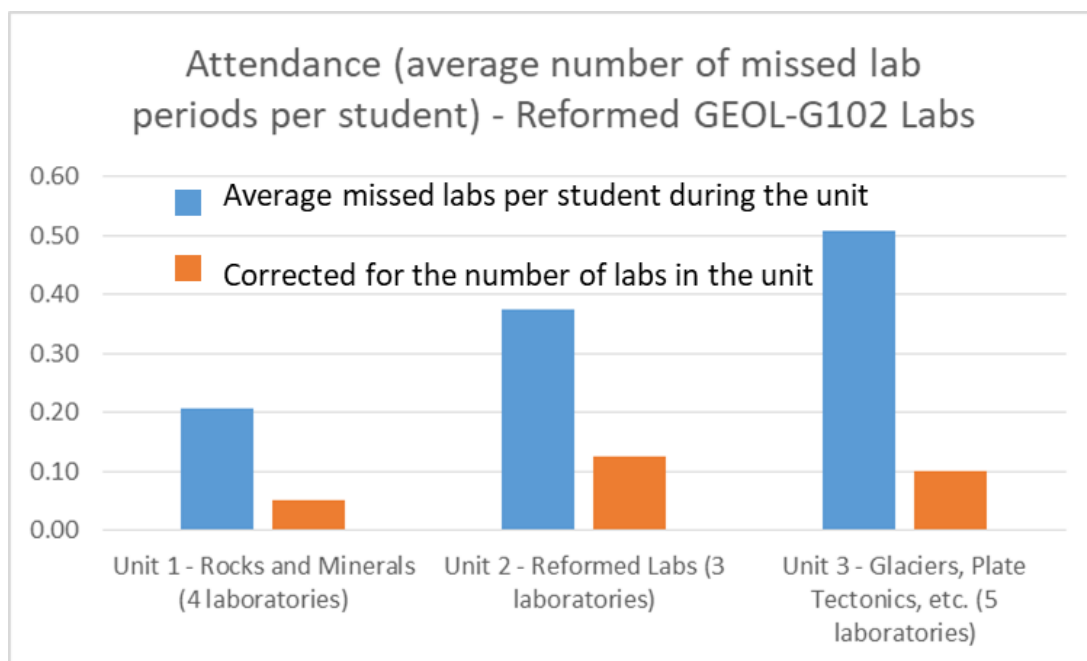
rate of 2.8% (4.1% including never-attended students). In fall 2017 the DFW rates increase compared with prior semesters, but are still below historical values.

GPA was higher in reformed GEOL-G 102 laboratory sections than historically (Figure 2). Overall, GPA in reformed laboratory averaged 3.04 (out of a possible 4.0). This is compared with an average 2.76 GPA for the three semesters prior (baseline). The highest average GPAs occur in the fall 2016, and spring 2017 (3.14 and 3.15 respectively). Average GPA drops to 2.89 in fall 2017, to a value just above the historical baseline value.



**Figure 2. Average Class GPA (4.0 max possible GPA) for reformed GEOL-G102 Laboratory Sections by Semester.** Baseline GPA is derived from the three semesters preceding implementation of the reformed curriculum. Average GPA for reformed sections across all semesters is 3.04.

Research suggests a direct relationship between attendance and academic success for most students (Lukkarinen, et al., 2016; Moore, et al., 2003). We wished to ascertain the number of laboratory periods students missed and at which time(s) during the semester students missed labs. Attendance in the reformed laboratories is reported as the average number of laboratories missed per student for each of three educational units (Figure 3). The first unit consisted of four laboratories that covered rocks and minerals and a rock and mineral identification exam. Unit 2 was the Local River Project reformed laboratories followed by the group presentation. Unit 3 consisted of five laboratories that, for most laboratory sections, covered glaciers, plate tectonics, fossils and geologic time, groundwater, and earthquakes. On average, students missed between 0.21 and 0.51 laboratories per unit, and the number of absences increased from Unit 1 to Unit 3.

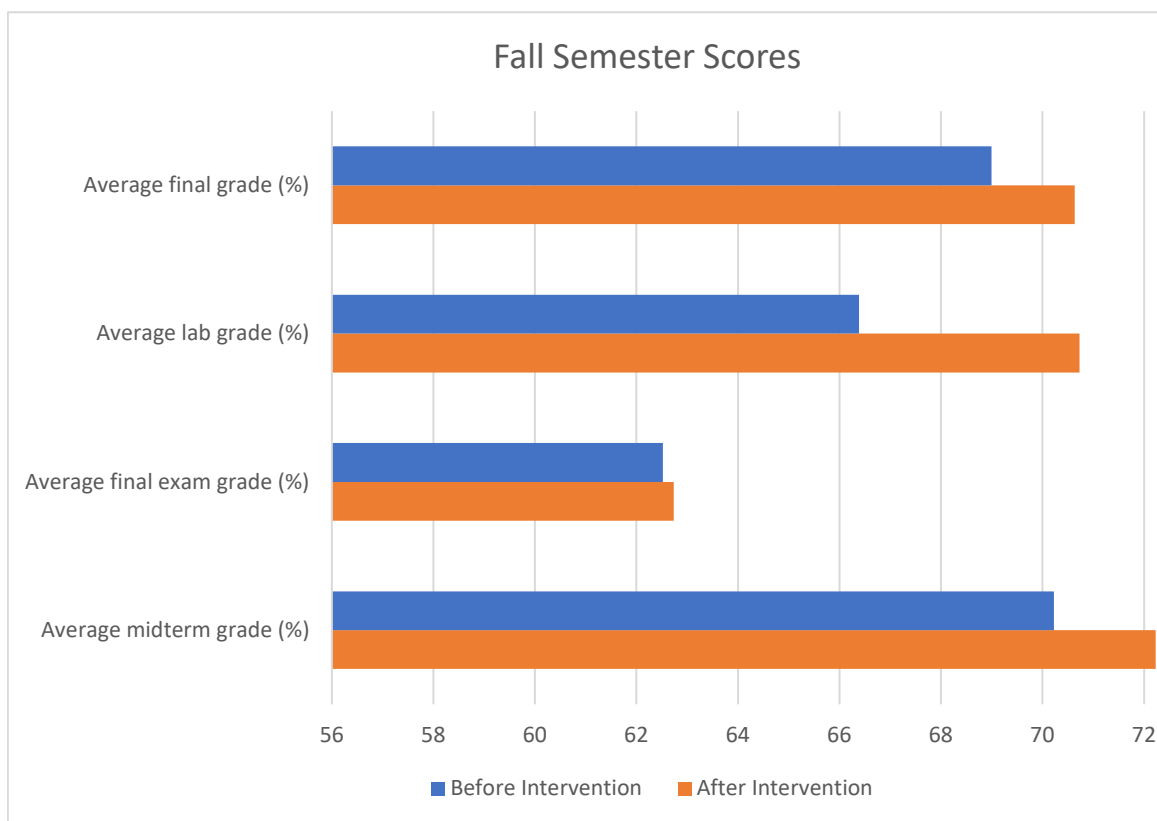


**Figure 3. Attendance in Reformed GEOL-G102 Laboratories.** Data are reported as missed laboratory periods per students throughout the unit (blue), and corrected for the number of laboratories in the unit (orange). Attendance data includes late-registered students and withdrawn students up to the time of their effective withdrawal. Students who never attended a laboratory are excluded from the dataset.

To eliminate the effect of differences in the number of meetings in each unit, the average was divided by the number of laboratory meetings in that unit. The result (shown in orange), is the per lab absences within each unit. Results suggest that student attendance is best during Unit 1, followed by approximately double the absenteeism in the two units that follow.

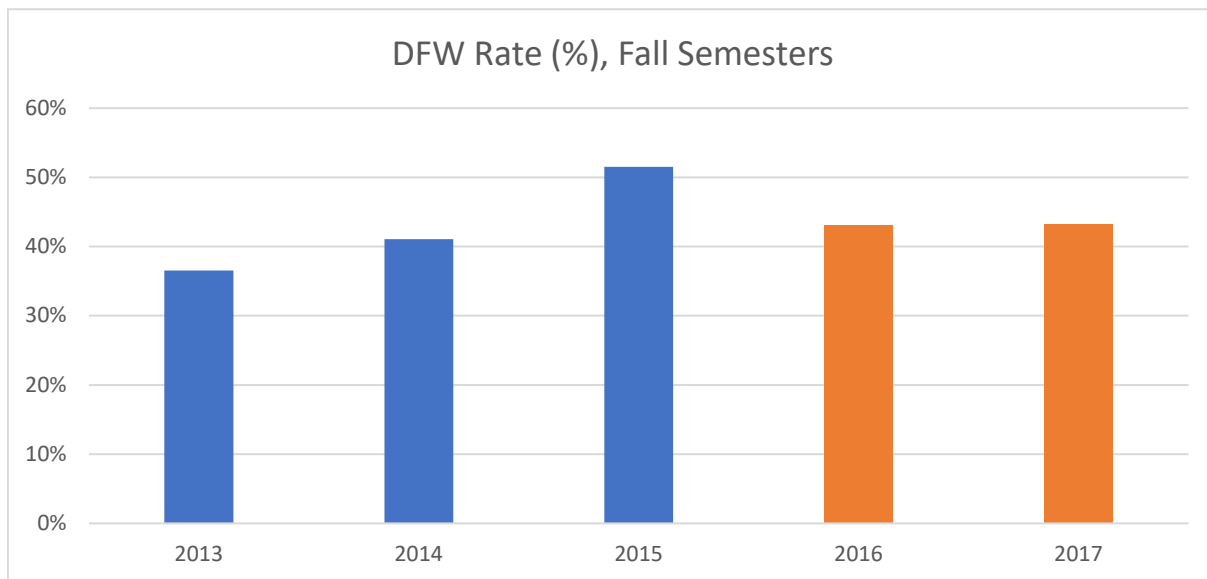
*b. Biology*

Students in the fall semester can choose one of two lecture sections, one in the morning and one in the evening. Because students receive the same assessments in both lecture sections and can be enrolled in any discussion or laboratory section regardless of their enrolled lecture section, we calculated all data using total enrollment, ignoring the particular lecture section in which students were enrolled. Student performance saw modest increases in all four assessments examined – average midterm exam score, average final exam score, average laboratory score and average final course score (Figure 4).

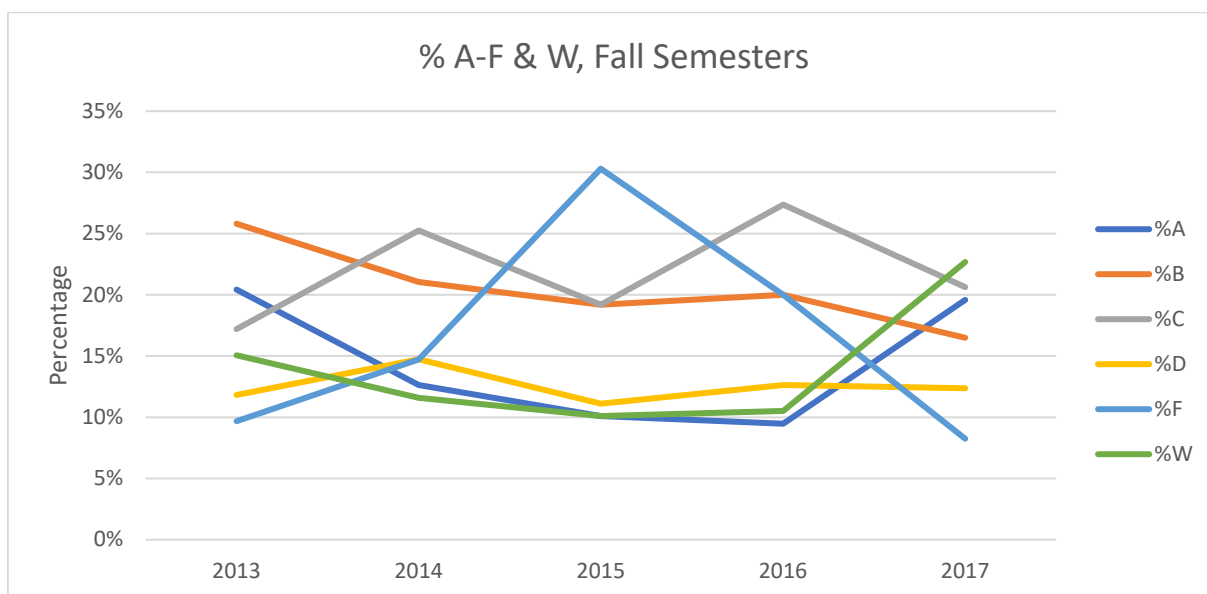


**Figure 4. Average student scores for selected assessments in fall semesters.** Increases were seen in all measured categories after the intervention, with the largest percent change in average midterm grade and average lab grade.

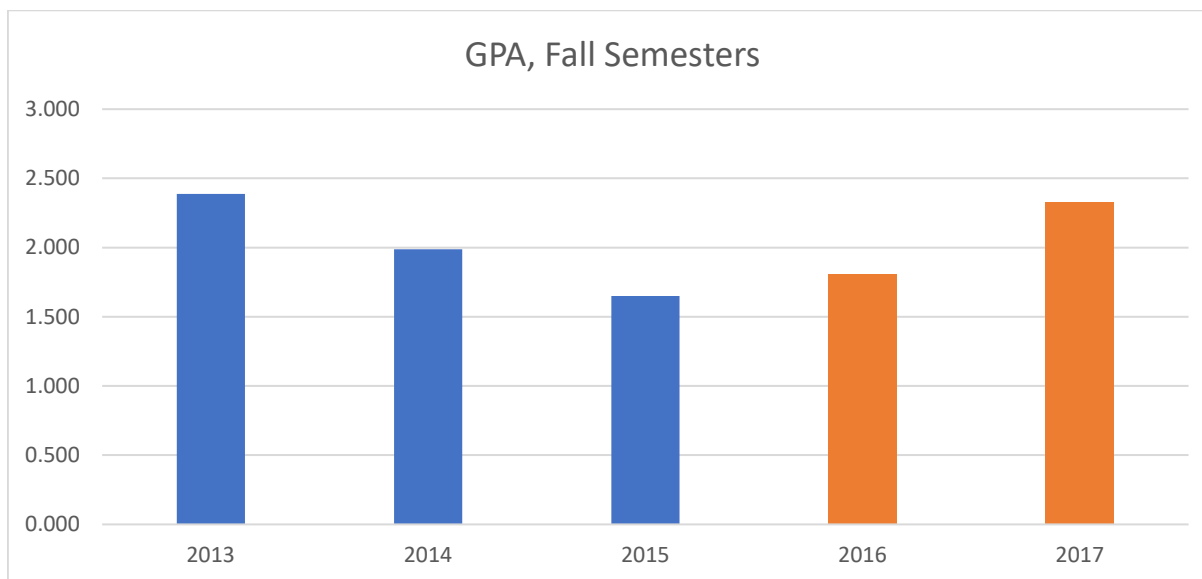
Despite these improvements, there was little change in DFW rates (Figure 5). For all fall sections examined, DFW rate averaged 43.12%. The average of the three semesters prior to the intervention was 43.04%, and after the intervention was 43.23%, suggesting that there was no noticeable change in DFW. When letter grade distributions were compared between pre-intervention and intervention semesters, we saw little change in the distribution of B, C or D grades (Figure 6). The number of F's did decrease in the intervention semesters, but was accompanied by an increase in the number of students who withdrew from the course (Figure 6). The number of A's increased by the second intervention semester, but did not rise above rates seen in 2013, three years before the intervention (Figure 6). GPA was calculated for each section to quantify grade distribution (Figure 7), and showed a noticeable increase from 2015 (the semester before the intervention) through 2017 (the second fall semester of the intervention). Collectively, these data suggest that the collaborative model employed in fall semesters of BIOL-L 101 may have reduced the percentage of failing students, but did not produce quantifiable improvements in student success or a reduction in DFW rate.



**Figure 5. DFW rates for fall semesters.** Average rates after the intervention (orange bars) dropped below high levels seen in fall 2015 but were in line with 2014 and higher than 2013.

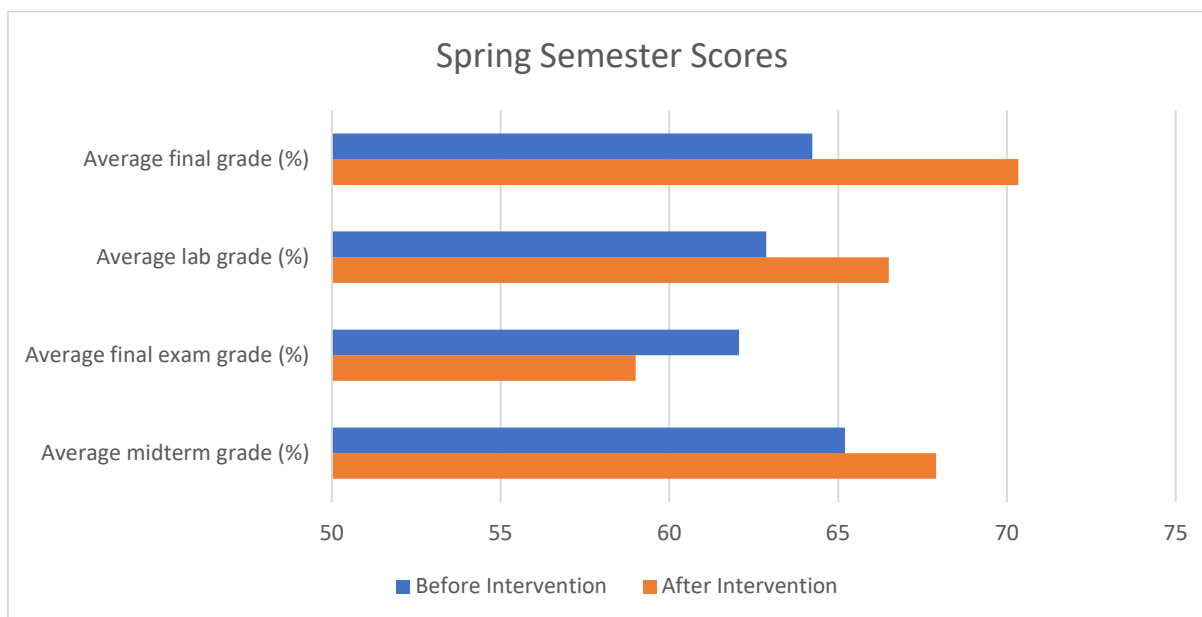


**Figure 6. Letter grade percentages in fall semesters.** The percentage of students receiving Bs, Cs and Ds did not vary appreciably before or after the intervention. The number of Fs did go down in the intervention semesters (2016 & 2017), with a concomitant increase in students withdrawing from the course. The percentage of students receiving As returned to 2013 rates.



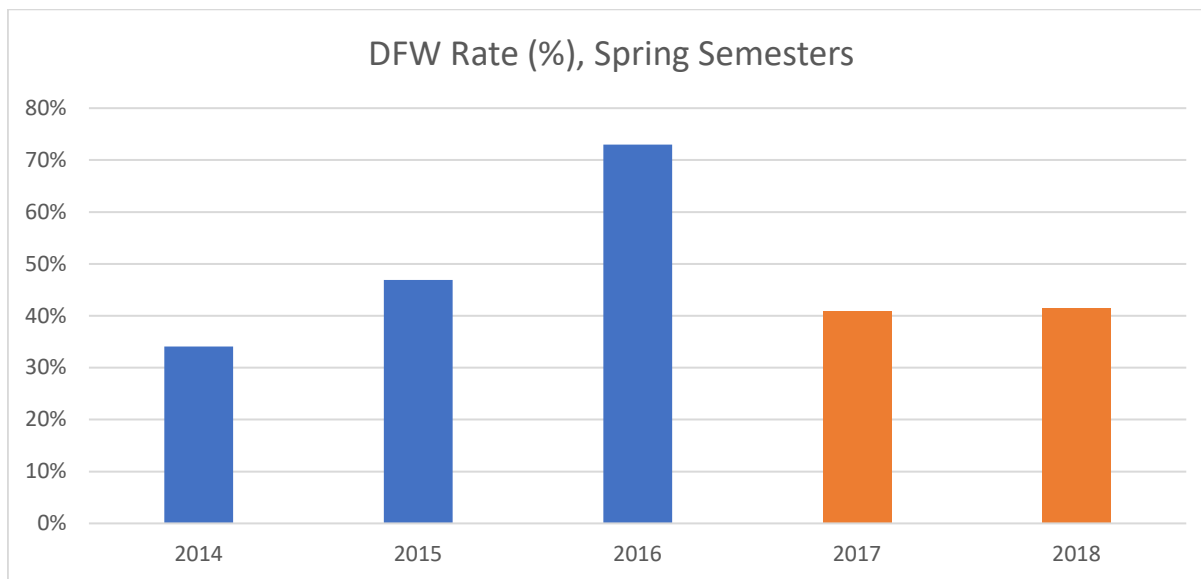
**Figure 7. GPA for BIOL-L 101 fall semesters.** GPA had been declining prior to the intervention (2013-2015) but increased back to levels seen in 2013 by the second fall semester of the intervention.

In spring semesters, there was a more noticeable change in student outcomes. Midterm exam grade, lab grade, and final course grade all increased after the intervention. However, the final exam grade showed a 4.94% decline after the intervention versus before (Figure 8). The average DFW rate for spring semesters before the intervention (2014-2016) averaged 51.31% (Figure 9).

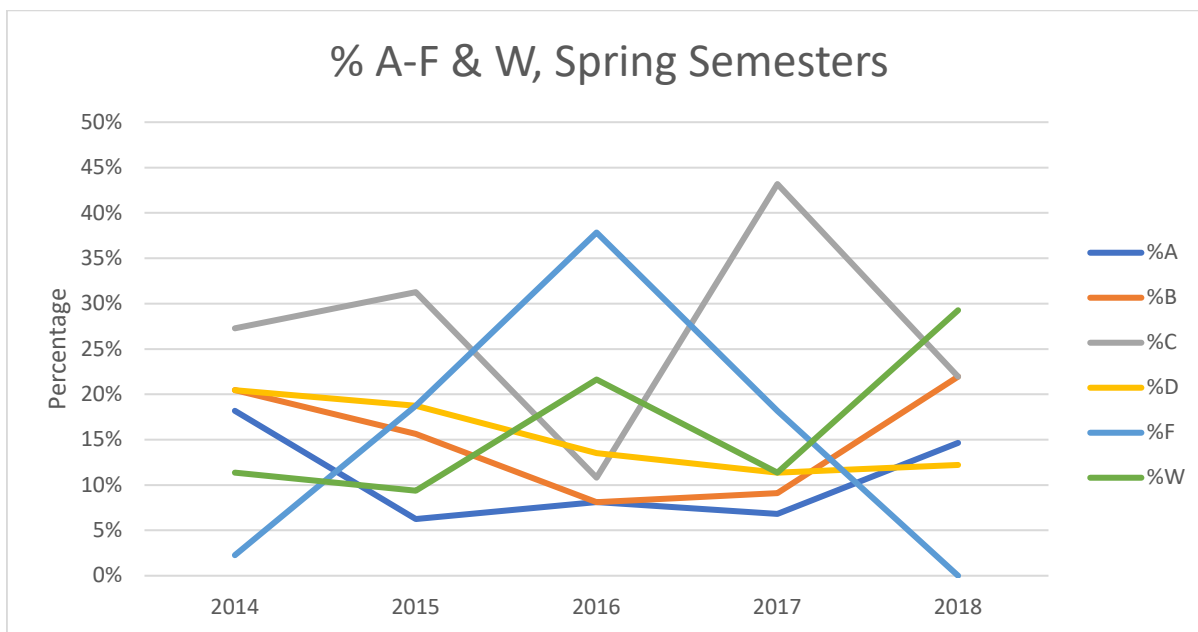


**Figure 8. Average student scores for selected assessments in spring semesters.** Average for all students for final course grade, laboratory grade, final exam grade and midterm grade. In semesters after the intervention (orange bars), scores went up on all examined assessments except for final exam grade, which declined.

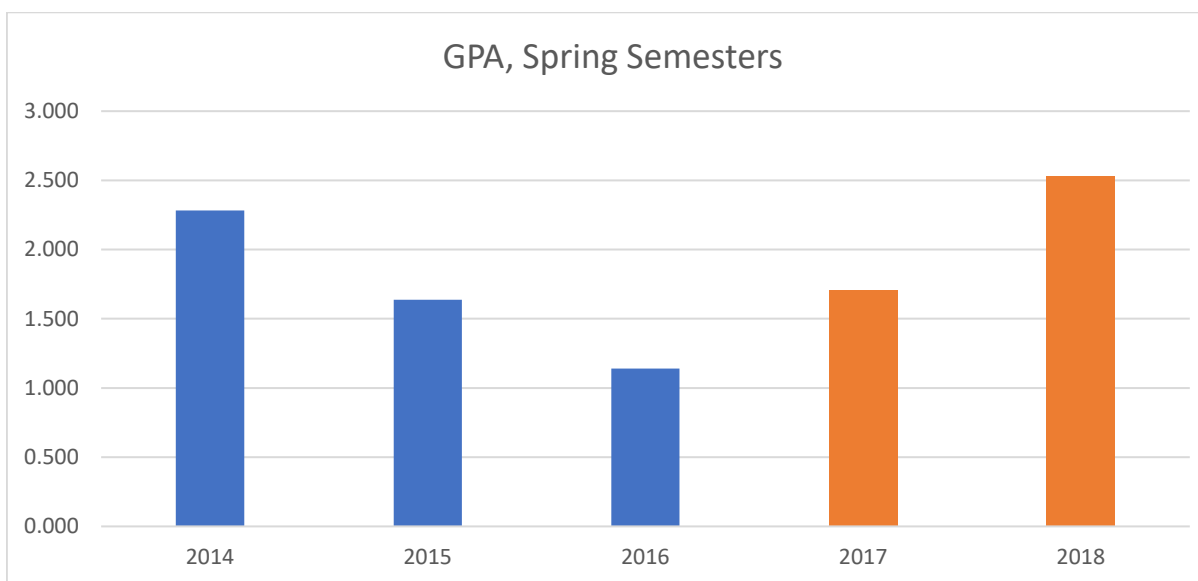
In the two semesters after the intervention began (2017 and 2018), the DFW rate declined to 41.19%, a 24.59% decrease. Grade distributions did show some change during the intervention, with many more Cs than usual in the first intervention semester (Figure 10) and a decline in students withdrawing from the course. These changes, however, did not persist into the following spring semester, when the withdrawal rate climbed again. However, with this increase in withdrawals came an elimination of students receiving an F (0% for spring 2018, Figure 10). GPA for the course increased during all semesters of the intervention, hitting a peak of 2.531 in spring 2018, the highest seen during the study (Figure 11). These results suggest that the intervention may have been more successful for students taking the course in the spring semester than for students in the fall semester.



**Figure 9. DFW rates for spring semesters.** DFW rates in 2017 and 2018, when the intervention was implemented (orange bars), were similar to 2014 and 2015, but much lower than in 2016.



**Figure 10. Letter grade percentages in fall semesters.** While the percentage of students earning As, Bs, and Ds remained relatively unchanged, many more students earned Cs in the first year of the intervention, with a sharp decline in withdrawn students in that semester. However, by the second semester of the intervention, C grades returned to close to historical values. As was seen in fall semesters, the number of Fs declined during the intervention, accompanied by an increase in withdrawals.



**Figure 11. GPA for BIOL-L 101 spring semesters.** Declining GPAs from 2013-2018 increased in 2017 and 2018, reaching its highest level in 2018 (2.531).

## Discussion

### *Geosciences*

Students enrolled in the revised GEOL-G 102 laboratories performed better and failed/dropped out less than students during the three previous semesters, suggesting a positive effect on student engagement. There is a well-established relationship between student engagement and academic success (Kuh et al., 2008), and recent work suggests that engagement in the academic setting may be even more important to students on commuter campuses (Whitten, et al., 2017).

The dramatic drop in DFW rates in fall 2016 and spring 2017 (4.35% and 4.1% compared with 13% historically) is followed by a comparative increase in fall 2017 (8.3%). While still below historical baseline values, DFW rates rise approximately 4% from previous semesters. The cause of the rise is unclear but may be attributable to the differences in implementation of the reformed GEOL-G 102 laboratories (described above) in different semesters. Differences underscore the importance of consistency in instructor preparation, instructor buy-in, and laboratory versatility. That is, the revised laboratories should be easily adaptable to instructors' own teaching style without diminishing the effect. For the geosciences, the study tested the effect of just three revised laboratories developed by one faculty member. This was a first step, and positive results have encouraged the involvement of additional faculty to further modify the curriculum. Moving forward, we will pursue more robust input from all laboratory instructors. Turnover of adjunct and TA instructors still presents a challenge, however.

We also sought feedback on perceived student engagement, performance, and learning from instructors – specifically those who taught both the revised curriculum and the prior traditional labs. All instructors noted that the revised laboratories enhanced student engagement compared with the traditional laboratories they replaced. Instructors commented specifically on the relationship between students' heightened interest level and focus on the “local river,” “local geology,” and “local environment.” Some instructors reported that students paid more attention, suggesting this was because students understood they would have to present findings to the class. Instructors also commented that the revised curriculum was more interesting to teach and liked that there was less reliance on the laboratory manual.

Instructors perceived that student performance and grades were better, but also expressed concerns over evaluating collaborative work. On the positive side, instructors related better performance to perceptions that students prepared better for the evaluation, that group pressure encouraged harder work (in some instances), and that presentation instructions and grading rubrics were helpful to students. However, instructors were also concerned by instances of unequal division of labor and poor team dynamics in some groups. Instructors commented that individual accountability should be evaluated more directly and noted that the previous lab format was easier to grade. These comments suggest the need for developing a more robust peer assessment, personal assessment/reflection, and group management model, areas of concern identified in previous research (Brooks and Ammons, 2003; Almond, 2009).

The time intensive nature of the project-based approach required tradeoffs. Instructors expressed concerns over the loss of time spent on particular skill development, especially for geology majors. Specific concerns were that less time was spent on concepts related to topographic maps in order to accommodate the new water quality laboratory and that students needed more practice with “the basics” before applying skills to the local area. However, instructors also commented that most students did not understand the old labs very well and learned much more from the new geology laboratories. All instructors verbalized the perception that a tradeoff exists between the two



educational styles and discussed where the appropriate balance lies. Finally, instructors gave specific suggestions for improvement to be incorporated into future laboratories.

GEOL-G 102 laboratory absenteeism increased as the semesters progressed, reaching a peak near the middle of the semester. This is the case even though late registrants are included in the dataset. This trend is likely no surprise to faculty teaching on commuter campuses enrolling significant numbers of students with jobs, spouses, children, and other significant outside stressors. Research on college persistence rates find that part-time, minority, and non-traditional students have lower persistence rates than their full-time, white, traditional counterparts (Kuh, et al., 2008; National Center for Education Statistics, 2012). The former are populations for which the standard university curriculum presents a multitude of challenges. While we do not have historic attendance data, the lower DFW rate does suggest that the laboratories are helping students persist through the semester compared with earlier semesters.

### *Biology*

While numerical increases in student assessments, or meaningful decreases in DFW rate, were not seen in our intervention, we did see an increase in course GPA. This increase likely reflects the increased percentage of withdrawals and decreased percentage of students receiving F's documented in semesters after the intervention. Although no aspect of the intervention was designed to increase a student's likelihood to opt to withdraw from the course rather than remain enrolled and receive a failing grade, this may have been an unexpected outcome of the intervention. This could be explained by the increased communication between students fostered by the collaborative exercises and projects incorporated into the course.

Low GPA has been shown to be an effective predictor of freshman student retention (Hurford et al., 2017). As a withdrawal does not hurt a student's GPA as much as an F, we are interested in determining whether this decrease in F's translated to increased student retention. Preliminary data provided by the Dean of the College of Arts and Science at IU Northwest suggests this may be the case. Students who received an F in BIOL-L 101 in spring 2014, 2015 or 2016 returned to IU Northwest the following fall at a rate of 46.15%. Students enrolled in those same sections who opted to withdraw returned the following fall at a rate of 66.67%. Overall, looking at year-to-year retention for all sections between spring 2014-spring 2017, the retention rate for students receiving an F was 39.29%, compared with 57.14% for students who withdrew from L101. Such an increase in spring-to-fall and year-to-year retention is entirely in line with the goals of RFY.

We were intrigued by the greater success of the intervention in the spring semester. The student population that takes BIOL-L 101 in the spring consists primarily of students who fall into one of three categories: (1) students who failed to earn a C- or better in the fall, (2) students who took a non-majors biology course in the fall instead of L101 because of their score on the placement exam for the course, and (3) students who are taking the course late in their undergraduate career, either to complete their graduation requirements or to prepare for advanced studies. Given these differences, it is entirely possible that the interventions we attempted worked better with one or more of these groups of students, leading to the slight increase in student performance and the decline in the DFW rate we observed.

In addition, it is important to note that the spring 2016 semester, immediately before the intervention was started, had a much higher than usual DFW rate and lower than usual values for midterm exam and final course grade. When this semester is removed from the data analysis, the increases in laboratory grade and final course grade persist, but are much smaller (5.30% increase for laboratory grade, 1.93% increase for final course grade). Importantly, the DFW rate no longer decreases, but goes up by 6.50%. The instructor who taught this course in spring 2016 was a first year

instructor, and the lower than usual scores and higher than usual DFW rate may be directly attributable to inexperience. It is therefore unclear from our observations whether these interventions truly accounted for the increased student success seen in spring semesters, or if it was simply a “leveling off” when the course was taught again by two instructors, one of whom has many years of experience teaching the material. (Of note, the “experienced” instructor had a similarly high DFW rate in their first semester teaching the course.) However, the GPA and grade distribution data are independent of this one semester effect and again suggest it may be worth examining fall-to-spring retention rates between non-intervention and pre-intervention semesters.

Beyond numerical student success, the instructors themselves noted that their own enthusiasm for teaching the discussion sections was notably increased, and for this reason alone felt that continuing the intervention was in the best interest of the students taking BIOL-L 101. However, in student evaluations of teaching, few comments were made regarding the interventions in L101, and the majority of the comments indicated that students did not enjoy the group work or felt that the time could have been better spent in review of material. As these comments were a small percentage of the total enrolled students (4 negative comments over four semesters, with a total of 277 graded students), it is difficult to gauge how accurately they reflect overall student sentiment. Additionally, instructors perceived that students seemed to engage more fully in the group projects included as part of the intervention when compared with prior semesters.

In future semesters, we plan to focus more on identifying those at-risk students who are withdrawing from the course. These students will be offered additional mentoring, focused problem sets, and student-focused learning methods to help keep them enrolled in the course and earning a C- or better.

## Conclusions

Findings suggest several benefits of project-based, collaborative educational strategies in introductory science courses. In the Geosciences, students persisted at higher rates, and performed better in reformed GEOL-G 102 laboratories than in previous semesters - indicated by lower DFW rates and higher average GPAs. An attendance baseline was established, and the effect of future modifications on attendance can now be tracked. Future work will focus on expanding the number of reformed laboratories offered in conjunction with the course, stronger instructor involvement in laboratory development, and developing better personal, peer, and group assessment models.

In the biological sciences, the intervention pursued did not produce the anticipated changes in student performance in the specific course but may have led to increased student GPA overall and increased first-to-second year retention amongst students enrolled in the course.

That early success in college courses can have a substantial effect on a student’s success throughout college is one of the central tenets of the RFY initiative. As more institutions strive to attract, retain, and advance less traditional student populations, greater importance is placed on removing administrative and educational barriers to student success. Meaningful pedagogical practices play a central role in the success of such efforts – helping students develop their sense of place, purpose, and belonging within the higher educational environment. Beyond the student persistence and performance measures already discussed, the authors’ engagement in the process of developing, implementing, and assessing the pedagogical intervention described in this manuscript gives rise to several important perceptions and recognitions. The following outlines some of the lessons the authors have learned as we have engaged in our collaborative and project-based learning model.

### Enthusiasm of Instructors and Students

Instructors involved in the interventions described in this manuscript noticed that their enthusiasm for teaching the material increased as a result of the changes made. The instructors of BIOL-L 101 were particularly interested in finding a better use for the 50-minute discussion periods associated with lectures and had found it challenging to utilize this time in a way that helped students interact with the material covered in the 150 minutes of lecture time each week. Incorporating collaborative learning exercises renewed the instructors' interest in the discussion periods. The instructors also noted that students were more engaged during laboratories and discussion periods in the intervention than in previous iterations of the course. Some GEOL-G 102 instructors perceived a causal effect between greater student engagement and their own heightened interest in teaching the redesigned laboratories. We believe that increased enthusiasm on the part of the instructors and the students provides its own positive feedback loop where increased student engagement can encourage instructors/course designers to further experiment with evidence-based pedagogies, and is an effective catalyst for improved learning outcomes.

### Course Design and Instructor Endorsement

Collaborative and project-based learning models call for approaches to course design and to teaching that are different than more traditional models. For example, one of the challenges we have faced in implementing the biology collaborative learning exercises has been tailoring the activities and questions to best help students understand the material being taught. We have found that questions must require students to think critically. Further, questions must be aspirational in nature, such that no one student would be expected to come up with the entire answer. Instead, the questions ideally should require students to work together to come up with the correct answers. Similarly, there were challenges designing geoscience activities that necessitated substantial teamwork and contribution from all student group members throughout the entire four-week unit. One lesson learned is that producing a course design that achieves the desired student outcomes is a highly iterative process. Having a process in place to collect student and instructor feedback, improve, and redesign questions and activities are a key component of success. Where multiple instructors teach laboratories, flexible project designs that can be adapted to instructors' own teaching style are also important.

Finally, it is important for instructors teaching the reformed curriculum to have the opportunity to develop their understanding of pedagogical techniques in a meaningful way. For the course designers, the seminar-styled PIG was an important outlet for exploring evidence-based research on modern pedagogies. It provided impetus, was an important forum for discussion and exchange of ideas, and provided a signal of support from administrators for this type of scholarship. We suggest that a similarly-styled workshop for adjunct faculty and TAs could provide a robust opportunity for study and exploration of evidence-based pedagogies and the reasons behind employing them.

We have been encouraged by the preliminary results of our intervention and are committed to incorporating the collaborative learning model more fully in current classes and in other classes in our curricula. For example, as a direct result of the initial successes seen by using the collaborative learning model in discussion, we have adopted a "flipped classroom" for BIOL-L 101. Students spend lecture periods working on collaborative exercises intended to further their understanding of concepts covered in assigned readings and pre-recorded lectures. The investigators have further committed to implementing collaborative learning exercises in upper-level courses. One investigator (H.E.O.) has already seen substantial increases in student performance in a sophomore-level course by implementing a collaborative-based strategy (data not shown). This course was heavily populated with students involved in the BIOL-L 101 intervention described herein.

We are interested in expanding the role of active learning and collaborative learning in all of our science classrooms. The interventions described in this report were confined to discussion sections. Lecture sections were left largely unaltered, hewing to the traditional model of “sage on the stage” lecturing using PowerPoints, with students sitting passively in the lecture hall. As noted, we are already changing this in the Biology curriculum. We also want to focus our efforts on assisting those students who run the risk of withdrawing from the course, and find ways to keep them enrolled and earning a grade of C- or better. Not only will this help these students remain in good academic standing, it will help increase spring-to-fall and year-to-year retention rates.

### Acknowledgements

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## Maintaining High-Impact Bridge Programming at Scale

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*Abstract: This paper uses Middle Tennessee State University's MT Scholars Academy, an extended early arrival program targeting first-year students who are classified as at-risk by a variety of measures, as a case study for demonstrating the effectiveness of AASCU's Re-Imagining the First-Year (RFY) initiative. In particular, this case study demonstrates the implications of RFY's foundational assumption that successful practices are known well in student success literature and need to be enacted. The case study demonstrates the scholarship which undergirds the program and describes a series of decision points that have been encountered as these research proven strategies have been put into practice. The current iteration of the program is also described thoroughly, and its results for student success are articulated.*

*Keywords: student success, first-year retention, summer bridge, first-year experience, re-imagining the first-year.*

In higher education, programs tend to become stale or even ineffective after a number of years. This article will provide a case study of Middle Tennessee State University's (MTSU) MT Scholars Academy (SA) – a continuously evolving summer bridge turned early arrival program informed by the work of Astin (1998), Tinto (1993, 2012), and Schlossberg (2008) – which is aimed towards improving the retention, progression, and graduation of students who are typically considered “high risk.” The changes made to the program have refined the implementation of research-informed best practices for student success and have adapted general principles into the specific context of our campus community.

Tinto (2006) points out that increased knowledge about why students leave universities “does not tell institutions, at least directly, what they can do to help students stay and succeed” (p. 6). He goes on to suggest that, “the regrettable fact is that many good ideas are not well implemented or implemented fully. In other cases, even when fully implemented, many programs do not endure” (p. 9). These observations are substantially similar to those that undergird the Reimagining the First Year (RFY) initiative. This initiative, formed by the American Association of State Colleges and Universities (AASCU) in 2016, is a conglomeration of 44 higher educational institutions who have agreed that the national college graduation rate which hovers near 55% is not satisfactory and who have committed to enacting research based best practices to affect drastic change in retention, persistence, and completion rates. As AASCU official George Mehaffy suggested in his remarks at the RYF launch event, “we have a large body of research that demonstrates that we know what to do to improve student success for all students, particularly low income, first generation, students of color” (Mehaffy, 2015, p. 3). In his view, low retention and completion rates are not a result of a “knowledge problem” but of an “implementation problem” (p. 3).

This research explores the successful implementation of the MT Scholars Academy. The program has evolved and developed over the years since its pilot phase and is now institutionalized and moving towards full-scale implementation. It has survived staffing departures, changes in institutional demographics, changes in structure, and changes in university policy. Along the way, the



program has developed and strengthened increasingly significant institutional partnerships and has maintained vitality and effectiveness. The overarching question is why? What factors combine to create the success of this program? And further, which of these factors can be abstracted and applied to other student success initiatives? This program embodies the benefits of effectively implemented, and research backed first-year success initiatives advocated by RFY program, and the 81% average first-year retention rate for program participants over the past four years demonstrates the effectiveness of the RFY approach of enacting effective practices at scale.

### **Context: What We Know About First-Year Student Success**

Research into the factors that affect student retention has come a long way since the 1970's, and its development has been summarized well already (Tinto, 2006). Retaining first year students requires effective transition to college expectations in both social and academic domains of college life (Mannan, 2007). Within each domain the overarching criteria that affect retention is student involvement/engagement (Tinto, 2001; Upcraft, Gardner, & Barefoot, 2005). Yet, the precise definition of what effective involvement/engagement involves and requires is rather nebulous. Certainly, as Kuh (2008) observes, high-impact practices (HIP's) are those that require students to spend considerable time and effort on educationally significant tasks. However, what constitutes considerable time, considerable effort, and the boundaries of what should be classified as educationally significant tasks are all open to debate.

At a basic level, important structural differences exist between high school and college expectations. According to Braxton and Hirschy (2005) these differences require that students are integrated into both the structural and normative standards of the institution. Some of the transitions that students need to make are expected or clearly presented, while others are more covert and exist as a part of the so-called hidden curriculum (Smith, 2013). Failing to recognize and adapt to differences between the institutional and student expectations results in an experience that Kidwell (2010) describes as a both "purgatorial zone" that is typified by "academic hazing." Clearly, this type of experience is to be avoided at all costs. Thus, effective first-year programming must identify as many of the differences between high school and college and communicate those differences clearly to students. A complicating factor is the divergent experiences of individual students, but the complexity is unavoidable. Large elements of transition happen in both the academic and social domains.

#### *Academic Factors*

In considering the academic factors related to first-year student success, it is immediately clear that what students need is to figure out how to learn in the college environment, which is significantly different than their high school experience. Erickson, Peters, and Strommer (2006) summarize the difference between high school and college classes by suggesting that "courses are larger and seem less personal; the structure is looser and the support less evident; expectations seem less clear and evaluation is less frequent" (p. 8). Of course, students notice the difference almost immediately – but knowing how to adapt their learning to meet the change is another story. The result is often inaction. More than 75% of first-year students report studying less than 10 hours per week, while only 5% report studying more than 20 hours a week (Eagan, et al., 2016). In addition, applying the academic patterns used in high school is often ineffective. Research into effective learning conditions has demonstrated that effort and time correlate to learning at a high rate (Dunlosky, et al., 2013), and that the most effective study strategies are the least used by students (Blaisman, Dunlosky, & Rawson,

2017). Not surprisingly, this reduction in effort decreases student learning in college (Arum & Roksa, 2011; Blaich & Wise, 2011).

### *Social Factors*

Students also need to effectively transition to social aspects of postsecondary education. A number of significant changes happen during the transition to college. Students often leave established support structures (composed of family and friends) and experience increased flexibility and autonomy. Many choices are available to college freshman which were not options in high school. For example, students in college can choose not to attend class. In addition, they often have access to more alternative forms of entertainment than they did in high school. The difficulty of adjusting to these increased social freedoms is compounded by the fact that students are in class less per week than they were in high school, which results in more unregulated time.

A number of overlapping social factors have bearing on a student's retention. Several of these factors measure a student's relationship to their educational institution, including: satisfaction (Krumrei-Mansuso, et al., 2013), engagement (Kahu, 2013), self-efficacy (Davidson & Beck, 2007), institutional fit (Denson & Bowman, 2015), relationship with teachers (Haugenauer & Volet, 2014), social integration (Brooman & Darwent, 2014), student attachment (Wilson & Gore, 2013), and connectedness (Jorgenson, et al., 2018). In addition, family support (Feenstra, et al., 2001) and relationships with peers (McCabe, 2016 [connecting in college]) also affect student success and retention. Students adjust to each of these factors at different rates and in different measures, but the overall result is that a student who adjusts well feels as if they belong at the university and is retained.

### *"High-Risk" Students*

The term "high-risk" is increasingly understood as problematic because of its connotations of student deficiency. However, in general, "high-risk" students are those for whom their "academic background (academic preparation), prior performance (low high school or first-semester college GPA), or personal characteristics may contribute to academic failure or early withdrawal from college" (Pizzolato, 2003, p. 798). The personal characteristics that contribute to 'high-risk' status include: "raised in a single-family household, low-income, first-generation, demonstrate poor academic performance" (Smith, 2013). Also, it is clear that institutional barriers affect each of these risk categories differently, and so affect the retention, persistence, and graduation of these students. These students are typically understood to experience several deficits – in comparison with other lower-risk students. In particular, they seem to have lower levels of family support (Choy, 2002), are less academically prepared, and lack the type of cultural capital and experience that are valued in educational contexts (Choy, 2002). However, becoming a college student is an incredibly important part of the "possible self-achievement process" for these students (Pizzolato, 2003, p. 799).

The aforementioned areas of risk relate directly to student retention in several significant ways. Engle and Tinto (2008) demonstrate that first-generation students are four times more likely to leave institutions of higher education without a degree. Hodges-Payne (2006) argues that low income families do not understand the benefits of college degrees, and so dropout is more pronounced amongst that demographic. However, it is important to recognize that low income students work during college "because of their obligations to support other responsibilities they may have outside of college" (Petty, 2014, p. 258). In addition, Hicks (2003) demonstrates that first-generation students are psychologically less prepared for college. The result is that "overcoming intimidation and obstacles are skills that first-generation students lack but must learn in order to survive in college" (Petty, 2014, p. 262).

In light of this research, institutions have developed various transition programs with the expressed goal of improving student persistence and retention by ameliorating the myriad difficulties inherent to the first-year of college. In particular, two related programs—bridge programs and first-year experience programming—will be described herein, because the MT Scholars Academy is a combination of both programming models.

### *Bridge Programming*

Bridge programs have their origin in the federal Upward Bound program. Originally these programs were constructed to assist students in preparing for and achieving college enrollment (Kallison & Stader, 2012), but they have come to exist as remediation programs, aiming to assist students in navigating the many transitions associated with the first year of college. Typically, these bridge programs contain academic instruction, tutoring, study skills instruction, mentoring/advising, and information about college financial aid and application (Gullatt & Jan, 2003). Effective bridge programs focus on establishing trusting relationships between students and staff, addressing areas of content weakness, providing college survival skills, hearing from previously successful college students, and receiving quality career and academic counseling (Engle, et al., 2006).

### *First-Year Experience/Seminar Courses*

First-Year Experience courses take a variety of forms and play many different functions in the landscape of higher education. Skipper (2017) notes that from a national perspective there are four types of first-year seminar courses: a) extended orientation, b) academic seminar with uniform content, c) academic seminar with variable content, and d) hybrid, and argues that first-year seminars incorporating some or all of these conditions could be classified as high-impact (p. 8). The impact of successful first year seminar programs is notable, resulting in their designation as high impact practices (HIP's) (Kuh, 2008). Effective first year seminar courses work to ameliorate the difficulties of a student's transition to college. Cuseo and his colleagues (2007) suggest that students must learn four essential things in their first-year of college: (1) active involvement, (2) utilization of campus resources, (3) social interaction/collaboration, and (4) self-reflection. These principles form the backbone of an effective FYS course.

Thus, it is clear that any program wishing to increase student retention needs to consider both the academic and social factors that influence student success and retention. Further, these programs must prioritize student involvement, the use of campus resources, the creation of relationships amongst students and various university stakeholders, and must enable and provide opportunity for self-reflection. Finally, it must be mentioned that a student's initial experience with the university is incredibly significant (Woosley, 2003). These are the 'best practices' that have been put into place as the theoretical foundation for the MT Scholars Academy and will be demonstrated in more detail in the following case study.

## **MT Scholars Academy**

The MT Scholars Academy is a first-year initiative, aimed towards improving the retention, progression, and graduation of students who are typically considered "high risk." The program commenced in 2005 with 20 students utilizing best practices of such established summer bridge programs as the ones at University of South Carolina, University of California - San Diego, and Indiana University-Purdue University Indianapolis (IUPUI). At that time, the program was tailored to increasing the academic success of students of color (Hart, 2016). In the early years, much of the

program's activities centered on both self-esteem and self-efficacy. Its four major components: academic, social services, career, and research were designed to promote the students' self-awareness, critical thinking abilities, social network, and a sense of belonging (Kenett & Reed, 2009). While the initial contact occurred during six weeks in the summer term, when students took two college courses (a 3-credit First Year Experience [FYE] and a 3-credit communications course), weekly meetings were held throughout the first year of transition. Moreover, the participants were expected to remain active in the program throughout their matriculation. This program design offered students a head start towards accomplishing their academic goals.

Success of the first cohorts as measured by retention led to the growth of the program. The following table shows the growth in enrollment and the 1-year retention rate of the program participants. Retention is defined as a student enrolling during the fall semester of the following year.

**Table 1: MT Scholars Academy Enrollment & Retention**

Year	Enrollment	SA 1-year Retention
2010	23	69.5%
2011	28	96.4%
2012	30	76.6%
2013	32	84.4%
2014	115	85.2%
2015	165	83.6%
2016	312	78.8%
2017	351	78.0%

As currently formed, the MT Scholars Academy consists of both an academic curriculum and co-curricular activities. The 2017 Scholars Academy cohort was made up of 352 participants. Of these, 59.9% were female, and 40% were male; 58.52% identified as black or African American, 3.98% as Hispanic, 3.98% as having two or more ethnicities, and 32.67% as white. In addition, 63.92% were first generation college students, whereas 36.07% were not. The average composite ACT score for the cohort was 20.97, with the following subset averages: English 21.49; Math 20.13; Reading 22.19; Science 21.48. In addition, 117 of the students had earned some college credit before enrolling in the program, and these students earned an average of 9.09 credits earned, though it should be mentioned that eight students earned more than 20 credits, with one particularly industrious student earning 50 credits before matriculating to college.

The classroom curriculum is an adaptation of our First Year Experience course, which is focused on the development of college-appropriate success skills. Students enroll in the FYE course during the fall semester, though a variety of academic topics are presented to students first during nine intensive sessions in the summer (time management, the expectations of college level learning, effective study practices, building relationships on campus, etc.). The students' application of these skills is supported by regular class and programmatic meetings during the semester. Co-curricular activities include several meetings with Student Affairs staff, attending MTSU sporting events, attending first year student programming, and touring campus buildings and facilities.

## Decision Points

As the program has developed, it has faced challenges. The full goal is to serve 500 students per year while maintaining the identity of the program that has made it successful. Through the development of the program, several decision points have influenced its current iteration.

In 2010, the manner in which the university is funded was changed dramatically. The Tennessee state legislature passed the Complete College Tennessee Act (CCTA) of 2010, which had as one of its provisions a funding formula model that moved state funding from enrollment to progression and completion. One of the implications of this change was that students who took summer classes would not be counted as first-time freshmen in the fall semester. Because of the priority that retention of first-time freshmen plays in the funding formula, it was imperative that the students in this program be counted as first time freshmen during the fall semester. Thus, the program was transitioned from a traditional bridge program taking place in the middle of the summer, into an early arrival program taking place in the two weeks before the start of the fall semester. The program remains residential because it is clear that transitioning to independent living is one of the many transitions that students need to successfully navigate to ensure their institutional success.

Changing the duration of the program and its timing required also that the curriculum be revamped. It was no longer possible to offer students the opportunity to take two full classes for credit. In the first years of the relocated program, students took non-credit seminars in three areas: study skills, basic math, and basic science. The goal was to give students the skills necessary to be successful not only in college generally, but to have a refresher on basic content in Math and Science, classes that have high DFW rates on campus. However, because the classes were not for credit, they did not have the expected effect. Many students were not engaged in the workshops, and several did not find value in the offerings creating problems of students skipping the sessions. The current iteration of the program devotes the intensive instructional time in the summer sessions to academic skills development. In the summer term of the program, students develop a strategy for their success in the coming year. This work is submitted on the first day of the fall term, and provides the foundation for the remainder of the course which focuses on supporting students as they apply their strategy to their first semester in college.

Another decision point deals with staffing. Initially, the program was led by the university's chief diversity officer. Later, due to tightening budgets during the national recession that began in 2008, the program was relocated to Student Affairs and was housed in the Office of Intercultural and Diversity Affairs. When the program's director received an appointment in Academic Affairs in 2013, the program followed him and is now housed in the Office of Student Success. One of the major benefits of the program for students is the connections they make with university staff and faculty. When the program was smaller, these benefits were easier to confer – the administrator in charge of the logistics and implementation knew each student personally, as did several high-level administrators and the faculty who taught in the program. All the students met with their academic advisors as well. As the program grew past 100 students, the quality of those personal relationships was threatened. Faculty expectations were re-written to include individual meetings with students throughout the semester to help troubleshoot and advise students more comprehensively. In addition, support staff were added to divide responsibilities between the logistics of program development, assessment, and recruitment of students and the more 'boots on the ground' functional leadership of the summer institute and academic year programming.

In addition to the evolution of the professional staff component, peer mentoring has also become an integral part of the program. In 2010, when the program was relocated to the Division of Student Affairs, the decision was made to incorporate peer mentors into the structure. It was determined that a peer mentor was needed for every seven participants. The peer mentors received compensation including complimentary residential hall accommodations and free breakfast, lunch, and dinner during the program's summer duration. Over the last eight years, peer mentor training has been added as have book bags, and the lead peer mentor position. The number of peer mentors has risen to 48 for the 2017 cohort.



One final decision point is worth discussing, that of intentional campus partnerships. Creating quality programming to ensure the success of ‘high-risk’ students is a big job, which benefits from wide collaboration of various stakeholders. Since 2010, the program has had a residential option. That is, while students who live off campus can commute to the program and are welcomed to participate, the vast majority of the participants reside in dormitories. Those residential students receive several benefits from a collaborative relationship with Housing and Residential Life including familiarity with dorm life, relationship-building with resident hall assistants and other staff, and early exposure to residential hall policies and programming. Another noted benefit is that the program’s residential participants avoid the hectic move-in days at the start of the fall semester when three thousand other residents move in.

As the academic component of the program developed, partnership was required with various academic departments including University Studies (the area housing our first-year seminar course), English, Math, and Science. Fostering these partnerships enabled the creation of quality curriculum across the disciplines covered in the program. Collaborative partnerships are also developed with various support services across campus. Because student use of tutoring correlates both with increased GPA and retention gains (Cooper, 2010; Reinheimer & McKenzie 2011), the program partnered with the campus tutoring center to expose students to the benefits of tutoring. This partnership resulted in intentional daily tutoring sessions during the Summer Institute. These sessions were led by peer mentors. In addition, efficient, convenient, and responsive libraries are correlated with student success (Scott et al., 2008), so students were regularly encouraged to use the library for independent study.

Not all of the decision points are behind us. At present, we are working to allow students the opportunity to develop essential areas of academic skills in the summer before their first full term in college, particularly in Math, English, and Science. All too frequently, academically rigorous general education courses challenge students and threaten their sense of belonging at the university, or within their chosen degree path. Our current curricular development efforts are aimed at providing opportunities for students to refresh or develop essential skills in these areas in order to then be more successful in these foundational general education courses. In addition, we are looking at ways of more systematically supporting students who enroll in SA through the sophomore transition and into the completion of their degree.

Lastly, there is a modicum of concern that the MT Scholars Academy has peaked in terms of size and its ability to continue to produce retention rates above 80% as it has in prior years. Although the program’s success continues to outpace that of non-participants, interest in the program’s potential point of diminishing returns has been expressed. Those questions were raised as reactions to the 2016 cohort’s below 80% retention rate. The 2016 cohort, which was then the program’s largest before the 2017 cohort surpassed it, experienced a couple of unexpected gyrations that perhaps impacted its success rate.

One, its persistence rate, measured by the percentage of students who return for the spring semester following their first fall semester, was lower than expected and needed. The first-year retention rate goal for each cohort is 85%. In order to reach that goal, it has been concluded that the persistence rate must be near 95%. However, the 2016 cohort’s persistence rate was 90.8%, which did not leave much room for the slippage that takes place following the spring semester.

Two, the program lost two key administrators at critical times. The staff person who handled the administrative and other customer service tasks including room reservations, daily and weekly reports, interfacing with the participants, and office coordination left the university in May 2017. Perhaps more impactful was the departure of the staff person who led the program’s recruitment and retention efforts. That person was integral in establishing the tone, setting expectations, meeting with the cohort, and providing intrusive leadership and daily management. When that person departed the

university in June 2017 in the middle of our 2016 retention efforts and 2017 recruitment efforts, there was a considerable shift in effort, energy, and prospects for both cohorts.

As aforementioned, one of the strengths of the program is that it is constantly been reviewed for opportunities to increase its ability to aid student success. Therefore, several enhancements have been added over the years. A recent and compelling example of this commitment is the decision to commence the FYE course in the summer and extend it throughout the fall semester. With regard to persistence the 2017 cohort produced a 94.9% persistence rate. That is, 94.9% of the 2017 cohort who entered the program in summer 2017 and enrolled at MTSU in fall 2017 were enrolled for the spring 2018 semester. As for retention, the 2017 cohort was retained at 78% rate. While the retention rate goal for the program remains at 80%, program participants were still retained at a higher rate (78%) than were students who entered the university the same fall semester yet did not participate in the program (75%).

## Conclusion

The RFY project operates from the assumption that the field of student success research has developed to the point where effective policies and programs are clear. Mehaffy pointed this fundamental starting point in his speech at the launch of the program. In his words, “when I say WE know what to do, I really mean the field knows what to do” (p.3). But, Mehaffy did not stop there, he continued by suggesting that, “each of us, on our own campuses, knows some things but few of us have a broad enough view to know all of the most promising practices. We each grasp a different part of the problem” (p. 3). To these observations can be added the conclusion from the National Commission on Higher Education Attainment, which argues “access alone is not enough. For all students, traditional or not, offering access without a commitment to help students complete college degrees is a hollow promise” (NCHEA, 2013). Helping students, particularly underrepresented and underprepared students, make meaningful progress to their degree and to find success in college is of paramount importance.

The MT Scholars Academy forms a test case for each of these observations. The preceding review has demonstrated that since the establishment of the program, university officials have intentionally developed the curricular and co-curricular offerings both in response to larger changes in the landscape of higher education, and in order to make the program more effective for the individual students enrolled. In terms of access, enrolment has seen exponential growth while keeping the costs of the program passed onto the students low. More significant though have been the developments in the program components. These developments work to make sure that the program is not a hollow promise of increased student success, but rather carries through and benefits the students who enroll. In this way, we have relied heavily on the things “we know” in student success literature. But, no research demonstrated program has been copied whole cloth. Rather, we have put bits of several programs into practice. The combination of these programs benefit the students enrolled both in this program, and at our university. Mehaffy was not wrong when he asserted that individual universities have particular knowledge of practices leading to student success. Moreover, this individual knowledge is extremely beneficial in other contexts. But, it must be applied and translated to the new institutional context rather than just replicated.

There are many issues that arise when one applies national research to a local context. These issues are not insurmountable, but it must be borne in mind that successful programs are rarely 100% transferrable. Rather, emendation is necessary. In this case, we have faced a number of decision points where circumstances external to the success research have necessitated decisions and changes to the program which were unexpected. However, by approaching these decision points carefully, involving a wide range of institutional stakeholders in the decision-making process, and maintaining the place

of primary impact proven by research, we have been able to create a dynamic program that benefits both the students and the university. RFY's methodology is key in this process. To progress one must avoid analysis paralysis, build a program on the basis of what is demonstrated to work as seen in national research, and then emend the program as various decision points arise to maintain the benefit, but to fit the local context.

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## Curricular Learning Communities and Retention

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*Abstract: Learning communities have been a part of the higher educational landscape since the 1980s. Despite their widespread use, research regarding their effectiveness with enhancing retention is sparse. This study describes a freshmen curricular learning community linking courses required for all business majors. Retention for students taking courses in a curricular learning community is compared to retention for students taking the same courses independent from a learning community. Analysis of the data indicates that students who participated in the learning community were twice as likely to persist to the following semester than the students in the baseline comparison group. The results provide evidence that purposeful structuring of courses in a curricular learning community with support imbedded to help students succeed is associated with improved retention.*

*Keywords: learning communities, retention, cohorts*

The first year of college is instrumental for student learning and continuing student success (Barefoot et. al., 2005). The Association of American Colleges and Universities (AAC&U) has identified ten high impact practices that have been demonstrated to be effective for a wide range of educational outcomes. Learning communities are one of these practices. By 2004, over 500 colleges and universities had implemented them (Smith, MacGregor, Matthews & Gabelnick, 2004). Despite their widespread use, research regarding their effectiveness is “sparse and mixed” (DeAngelo, 2014). Their use in a nonresidential setting is even sparser. This study examines the use of a learning community for freshmen students at a regional Midwestern public university and its association with retention.

### Background

#### *Description of Learning Communities*

Cox (2004) traces the early seeds of learning communities to Dewey (1933) and Meiklejohn (1932). Both independently advocated having cohorts of students taking common courses. Dewey’s focus was on student-centered learning; Meiklejohn’s motivation was to mitigate his concern regarding specialization in the disciplines leading to a fragmented learning experience for students. Over the years various efforts to form learning communities arose and dissipated. It was not until the 1980s that they gained traction (Cox, 2004) leading to their prevalence in universities today.

Learning communities can take many forms. Lenning and Ebberts (1999) take a broad view of learning communities describing four forms: curricular, classroom, targeted group learning, and residential communities. Curricular learning communities link two or more courses often serving the same group of students. A classroom learning community is focused on a sole classroom often using pedagogies such as cooperative learning or other group-based pedagogies to foster community within the classroom. Student learning communities focus on a targeted group of students such as honors students or underrepresented students. They can have either a social or academic supportive purpose.

The final type of learning community is a residential learning community. They center on an academic interest building community via students living together.

This study focuses on a curricular learning community. Smith et. al. (2004) describe three forms of curricular learning communities. The first does not modify existing courses. At some large campuses, the existing courses may have very large enrollments. An additional course is added that may take the form of a freshmen interest group (FIG). FIGs typically have small enrollments (10 to 30 students). These interest groups can explore topics such as the transition to college, study groups, and shared academic interests. Another format that does not change existing courses is to add a course that is an integrative seminar which pulls together themes from the pre-existing courses.

A second form of curricular learning community explicitly links two or more courses together. The same set of students attends each of the courses that are linked. Although it is possible to have students in the linked classes who do not attend all the linked classes, Smith et. al. (2004) contend that the “broken cohorts” will tend to lead to a reduction in quality.

The final form of a curricular learning community is a team taught learning community. Tinto (2000) describes a similar format that he labels as “coordinated studies.” This format is a single course that is the equivalent of two or more classes where the themes common to the courses are at the forefront of the larger course. The course tends to be highly interdisciplinary and integrated. At some universities, the larger themed course is sometimes disaggregated after the term’s conclusion for the purposes of a transcript into the substituent smaller courses that were combined to form the integrated course.

#### *Potential Benefits from Curricular Learning Communities*

Despite learning communities’ being a part of the higher educational landscape since the 1980s, the research regarding their effectiveness is sparse. Zhao and Kuh (2004) note that at that time of their research, few studies were readily available. Taylor et. al. (2003) were able to obtain 32 research studies that were primarily doctoral dissertations. They note a number of relationships between learning communities and positive learning outcomes. Nonetheless, they conclude that we need to “identify which aspects of learning communities are effective in which ways with which students” (p. 66).

Of all the potential benefits from learning communities, enhancing student engagement has been of particular interest (Zhao and Kuh, 2004; Pike, Kuh & McCormick, 2011). Pike, Kuh and McCormick contend that since learning communities have a positive association with student engagement, and student engagement is positively associated with learning outcomes, then learning communities can be indirectly related to student learning (p. 314). Using a different data set, Rocconi (2011) echoes these studies by finding a positive relationship between learning community participation and student engagement along with a positive relationship between student engagement and self-reported educational gains.

While these studies have found an indirect positive relationship between learning community participation and educational gains or learning outcomes, Kilgo, Sheets & Pascarella (2015) find no relationship between participating in learning communities and seven liberal arts learning outcomes. They caution, however, that these results should not be interpreted as learning communities’ not having a benefit for students. Rather, they call for future research to “examine these practices more closely to explore how the effects of participation on students may vary according to facilitation and individual student characteristics” (p. 522).

## Research Question

This study assesses whether there is an association between participation in a curricular learning community and retention. Much of the literature regarding the effectiveness of learning communities has focused on residential learning communities (Inkelas, Daver, Vogt & Leonard, 2007; Carrino & Gerace, 2016) or learning communities broadly defined (Rocconi, 2011; DeAngelo, 2015; Zhao & Kuh, 2004; Pike, Kuh & McCormick, 2011). In reflecting on student retention, Tinto (2006) notes the importance of the classroom in student retention. In his view, if “involvement does not occur there, it is unlikely to occur elsewhere” (p. 4). Tinto (2012a) also urges institutions that wish to improve retention to focus on the classroom rather than “tinkering at the margins of institutional life” (p. 116). Despite the importance of the classroom for retention and other forms of student success, the literature regarding the effectiveness of curricular learning communities is scarce. This study focuses on curricular learning communities for required business courses at a campus that serves primarily commuter students. The primary research question is:

Is there a relationship between students’ participating in a curricular learning community for required freshmen courses and their persistence to the following semester?

## Methodology

### *Description of the Study’s Learning Communities*

The learning communities were formed at a regional public Masters granting university. The campus serves primarily commuter students. The learning communities link either two or three required freshmen courses for business and economics majors. The first semester learning community cohort links an introduction to business course to give the students a panoramic view of the different business functional areas, a career perspectives course to help them begin to process of choosing a career path, and microeconomics, a foundational discipline for business. The second semester freshmen cohort links a computer skills course with macroeconomics. The courses that often prove to be more challenging for the students have peer mentors imbedded in the courses. In addition, a block of time between courses is provided for tutoring as well as sessions dedicated to help with the transition to college. Free tutoring as well as success coaches were available to all freshmen during the time period of the study (fall 2016 through fall 2017), whether they took classes within or outside a learning community cohort.

Table 1 displays data regarding the sections in the learning community cohorts as well as those taught outside the learning community cohorts. A total of 22 sections of courses were taught in the learning community cohorts with 26 sections of the same courses taught outside of the learning community cohorts. A total of 12 different faculty taught students in the learning community cohorts with 16 different faculty teaching outside of the cohorts. Table 1 displays the number of fulltime and part-time faculty teaching in the learning community cohorts versus in the sections outside of the cohorts. Table 1 also displays the mean and median class sizes for the learning community cohort sections as well as those that were not in the learning community cohorts. The sections were similar in size with a greater variability in class size for the sections not in the cohorts.

**Table 1. Description of Faculty and Section Size for Courses In and Out of Cohorts**

Number of Fulltime versus Part-time Faculty Teaching Courses In and Out of Cohorts						
By Number of Sections:						
		Fulltime Faculty		Part-time Faculty		Total Sections
In Learning Community Cohorts		16		6		22
Out of Cohorts		12		14		26
By Unique Faculty:						
		Fulltime Faculty		Part-time Faculty		Total Faculty
In Learning Community Cohorts		9		3		12
Out of Cohorts		6		10		16
Section Sizes						
	Number of		Standard			
	Sections	Mean	Deviation	Quartile 1	Median	Quartile 3
In Cohorts	2239.6	3.9	40	41	42	
Out of Cohorts	2638.6	12.6	30	40	42	

*Description of Sample*

The analysis in this study is restricted to students who had freshman status as of the beginning of the semester. Freshman status is defined as having earned less than 30 hours of college credit. Most students taking courses in the freshmen business learning communities have freshmen status. A greater proportion of students who do not have freshman status take courses outside of the learning communities. The study restricts analysis to those students with freshmen status in order to have greater comparability in terms of the students' intellectual development between the students taking courses in learning community cohorts and those taking the same courses outside of the learning communities.

The study spans three semesters. A total of eight learning community cohorts occurred during this time. The study compares the retention of these students to that of freshmen taking the same courses during the same semesters outside of a learning community. A total of 606 student-semester observations were initially included in the sample. The study uses composite SAT scores (or converted ACT scores) as a control variable for academic ability. This variable was not available for 41 observations. Thus, the final sample includes 565 students.<sup>1</sup>

Table 2 displays student demographic characteristics along with measures of academic ability for the students taking courses within the learning community cohorts as well as those taking the courses outside of the learning community cohorts. The final sample has 293 student-semester observations for the learning community cohort group and 272 semester-student observations for students taking any of the same courses included in the learning community cohort during the same semester. Chi-square tests are performed to ascertain if students from differing backgrounds are disproportionately represented in the learning community cohorts. The only group that is

<sup>1</sup> If we had used high school GPA, a total of 42 students would have been eliminated from the sample.

disproportionately underrepresented in the learning communities are students from families with lower income levels. Table 2 also displays the average high school grade point averages (GPA) as well as composite SAT scores. Comparing the means fails to indicate a significant difference in either the average high school GPA or average SAT scores at conventional levels of significance. Data are obtained from a database at the university.

**Table 2. Characteristics of Student-Semester Observations in Cohorts**

Panel A: Demographic Characteristics			
Student Characteristic	In Cohort n (%)	Not in Cohort n (%)	p-value*
Gender			.486
Female	90 (49.7%)	91 (50.3%)	
Male	203 (52.9%)	181 (47.1%)	
Race/Ethnicity			.076
White	196 (51.6%)	184 (48.4%)	
Black	25 (43.1%)	33 (56.9%)	
Hispanic	33 (48.5%)	35 (51.5%)	
Unavailable	39 (66.1%)	20 (33.9%)	
First Generation			.567
Yes	118 (50.4%)	116 (49.6%)	
No	175 (52.9%)	156 (47.1%)	
Lower Parental Income			.006
Yes	28 (34.1%)	54 (65.9%)	
No	239 (49.5%)	244 (50.5%)	
Total	293 (51.9%)	272 (48.1%)	
Panel B: Academic Ability Variables			
Student Characteristic	Mean (n)	Mean (n)	
High School GPA	3.06 (282)	3.00 (282)	.127
Composite SAT**	1050 (293)	1031 (272)	.078

\*p-values for demographic variables are based on Pearson Chi-Square tests.

p-values for academic ability variables are based on t-tests.

\*\*Composite SAT includes conversions of ACT scores to an SAT score as well as conversions for students' taking differing versions of the SAT.



*Data Analysis Model*

A learning community cohort may attract students with greater academic ability (Zhao & Kuh, 2004). Similar to Zhao and Kuh, we use a student's entering composite SAT (or converted ACT) score as a measure of academic ability. We use several student demographic characteristics as additional control variables. We use indicator variables for gender, ethnicity and first generation status (Zhao & Kuh, 2004; Inkelas, Daver, Vogt & Leonard, 2007; Pike, Kuh and McCormick, 2011; Hill & Woodward, 2013). We also use a proxy for parental income, 21<sup>st</sup> Century Awardee. These students are granted a full tuition scholarship based on family income levels falling below levels dictated by size of family. To continue to receive the scholarship, the students must make satisfactory academic progress while in college. The dependent variable is dichotomous indicating that the student returned to the university in the subsequent semester or did not. The model used to assess our primary research question is:

$$RETAIN_{it} = \beta_0 + \beta_1 * COHORT_{it} + \beta_2 * SAT_{it} + \beta_3 * GENDER_{it} + \beta_{4-6} \sum ETHNICITY_{it} + \beta_7 * FIRSTGEN_{it} + \beta_8 * PARINC_{it} + \epsilon_{it}$$

A second model adds an indicator variable for the semester in which the courses were taught in order to control for factors that may influence a student's decision to attend the university in the following semester.

$$RETAIN_{it} = \beta_0 + \beta_1 * COHORT_{it} + \beta_2 * SAT_{it} + \beta_3 * GENDER_{it} + \beta_{4-6} \sum ETHNICITY_{it} + \beta_7 * FIRSTGEN_{it} + \beta_8 * PARINC_{it} + \sum \beta_i * SEMESTER_{it} + \epsilon_{it}$$

Since the dependent variable, *RETAIN*, is dichotomous, we use logistic regression to estimate the parameters and standard errors.

**Results**

Table 3 displays the percentage of students who were retained in the learning community cohorts versus that for the students who took the same classes outside of a learning community. The learning community students' retention rate is 86.3% compared to that of the students taking the same classes outside of a learning community cohort of 75%. A Chi-square test of independence indicates that these proportions are statistically significantly different from each other at conventional levels.

**Table 3. Retention by Learning Community Participation**

Number of Students Who Were Retained by Learning Community Participation

	Retained n (%)	Not Retained n (%)	Total
In Learning Community Cohort	253 (86.3%)	40 (13.7%)	293
Not in Learning Community Cohort	204 (75.0%)	68 (25.0%)	272
Total	457 (80.9%)	108 (19.1%)	565

Pearson Chi-Square statistic: 11.73 (p<.001)

*Results from Binary Logistic Regression Model*

Table 4 displays the results from the binary logistic regression model. The model's Chi-square statistic is significant at conventional levels providing evidence that the model fits the data well. The Hosmer and Lemeshow test is not significant. For this test a lack of significance is an indicator of a model

with a good fit (Homer, Lemeshow and Sturdivant, 2013). The model predicts whether a student is retained or not 80.9% of the time.

**Table 4. Likelihood of Retention from Participation in a Learning Community Cohort**

Panel A: Model without Semester Dummy Variable						
Dependent Variable: Retain (0=Not Retained)						
Variable	$\beta$	SE( $\beta$ )	Wald	Odds Ratio	95% CI	p-value
Learning Community Cohort (0=No)	.702	.225	9.693	2.017	1.297-3.137	.002
SAT Score	.002	.001	4.914	1.002	1.000-1.004	.027
Gender (0=Male)	.366	.248	2.189	1.443	.888-2.344	.139
Ethnicity (0=White)			.562			.905
Black	-.060	.360	.028	.942	.465-1.908	.868
Hispanic	.134	.355	.143	1.144	.570-2.293	.706
Unknown	-.202	.364	.308	.817	.401-1.667	.579
First Generation (0=No)	.289	.230	1.569	1.335	.850-2.096	.210
Lower Parental Income (0=No)	-.347	.349	.987	.707	.356-1.402	.320
Intercept	-1.005	1.049	.918	.338		.366
Model Statistics						
Chi-square: 21.561 (p=.006)			-2 Log Likelihood: 529.751			
Cox & Snell Psuedo-R <sup>2</sup> : .037			Nagelkerke Pseudo--R <sup>2</sup> : .060			
Hosmer and Lemeshow Test: Chi-square: 6.768 (p=.562)						

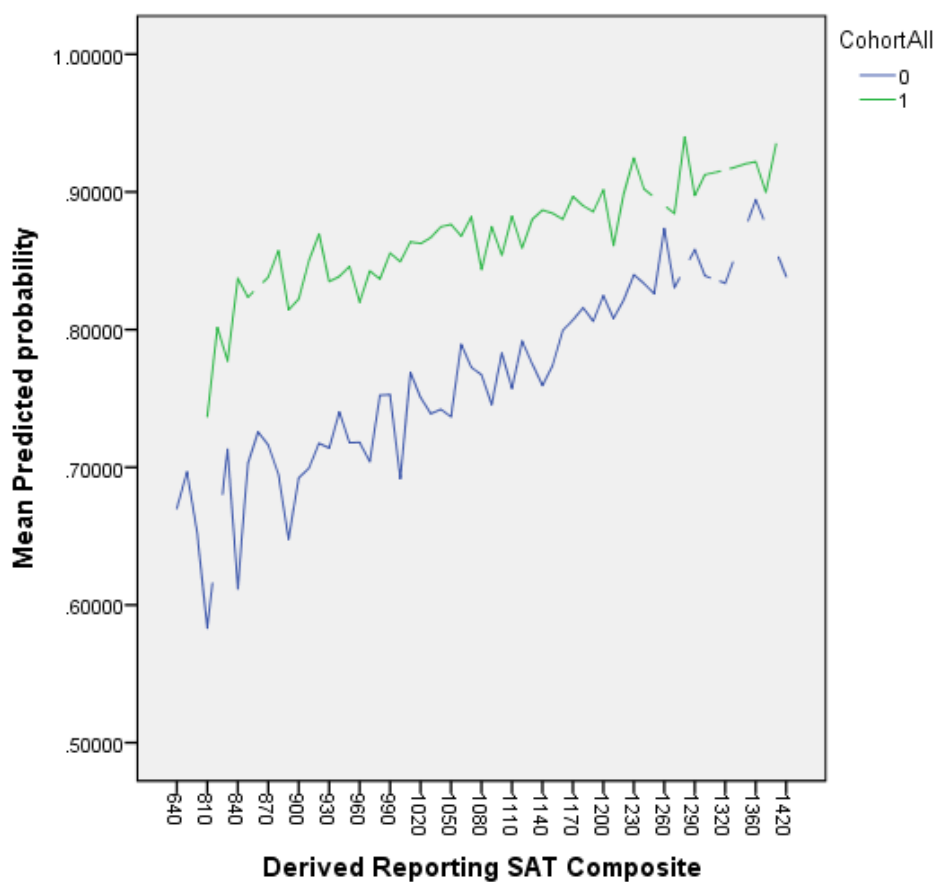
Panel B: Model with Semester Dummy Variable						
Dependent Variable: Retain (0=Not Retained)						
Variable	$\beta$	SE( $\beta$ )	Wald	Odds Ratio	95% CI	p-value
Learning Community Cohort (0=No)	.630	.228	7.616	1.877	1.200-2.936	.006
SAT Score	.002	.001	5.682	1.002	1.000-1.004	.017
Gender (0=Male)	.368	.250	2.170	1.445	.885-2.359	.141
Ethnicity (0=White)			.627			.890
Black	-.079	.362	.047	.924	.454-1.880	.828
Hispanic	.152	.357	.182	1.164	.579-2.342	.670
Unknown	-.201	.367	.302	.818	.398-1.678	.583
First Generation (0=No)	.312	.233	1.794	1.366	.865-2.157	.180
Parental income (0=No)	-.400	.352	1.295	.670	.336-1.335	.255
Semester (0=Fall 2016)			5.650			.059
Spring 2017	.095	.267	.126	1.099	.651-1.856	.723
Fall 2017	-.525	.272	3.723	.592	.347-1.008	.054
Intercept	-1.013	1.069	.899	.363		.343
Model Statistics						
Chi-square: 27.047 (p=.003)			-2 Log Likelihood: 524.265			
Cox & Snell Psuedo-R <sup>2</sup> : .047			Nagelkerke Pseudo--R <sup>2</sup> : .075			
Hosmer and Lemeshow Test: Chi-square: 10.706 (p=.219)						

The results from the model with no semester dummy variable are displayed in Panel A of Table 4. In terms of the control variables, only the coefficient for a student's SAT score is statistically

significant at conventional levels. The results for the gender, first generation, and lower parental income variables are congruent with that found in DeAngelo (2014) when she examined students' intent to persist to the sophomore year.

The coefficient for participation in a learning community cohort is significant at conventional levels ( $p=.002$ ). After controlling for academic ability, gender, ethnicity, first generation status, and a measure of parental income, there is evidence of a positive relationship between taking courses in a curricular learning community and returning to the university in the subsequent semester. The odds ratio for the learning community indicator variable is 2.017. This indicates the baseline student<sup>2</sup> is 2.017 times more likely to persist to the next semester if he/she participates in a curricular learning community than if he/she took courses outside the learning community.

Figure 1 displays a graph of the model's mean predicted probability of a student's persisting to the following semester versus composite SAT score. For students across the entire range of SAT scores, the predicted probability is higher if students participated in a curricular learning community cohort than if they took the same courses outside the learning community cohort.



**Figure 1.** Mean predicted probability of retention versus a student's SAT score by learning community cohort status.

Additional analyses (not reported) were performed to assess the sensitivity of the model to differing specifications. Interaction terms between each of the control variables and the learning

<sup>2</sup> The baseline student with zeros for the indicator variables is male, white, not first generation, not first generation and does not have low family income.

community cohort indicator were added. None of the interactions proved to be statistically significant. High school GPA was substituted as a measure of academic ability. The results for the models were not qualitatively different from the results reported using SAT scores as an indicator of academic ability.

Panel B of Table 4 displays the results from adding dummy variables as a semester time indicator to control for other factors that may be related to the particular semester in which the courses occurred. For example, the decision to return to college from fall to spring may be different than that from spring to fall. None of the semester indicator variables are significant at conventional levels, and the addition of these indicator variables does not materially change the statistical significance of the variables in the model without a semester indicator.

### *Limitations*

This study was conducted at a regional public university primarily serving commuter students. The results may not extend to other campuses with different learning environments serving students who differ from the students included in this study's sample. For example, the opportunity for commuter students to participate in a curricular learning community may have a stronger association with retention than one would observe at a campus with primarily residential students who have greater opportunities to engage with faculty and their peers. Although the campus is typical of many regional campuses, a sample drawn from another university may produce different results.

Participation in the learning community cohorts was voluntary. Although control variables were used to attempt to control for this issue, there may be variables correlated with the choice to participate in a learning community and a student's persisting to the following semester that were not measured. Although this is a significant limitation, analyses of the association "among significant constructs have an important role to play in educational research" (Pike, Kuh & McCormick, 2011).

### **Discussion**

Research regarding learning communities is not as well developed as research on several other high impact practices (i.e. first year seminars). The results of this study have important implications for those who wish to improve retention via the structure of how they organize courses in their curriculum. The results find evidence that students who take courses in a curricular learning community are twice as likely to persist as the reference group of students who took the same classes without having them linked in a learning community cohort. This finding holds across all levels of academic ability as measure by SAT score.

In reflecting about learning communities and student engagement, Pike, Kuh and McCormick (2011, p. 317) indicate that "in order to maximize the potentially positive effects of learning communities, intentional, contextualized design and implementation efforts are needed." This study provides evidence of a learning community structured in a manner to enhance retention of primarily commuter freshmen students. The learning community's structure incorporates the elements of Tinto's (2012a) model for student success.

Tinto's model has four attributes that fall under an institution's control: high expectations, support to meet expectations, assessment and feedback to faculty and staff, and involvement (engagement). This study's learning community cohorts can facilitate accomplishing the attributes of Tinto's model more easily than one could with independent courses. In terms of high expectations, challenging courses are purposely selected to be part of the learning community cohorts. In addition, junior and senior students who had achieved notable accomplishments as undergraduates visit the

cohorts during the first week of the semester to discuss the opportunities available to these students in order to begin to set high expectations.

In terms of support, the students in the learning community cohorts had peer mentors for each of the most challenging classes with special sessions during the block of time set aside in the middle of the cohort for exam review, extra problem sessions, tips on study skills and sessions focused on the transition to college. While all the required freshmen business courses have free tutoring available, the independent classes did not have the common open time to bring this extra support to the students. Instead, the students needed to go to the support.

With regard to assessment and feedback, there is an early warning system to alert advisors of students having difficulty in any course. The learning community cohort had an imbedded advisor who reached out to students having academic and nonacademic challenges. While advisors were available to students who enrolled in courses outside of the learning community, these advisors were not imbedded in the courses thereby making communication more challenging.

Finally, in terms of engagement, the learning community students attended multiple classes together scheduled consecutively. All the learning community cohorts had blocks of time intentionally scheduled to facilitate not only support but also additional opportunities for the students to engage with each other, their faculty and campus support staff. Thus, the structure created the time and opportunities for engagement even for commuter students who may arrive just before classes and leave shortly thereafter. The opportunities for engagement for the independent classes were available, but their availability either just before or after class would have been incidental rather than purposeful.

It is unknown which of the elements of the learning community structure are most important for student success. This is fertile ground for future research. It very well may be difficult to disentangle the efficacy of the relevant components. As Tinto (2012b, p. 260) indicates, student success is most likely when all four of his model's attributes "are linked in such a way that each is supportive of the others." The learning community cohorts that are the subject of this study provide a structure that facilitates student success with evidence of an association of enhanced retention for the students that participate in them.

## Concluding Remarks

Tinto (2000, p. 6) observes that "learning communities do not represent a 'magic bullet' to student learning." Despite their prevalence in higher education, little research is available to assist faculty and administrators with structuring learning communities to maximize potential positive student outcomes and minimize poor ones. This study provides a description of a curricular learning community structure and evidence of its effectiveness. But, much more work remains to answer Taylor et. al.'s (2003, p. 66) call to "identify which aspects of learning communities are effective in which ways with which students."

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## **Re-Imagining the First Year as Catalyst for First-Year Writing Program Curricular Change**

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*Abstract: This article describes a revision of a first-year writing program curriculum using the pillars of the Reimagining the First-Year Program. The authors adapted principles related to mindset and habits of mind from both college retention scholarship and composition scholarship. After developing a research project in order to understand what elements of mindset correlate with readiness for credit-bearing writing courses, the authors created a multiple measures placement system for enrolling students in a credit-bearing first-year writing course with co-requisite support.*

*Keywords: Re-imagining the first year (RFY), first-year writing, multiple measures placement, co-requisite course, retention, habits of mind, remedial education, mainstreaming, basic writing*

National conversations about higher education regularly return to questions about student persistence, particularly in response to reports like the one circulated by the National Student Clearinghouse Research Center. Their 2014 data shows that only 68.7% of first-time students in 2012 returned to any institution of higher education in 2013. The response to some of these trends has been to explore why students leave, what characteristics mark the students who stay, and how to develop programs which enact that knowledge. This response turns more toward behavioral and attitudinal qualities than academic qualifications or benchmarks, with the mindset psychological work by Stanford professor Carol Dweck (2006) and the “sense of belonging” research by Terrell Strayhorn (2012) taking a central position in these conversations.

At the disciplinary level, the question of what characteristics mark successful students has been explored by those who teach secondary and postsecondary English, resulting in the 2011 report *A Framework for Success in Postsecondary Writing*, co-produced by the National Council of Teachers of English, the Council of Writing Program Administrators, and the National Writing Project (2011). This document, like the retention research, focuses not on discrete skills or academic credentials as markers of potential for success but on “Habits of Mind,” echoing the trend in college retention and persistence circles to focus on mindset and the sense of belonging as keys to promoting student success.

This article takes up the two threads above (college retention and success in college writing) in the specific context of a first-year writing program (FYW). We have turned the question of retention to an examination of the transition to college writing for those students who have traditionally been placed in non-credit-bearing writing courses (also known as “basic,” “remedial” or “developmental”



writing; for this article, we'll use basic writing or BW<sup>1</sup>). It is our attempt to make assessment--specifically assessment for placement into first-year writing courses--local, humane, organic, and context-sensitive as called for by assessment scholars like Brian Huot (2002) and Bob Broad (2003). Seeking to better serve first-year students who come to us in need of additional academic support, we tapped into a university-level retention program that offered an avenue toward more ethical placement practices.

## Background

The University of Wisconsin-La Crosse (UWL) is a four-year comprehensive institution which serves around 10,500 students (9,000+ undergrad); UWL occupies a somewhat privileged position in the UW System, as it maintains high admissions standards (second only to the anchor campus at Madison) and is consistently ranked highly by *US News and World Report's* America's Best Colleges list; in 2018, it was ranked as the number one comprehensive campus in the UW System and in the top four among regional universities in the Midwest. Our students tend to be high achievers; the average ACT of the incoming student is 24.7, and 25% of these students were in the top 10% of their graduating high school class. A small number of new students each year are placed into remedial courses in English and Mathematics based primarily on scores on standardized placement tests. These tests, developed in the 1970s, are written by committees of faculty from every UW school and are overseen by the UW Center for Placement Testing which does regular validity and reliability testing. Some UW institutions use the English Placement Test (EPT) score in conjunction with other placement measures to place students in first-year writing courses. At UWL, the score has been used to place students into one of two courses: the sole credit-bearing gateway first-year writing requirement, ENG 110, or the remedial non-credit-bearing ENG 050, which students must complete before taking ENG 110. Only 1.4% of incoming students score below 355, the cut-off for the credit-bearing gateway course (the average EPT score of an incoming student is 495), and the average ACT of "remedial" UWL students is 21. The average number of students scoring below the 355 cut-off for the whole UW System is 6%, so UWL serves far fewer underprepared students than other UW schools, and even those students who might be categorized as remedial here have academic performance markers that would qualify them for credit-bearing English courses at many institutions. Because of these statistics and the growing move in composition pedagogy to eliminate non-credit-bearing remedial courses, we have been working on a proposal to mainstream all students into ENG 110 and create a co-requisite support course for students who might have previously been placed in ENG 050. This proposal coincided with our university's participation in a program focused on improving student success in the first year of college.

UWL is a member institution in the American Association of State Colleges and Universities (AASCU) and has participated in AASCU's program "Re-imagining the First Year" (RFY), which is a grant-supported national project targeting "low income, first generation, and students of color," for whom the first year of college can make a significant difference in their retention and success (2016). Their website explains, "AASCU has created a coalition of 44 member institutions that are working together for three calendar years (2016-2018) to develop comprehensive, institutional transformation that redesigns the first year of college and creates sustainable change for student success." The RFY member institutions work on four "pillars" to increase retention: institutional intentionality,

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<sup>1</sup> While many academic disciplines refer to the student population needing additional coursework before college-level work as "remedial" or "developmental," the field of composition studies prefers to refer to these students as "basic writers" and the courses they take as "basic writing."

curriculum, faculty and staff, and student success. At UWL, this program is being used in part to redesign a one-credit first-year experience (FYE) course, UWL 100. While there are many models for FYE courses, UWL 100 had been an “introduction to college” type course designed to engage students in conversations about making the transition from high school to college and understanding the basic structures and modes of college courses. Through RFY, this course has been restructured to include a focus on engagement, belonging, and growth mindset and has changed from an optional course for all students to a required course for students who come from groups with a history of academic underpreparedness. These required FYE courses are now linked to particular student populations and/or general education courses. This course has been UWL’s RFY focus because although UWL has an 83% retention rate for first-year students, first-generation college students, students from underrepresented racial/ethnic groups, and students from low-income families don’t achieve at that high of a rate (generally 4-5% below the average).

These same groups of students, along with returning and transfer students, veterans, and international students, are more likely to be overrepresented in basic writing courses, and research suggests that retention rates for these students are negatively affected by remedial courses. The university’s participation in RFY coincided with our plans for changing our BW program and offered us the opportunity to pilot the mainstreaming of a small number of students into the credit-bearing FYW course, using the revised UWL 100 as our co-requisite support course. Both the common cohort of students -- first-generation students, low-income students, and students of color -- and the common goal of retention beyond the first year made the partnership between these programs ideal. This article will describe that partnership and how the pilot co-requisite courses led to revision of the BW program and the creation of a new placement protocol and co-requisite support course in English.

## Literature Review

Scholarship relating to this research project comes from several fields: student success and retention, particularly related to remedial education; first-year writing program revisions and best practice; and multiple-measures placement. The intersections of these research areas provide critical lenses for supporting the revision of the basic writing program at UWL.

Research from Complete College America (CCA) indicates that over one million college students annually are placed in remedial courses and that few of these students (only 36%, for 4-year institutions) go on to complete the gateway course that the remediation is meant to prepare them for. The research also notes that low-income students and students of color are disproportionately represented in remedial courses, leading to much lower retention rates for these students. CCA proposes that the solution to this remediation and retention problem is providing co-requisite remediation alongside credit-bearing college courses. Several states have implemented this solution and have demonstrated a marked improvement in successful completion of gateway courses with co-requisite remediation programs. This research provides significant motivation to consider how to move more students out of non-credit-bearing remedial courses and position them for success in first-year courses.

In gateway courses such as mathematics, the movement into credit-bearing courses and co-requisite support can happen with fairly simple adjustments in standardized test scores. However, for FYW the issue of placement is a bit more complicated. Beth Brunk-Chavez and Elaine Frederickson (2008) remind us that “Placement scores, regardless of how they are generated, are generally meant to indicate that a student will be capable of succeeding in the appropriate course (p. 80). So, how do we best use placement scores to put students in the appropriate kind/level of writing class? Can we use “a one size fits all” approach to placement (like with standardized testing) that is both accurate and ethical? The answer seems to be, no; Holly Hassel and Joanne Baird Giordano (2011) discuss the

importance of moving from a standardized exam to a multiple measures placement (MMP) system for their FYW students, arguing that, “As a stand-alone placement measure, a standardized test can evaluate only a small part of what students need to be able to do as college readers and writers” (30). Additionally, standardized tests are often “decontextualized from the writing experiences students will have in their coursework” and are “typically designed to measure performance, not potential” (Brunk-Chavez and Frederickson 2008).

Brunk-Chavez and Frederickson (2008) suggest that placement should occur in a more local context, noting that assessors can judge the potential in a student’s placement performance best through a multiple measures system. They echo Rich Haswell (2004) who says, “Educators who wish to measure writing promise, through whatever the system of placement, should implement multiple measures and validate with multiple measures.” Hassel and Giordano (2011) also emphasize the importance of a locally-situated placement process that aligns with a FYW programs’ outcomes, describing a “flexible and local” process that gives more agency and validation to students and the knowledge they bring to the institution. Hassel and Giordano, and their colleagues at the UW Colleges, integrated an essay and self-assessment component into their placement measures, enabling them to create a tool that more accurately captures their local first-year student population.

Any placement system that accounts for location, context, and the particular nature of FYW programs is better positioned to work for student success (i.e. retention) because research shows that FYW is uniquely positioned to improve retention. Garrett, Bridgewater, and Feinstein (2017) look specifically at the role FYW plays in predicting a students’ success at college, finding that performance in “writing courses strongly predicts both graduation and success in the major” (p. 107). Because of its smaller class size, content, and emphasis on metacognition, among other things, FYW becomes one of several potential points of intervention for first-year students.

However, Pegeen Reichert Powell (2009) presents a somewhat contradictory assertion about the role of FYW in retention, contending that FYW courses may play only a small part. She seems more interested in encouraging composition professionals to examine what happens to students before they get to FYW -- what practices and cultures make it possible for them to even get into that class -- because if we want FYW to play a role in retention, we’ve got to look at placement. She also urges us to consider what the course might look like “if it is formulated in the context of retention scholarship, keeping in mind those students in our first-year courses who may not persist” (p. 678).

One response to Powell’s call for deliberate use of retention scholarship to guide FYW pedagogical practices is the National Council of Teachers of English’s (NCTE) Research Policy Brief, “FYW, What Good Does It Do?” (2013) which describes specific ways FYW fosters engagement and retention, enhances rhetorical knowledge, develops metacognition, and increases responsibility. According to the brief, “Research suggests that FYW is uniquely placed in the undergraduate curriculum to develop student metacognitive awareness, the development of which has the potential to have resounding consequences on student postsecondary education and writing (p. 2).” Two other key factors in college retention that are also provided by FYW courses are personal attention and low student/teacher ratios. These characteristics explain why FYW courses are “formative moments for students’ life-long learning and writing experiences” that encourage student retention and persistence.

Research from this policy brief combined with the research of Carol Dweck on mindset and research on habits of mind from NCTE et al. provide solid evidence that the influence of FYW on student retention, success, and persistence cannot be overstated. This connection positions our project as an ideal partner for an RFY initiative that seeks to understand the importance of the first year of college.

## Research Questions and Methodology

Based on the literature above, using a one-size-fits-all placement method and placing students into non-credit bearing remedial courses does not help colleges and universities meet the writing and learning needs of their students. This understanding made eliminating ENG 050 on our campus a logical move. However, we did not have much student voice involved in a program revision that directly affected them; we did not know much about the specific kinds of knowledge or awareness these students were bringing to our campus. If we wished to move to a locally-constructed and flexible MMP system, we needed more context about our students. The EPT, while largely an accurate placement tool for most students on campus, did not provide some crucial information about our students: their experiences with and perceptions about writing.

We initially hypothesized in the 2015-16 AY, based on EPT scores only, that although ENG 050 may no longer be necessary, there would still be a population of students who could benefit from supplemental writing instruction alongside our FYW course. We informally named this pocket of students “cuspy.” We had a sense of what cuspy looked like based on informal interactions with and observations of first-year students. In some cases students were cuspy because of a lack of confidence; in others, a lack of awareness of audience and sometimes a string of bad writing experiences affected their abilities to be flexible or persistent. Because we wished to explore these hypotheses on a more formal basis, our curriculum revision organically evolved into a research project. Over the course of one academic year, we gathered data about first-year writing students, including: ACT scores, EPT scores, in-class writing samples, surveys, and coursework to help us define cuspy on our campus. The larger research questions that drove our data collection were:

- Do we need a basic writing class on a campus with such high admission standards?
- If we don’t have a basic writing program, how can we still assist students who need additional support?
- Are there particular characteristics in student writing that suggest unpreparedness for college writing? Are there particular habits of mind that suggest unpreparedness for college writing?
- What placement tools could offer a glimpse into this unpreparedness? How should we design those tools?
- How do students’ perceptions of themselves as writers feed into our definition of cuspy?

After receiving IRB approval from our University, we gathered data during the 2015-16 AY from a total of 140 students, 30 of which were in ENG 050 and the remainder from ENG 110. For each student, we collected the following:

- EPT scores;
- ACT composite and English sub-scores;
- Responses to a forty-question survey distributed during the first week of classes;
- Two in-class writing responses<sup>2</sup>, one that called for students to reflect on the *Framework for Student Success in Postsecondary Education: Habits of Mind*, and another that called on them to write a revision plan for that in-class writing, both completed during the first week of classes;
- ENG 050 or ENG 110 coursework, which included final, polished essays submitted via a portfolio at the end of the semester.

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<sup>2</sup>These response prompts were adapted from Holly Hassel and Joanne Giordano’s MMP materials used by the UW Colleges.

Because 355 is the cutoff EPT score, we focused on the 320-420 EPT score range, particularly the range of 350-370, which we considered a cuspy range. Students who scored 350 or below would have been placed into ENG 050; and those who scored 380 and above were academically prepared. We collaboratively read each student's coursework alongside their two in-class "Habits of Mind" responses to explore:

- The reliability of the EPT score to confirm our assumption that it is an accurate placement tool and predictor of academic ability;
- General patterns in students' "Habits of Mind" responses or coursework that revealed inconsistencies in our hypotheses;
- Possible correlations between various data points: EPT scores and "Habits of Mind" responses; EPT scores and quality of coursework; or quality of coursework and quality of "Habits of Mind" response.

We came to the following realizations that encouraged us to re-evaluate our research questions and placement practices:

1. Students who scored higher on the EPT did have stronger coursework and "Habits of Mind" responses in general. Students even at the low end of our targeted EPT score range (350-370) were prepared for FYW; as a result, there was no reason to look at students with a score higher than 350. Therefore, we made the cuspy "window" lower and smaller: 330-350;
2. Unpreparedness can be defined in many different ways. When reading student writing from those who scored 350 or below, we identified a wide variety of characteristics that signaled to us that these students might not be ready for FYW;
3. Coursework that has been revised is not a reliable piece of data to look at for placement. The "Habits of Mind" responses and survey results offer a more accurate and authentic picture of a beginning college writer;
4. Crafting a multiple measures placement tool will be more difficult than expected; how should we design it, if we can't discern consistent markers of unpreparedness in the first place?

While we were analyzing the data in June 2016, a colleague of ours who was invested in the RFY project on our campus offered us the opportunity to teach a Fall 2016 section of UWL 100, our one-credit First-Year Seminar, which would be linked to a section of ENG 110; students would enroll in both courses simultaneously. The purpose of these linked courses was to foster a sense of belonging and community in first-year students who are more prone to feeling isolated in a new environment. We enthusiastically agreed and linked one UWL 100 section to a small cohort of ENG 110 sections--each section had a few students who had scored either a 340 or 350 on the EPT and should have been enrolled in ENG 050 but would now instead be mainstreamed into ENG 110. We called these our "Golden Ticket" students (a la Willy Wonka) because during freshman registration these students literally received yellow pieces of paper in their registration materials indicating that they had been chosen to participate in this pilot project. While we didn't yet have specific data-driven research results to support this move, our expertise and experience teaching both the remedial and FYW courses and our initial collaborative reading were enough for us to cautiously proceed with this experiment.

During this co-requisite pilot semester, we returned to our survey results from the 2015-16 AY because an initial research question remained unanswered: "Are there particular writing characteristics or habits of mind that might suggest unpreparedness for college writing?" To examine this question, we analyzed the survey responses, which included more specific, direct questions and opportunities for students to assess themselves as writers.

The survey divided forty questions, adapted from the National Survey on Student Engagement (NSSE) and the Daly-Miller Apprehension Test, into four categories: Apprehension, Genre Exposure, Writing Perceptions and Habits, and Writing Practices and Prior Instruction. Students responded on a five-point Likert scale. Examples of categories and response statements appear in Table 1.

**Table 1: Example of Survey Categories and Statements**

	<b>Apprehension</b>	<b>Genre Exposure</b>	<b>Writing Perceptions and Habits</b>	<b>Writing Practices and Prior Instruction</b>
<b>Statement Example</b>	I avoid writing.	In High School, I summarized a piece that I read.	As I write, my ideas about my subject change.	In High School, I talked with an instructor about my writing before submitting it for a grade.
<b>Likert Scale</b>	Strong Disagree (1) to Strongly Agree (5)	All Assignments (1) to No Assignments (5)	Never (1) to Always (5)	All Assignments (1) to No Assignments (5)

To analyze the survey results, we first identified overall trends in responses. Then, we divided survey responses into four quartiles based on EPT score in order to determine if there were correlations between these quartiles and the average response in each category. We were particularly interested in setting up this correlation because of the 340-350 score range used for placement into UWL 100. We looked for patterns across quartiles, such as:

- Does a particular EPT score quartile correlate with any overall category of response?
- More specifically, do students with a lower EPT score have higher levels of writing apprehension?
- Do students with a higher EPT score have more previous experience writing in a variety of genres? And in various stages of the writing process?
- Do EPT scores correlate with student perceptions of writing ability?

For nearly every question in all categories, the average response for all cohorts across all test score quartiles was 3, right in the middle of the Likert scale, which reflected the objective choices “neutral” or “occasionally,” depending on the statement’s context. More specifically, the average for Apprehension was 2.9; for Genre Exposure, 3.1; for Writing Perceptions and Habits, 3.4; for Writing Practices and Prior Instruction, 2.8. While these questions asked students to consider very different contexts about their writing, the results instead reflected synonymous experiences, contradictory experiences, or a sense of indifference. For example, we were puzzled by students who responded “agree” to “I avoid writing” while simultaneously marking “disagree” for “When I revise, I mostly look at grammatical and mechanical errors.” This suggests the student avoids writing, but at the same time, understands and perhaps values thorough revision. Results were particularly contradictory in the Genre Exposure section, as some students marked “some assignments” for nearly *every* genre listed,

which seems, based on our experience, an inaccurate representation of a typical high school curriculum from our cohort.

Because of these confusing results, we compared responses across more specific cohorts. In comparing rankings from students enrolled in ENG 050 to those enrolled in ENG 110, no statistically significant differences were found. Responses were so similar for both cohorts, in fact, that the standard deviation was a surprisingly low .3 for the entire survey. In comparing responses from the top quartile to the lowest, no statistically significant differences were found in any of the four categories. The data's p-value was calculated for reliability testing, which affirmed these results were accurate. These results reinforced the hypothesis that basic writers were not a discernible population on our campus.

But when we interpreted this same data through a different lens--that of RFY--it told a very different story.

As mentioned previously, one of the four core pillars of RFY is student success, which challenges participating institutions to "consider the student experience on campus, particularly focusing on engagement, belonging, and growth mindset" (Arney, Canada, Dale 2018). After being introduced to RFY principles on campus, which also happened to be after the survey was administered and analyzed, we realized many of the questions mapped above in table 1.2 assess a student's mindset towards writing, like "I avoid writing" or "I write effectively without much drafting and revising." Others reflect a student's engagement with their academic work, like "I analyze and evaluate my own writing" or "I use feedback from others to improve my own writing." Instead of looking for differences within cohorts to define cuspy, we shifted to a more holistic reading to gauge the level of academic preparedness of first-year writers on our campus. One of the many results of this holistic reading was the development of an MMP rubric that evaluates the following: student's ability to work through and follow a prompt, the student's ability to synthesize sources and ideas at a beginning level, and the student's ability to reflect on their writing choices.

Through this lens, these students seemed unable to assess their own academic preparedness, which supports the idea that they have underdeveloped metacognition, an essential skill for success in postsecondary education, and one listed as a key facet in the *Framework* discussed earlier.

With new interpretations and the supportive context of RFY, we realized that best practices in academic preparedness and FYE were underutilized and less explicit than they should be in FYW. Re-envisioning this survey allowed us to reevaluate our linked courses and our FYW program; both are important points of intervention for at-risk and underprepared students on our campus.

In fall 2017 we ran another pilot "Golden Ticket" section of UWL 100 again and utilized these realizations to revise the course, focusing on the explicit inclusion of FYE principles. We co-taught the course and hired two in-class student mentors so students had more small group and one-on-one interaction in the classroom; we set the curriculum to focus on writing practices that engage habits of mind, such as collaborative, low-stakes, and reflective writing, revision, and portfolios; and we included readings and framed in-class discussions around mindset, among other things. We hoped these changes would help students become more aware of themselves as writers, as college students, and as people participating in a larger university community to which they belong. This awareness, though foundational, is essential to developing a confident identity as a writer.

## Implementation and Implications

Using the above research and collaboration with the RFY initiative and findings from our two pilot sections of UWL 100, we revised the basic writing component of our FYW program with the following changes:

- Mainstreaming all incoming UWL students into ENG 110;
- Using multiple measures placement (MMP);
- Creating a co-requisite support course (ENG 100).

### *Mainstreaming*

The decision to mainstream all incoming UWL students into ENG 110 was based on discussions about the ethical implications of maintaining a basic FYW course, our analysis of the survey data, and our experiences in teaching the two pilot co-requisite sections of UWL 100. In short, we determined that with the additional support of a co-requisite course (more about that below), all UWL students should be able to succeed in ENG 110. The decision to mainstream all UWL students responds to calls from both the fields of RFY and FYW to remove, when possible, institutional barriers to students success, and to eliminate the bottlenecking of core course requirements that prevent students from making progress towards degree (Arney, Canada, Dale 2018). In mainstreaming all students into a credit-bearing FYW class, we have eliminated the issue of forcing students to spend time and money on a course that not only delays time to graduation, but also requires students to pay for a class that bears no credits.

### *Multiple Measures Placement*

Our decision to mainstream all students into ENG 110 and to then conduct MMP for students within certain score ranges means that all students who would have previously placed into ENG 050 can confidently assume that they'll be earning ENG 110 credit during their first semester at UWL. In addition to the assurance that they'll be in a credit-bearing FYW course, these students will also have the same flexibility in scheduling ENG 110 that other students have always had. Moreover, because these students will not be segregated into ENG 050 classes, all instructors will have the opportunity to work with this population of students and the students will have access to a wide variety of sections of ENG 110 with diverse pedagogical practices and approaches to teaching FYW.

Our current system for placement uses student ACT or EPT scores for placement. All students admitted to UWL must have both sets of scores and our practice has been to use the higher of the two scores for placement. Our current cutoff scores for placement into ENG 110 is an ACT English sub-score  $\geq 19$  or an EPT score of 355 (on a scale of 800 possible points). As noted earlier, students scoring less than a 19 on the ACT and 355 on the EPT are automatically required to take ENG 050.

The revised placement system will require students who are in the cusp area of both placement tests to undergo MMP. We're defining the cusp as an ACT English sub-score of 18-20 and an EPT score of 330-350. The chart below will be used by the Offices of the Registrar and Admissions to clarify and identify which students need additional placement measures.

**Table 2: Placement Matrix**

	<b>EPT Score <math>\leq 329</math></b>	<b>EPT Score 330 - 354</b>	<b>EPT Score <math>\geq 355</math></b>
<b>ACT English 0 – 17</b>	<b>ENG 100 and ENG 110 concurrent enrollment</b>	<b>MMP</b>	<b>ENG 110</b>



<b>ACT English 18 - 20</b>	<b>MMP</b>	<b>MMP</b>	<b>ENG 110</b>
<b>ACT English 21 – 36</b>	<b>ENG 110</b>	<b>ENG 110</b>	<b>ENG 110</b>

There are a myriad of reasons why students score in this range and MMP allows us to better determine if students with these scores actually require additional support or not. The MMP process requires these students to complete a brief writing assignment—including a short description of the ways in which they might revise this assignment if they were asked to and a brief survey on their writing habits and experiences. The design of our MMP tool is based on the same survey we used in the pilot sections of UWL 100. Students complete this additional placement process online through a survey and have several days to complete the task. Then, we review student work looking at how each student’s response demonstrates their ability to work through and follow a prompt, to synthesize sources and ideas at a beginning level, and to reflect on their writing choices.

Students who score ACT >18 or EPT >330 will automatically be placed into ENG 110 and ENG 100 without MMP. However, in addition to requiring a co-requisite course (for a total of six credits in English), we have also worked with our offices of admissions and the registrar to guarantee that students with these placement scores are provided with a schedule that does not require them to be in other writing-intensive general education courses (e.g. history) and that students take both ENG 110 and ENG 100 during the fall semester of their first year. Decisions like this further align the goals of FYW with the goals of RFY in terms of retention for first-year students (AACSU 2016).

Interestingly, our MMP tool also highlights additional important intersections between FYW and RFY. The MMP tool not only asks students to self-assess their writing habits, but in the writing component of the MMP, students are also asked to think about their writing in the context of “habits of mind,” which include “curiosity, openness, engagement, creativity, persistence, responsibility, and metacognition” (Council 2011). These habits of mind and our revision of our FYW program echo the goals of the RFY program and, in particular, the question guiding the RFY work taking place at UWL, “What can we do as a university to better support the success of ALL of our students?” UWL adopted two main RFY pathways towards assuring student success, namely: “belonging in college and [. . .] growth mindset” (Arney, Canada, Dale 2018). In the context of our project, this means, at the institutional level, creating an easy path to credit-bearing courses and, at the course level, asking students to reflect on how their habits of mind affect their potential for success in the FYW classroom. The adoption of Carol Dweck’s work on growth mindset in particular has affected how we designed the MMP and influenced our decision to work with habits of mind as a framework for assessing student preparedness for FYW. We will explore these connections further when we discuss ENG 100, the co-requisite support course, below.

### *Corequisite Support Course--ENG 100*

While we are certainly not alone in our creation of a co-requisite support course as part of RFY (Arney, Canada, Dale 2018), this is a new move at UWL. This new course is based on the one-credit model developed in UWL 100 that was supported by the RFY initiative at UWL. While ENG 050 was somewhat stigmatized and resented by students because it was pass/fail and non-credit-bearing, the course offered crucial support for many students, and we wanted to retain the best of what the course offered, but to expand that work beyond the limitations of a one-credit class (e.g., not enough time to explore topics in depth or to provide students with enough one-on-one support). Therefore, we’ve designed ENG 100 with the following features:

- credit bearing (three credits)
- graded
- portfolio-based
- embedded peer tutors (carryover from ENG 050)
- emphasis on low-stakes writing (carryover from ENG 050).

This course will provide students with *additional* opportunities to reflect on their writing habits; to more actively participate in activities that will prompt the habits of mind crucial to their development as writers; to develop a growth mindset about writing; and to receive additional practice in writing to hone their skills as writers and thinkers at the college level. These course goals align with the NCTE research policy brief, “FYW, What Good Does it Do?” (2013) acknowledgement that “High school and college students alike are empowered as agents responsible for their own learning when they are given the time and space to develop their meta-awareness as writers, and are explicitly taught how to do so (p. 2).” ENG 100 will provide students with space, time, and instruction that will directly reinforce both best practices in FYW instruction and the main goals of the RFY project at UWL.

One last measure of support built into ENG 100 is that while students can make their own choices about which section of ENG 110 they would like to take, they are not allowed to drop ENG 100, and if they drop their ENG 110, the registration system will automatically re-enroll them into ENG 110. This mechanism assures that students take the two courses during the same semester so that the skills students learn in ENG 100 can be directly applied to the work they’re doing in ENG 110.

While this course will not replicate the work that takes place in ENG 110, it will provide support for the work students are doing in that course. Instructors teaching ENG 100 will be required to have a background in and/or prior experience in teaching developmental writing at the college level. ENG 100 instructors will work from a common syllabus which will facilitate communication about the purpose(s) and content of ENG 100 to ENG 110 instructors. Our hope is that this level of transparency about ENG 100 will encourage ENG 110 instructors to make connections between the two courses, to participate in conversations about how we can better support all of our student writers, and to create multiple points of intervention that ensure student success during their first year at UWL.

Each ENG 100 class will also have embedded tutors who will provide additional one-on-one instruction for students and serve as peer mentors. ENG 050 has always used embedded peer tutors who were trained through and also worked in the university’s Writing Center; therefore, we felt ENG 100 should preserve this feature, as the peer tutors provide several important services or functions. They come to class every day, having done at least the readings the students have done, so they can answer informal questions as well as lead more structured group discussions. They also work with students through invention, drafting, and revision activities in class, either individually or in small groups, and they facilitate peer review. They offer their own perspectives on writing, connecting what the professor presents to experiences and courses closer in time and perspective to the students. Additionally, they can provide another source of information and assessment for the professor, alerting her to challenges or problems or successes that students might be less willing to share with her, contributing to assessment of students’ progress, and collaborating to present information or design activities. Our use of embedded peer tutors then also responds to one of the main goals for RFY on our campus; namely, to provide students with a sense of belonging. For students who are taking ENG 100 they will not only experience the educational advantages that a support course can provide, but they will also benefit from one-on-one peer interaction that can help to demystify the first-year experience and create additional points of intervention for students who might feel lonely or isolated on our campus.

The last, although not insignificant, issue that we will need to address is how we frame ENG 100 for students who are required to take the course. Our goal of eliminating the stigma of a required remedial course in writing has been addressed from our perspective; however, from a student perspective--a perspective that has no knowledge about our prior system for working with developmental writers--they're still required to take an additional writing course. To address these concerns, we've created additional information, context, and resources for students on our departmental website and we will have an additional faculty member available during our summer registration to ensure that students (and potentially parents) have access to information about MMP and ENG 100 in a variety of formats.

## Conclusion

While the impetus for the curricular changes we've made to our FYW program has been student success, the effects of these changes will also be felt among the instructors in our program as well. Because department approval is required for programmatic changes, we found ourselves frequently describing the problems associated with remedial English classes, the research supporting the revisions we were suggesting for our program, and the results of our SoTL project with our colleagues. The overall effect of sharing our research with our department has been a highlighting of the importance of the work of FYW on our campus and a confirmation that scholarship in this field is not just theoretical, it's also applied and, therefore, lived. In other words, our work was not in the abstract; rather, we were making changes that would affect *our* students on *our* campus.

As we write this article, we're on the precipice of major changes in our FYW program--summer 2018 will be our first opportunity to officially engage in MMP, and we will be offering our first sections of ENG 100 in the fall of 2018. While our work will affect only a small percentage of students at UWL, the principles guiding this work will invariably have an effect on our FYW classes as well. For example, while ENG 110 instructors will not know which students are also required to take ENG 100, we will be sharing the syllabus for ENG 100 with all of the FYW instructors in our department so that instructors can build off the instruction in ENG 100 as they design their sections of ENG 110. In the past, work with students who placed into ENG 050 was largely conducted in private; only three or four instructors out of a department of approximately 35 were aware of the structure, content, and pedagogical approaches being used in the course. Through mainstreaming, improved placement practices, and the development of ENG 100 we're hoping those days are now behind us.

Additionally, because we were required to seek out campus-wide approval for the changes we were proposing (from our general education program to our office of the registrar and everywhere in between), we have had ample opportunities to frame our work to our campus community as an example of how social justice can be enacted through curricular revision. It's difficult to overestimate the effects of this kind of conversation on our campus. Our work serves as evidence of the importance of FYW to FYE (and vice versa), the influence of the RFY initiative on campus curricular reform, and the effects that conscientious SoTL work can have on our teaching and learning communities.

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## Designing for Students: Creating a Robust Interdisciplinary First Year Course

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*Abstract: Building a general education program from scratch for a population of first generation and underserved students provided both a challenge and opportunity. Faculty who had limited previous experience teaching and assessing first year students engaged in study of the best practices and research. Faculty designed a four-year general education curriculum that began with a robust First Year Seminar (FYS) course, the focus of this study. This required three-credit hour interdisciplinary humanities course (FYS) was designed to embrace the understanding of what it means to be human, including understanding oneself in relation to the natural world and to others. Full time faculty from all disciplines were selected through a competitive process to teach the FYS course with embedded High Impact Practices (HIPs). Four years of teaching FYS has provided qualitative and quantitative data on the effectiveness of the design, the role of faculty, and application of HIPs. Through the course assessment process and data analysis, faculty have expanded their repertoire of pedagogical strategies to engage the first year student, and as a result, positively influenced teaching in their other courses. This report offers insights on strategies for course design, the role of faculty, and the power of selected HIPs that may be replicated at other institutions.*

*Key words: course design, faculty, high impact practices, humanities, learning community, general education assessment*

### Introduction and Background

Governors State University (GSU) is a public regional university located 35 miles south of Chicago, Illinois, an area with limited economic growth. Since our founding as an upper division university in 1969, GSU has been a beacon of opportunity in higher education. Our undergraduate student population (2,993 FTE) looks like America. As the only public university in our region, we serve urban, suburban, and rural students. We primarily serve the underserved. When we admitted our first freshman class in the fall of 2014, fifty-one percent of our undergraduates were students of color; fifty-six percent received Pell grants; and forty-two percent were first generation.

GSU has always made a strong commitment to ensuring an accessible and high quality education. Over the last five years, GSU has undergone a transformation into a four-year university, providing a growing number of first-generation, underrepresented, and underserved college students with all the benefits of university education—experiences that students from more privileged backgrounds take for granted. For the first time in our history, in fall 2014 we admitted 242 freshmen and opened a residence hall. As we anticipated, an even higher percentage of our first freshman class compared to

our undergraduate transfer students was made up of underrepresented students: seventy-six percent were students of color; sixty-six percent received Pell grants; and nearly seventy percent tested developmental in English and/or mathematics.

The typical student at GSU would be considered nontraditional at other institutions. Designing curriculum as “retro-fit,” to shift from meeting the needs of a non-traditional adult learner to meeting the needs of the typical 18-year-old college freshmen could be as challenging as trying to retrofit an existing house with state of the art “green” technology. It runs the risk of being overly expensive, not having the appropriate materials, and not meeting your needs when it is finished. At GSU, we knew our approach to curriculum development required a fresh start, one that used the principles of universal design requiring innovative ideas, sound pedagogical methods, and authentic assessments that took into account the unique needs of all our students. We had to start from the ground up in building our general education curriculum.

Building curriculum this way required the best thinking of all our faculty with professional development centered on shared readings and conversations. A General Education Task Force was formed to take the lead in researching and developing a general education curriculum. This Task Force had representation from the various disciplines primarily in Arts and Sciences, but was led by a faculty member in the Physical Therapy doctoral program, who was a faculty leader and champion for high impact practices. Through small group meetings and workshops, the Task Force examined research on Liberal Education and America’s Promise (AAC&U, 2011), high impact practices (Brownell & Swaner, 2010; Kuh, 2008), student success, equity minded teaching practices, and assessment that matters. Our faculty built a research-based, model freshman program “from scratch.” Throughout this process, information, updates and drafts of the general education curriculum were shared with the university community through Faculty Senate, Deans’ Council, college meetings, and open forums. Their common understanding of factors that contribute to persistence and degree completion led them to value building community among students and faculty through engaging them in learning communities.

We also understood that to make transformative changes across the university, we had to ensure that everyone viewed themselves as stakeholders in student success. We brought together individuals from facilities, business offices, human resources, campus police, advising, academics, student affairs, administration, and student senate to participate in campus-wide symposia led by academic leaders and change agents, such as Carol Geary Schneider, John Gardner, Betsy Barefoot, Roberta Ness, Caryn McTighe Musil, and Daniel Goleman. These symposia provided a venue for community building and candid discussions on what we needed to do together to best serve all of our students, but especially the incoming freshmen. The commitment to student success was incumbent upon everyone on campus.

## Literature Review

### *Scholarship of Teaching*

The Scholarship of Teaching and Learning (SoTL) opens the classroom and university setting to a site that focuses on inquiry and exploration of the structure and impact of teaching on the learning experience and elevates the focus to the profession of teaching (Huber & Hutchings, 2005). SoTL requires faculty to refute the assumption that only “ineffective” teachers have questions or problems with their practice (Hutchings & Schulman, 1999). Faculty within the university are hired because they are content experts, and the expectations of joining the university community are that these experts will be able to spark in students the same passion and thirst for knowledge for the respective discipline. Expertise in effective pedagogy, curriculum, and course development may not have been part of the

faculty member's preparation, but it is a necessary component of effective college teaching. Arreola, et.al. (2003) identified four professional dimensions of college teaching: base profession skills and knowledge, instructional design skills, instructional delivery skills, and instructional assessment skills. SoTL promotes the understanding that credible research may use many models beyond the traditional empirical model of inquiry (Arreola, et.al, 2003). Effective use of pedagogical strategies and curriculum development require faculty members to understand the dimensions of their meta-profession and truly examine how a wide range of research methodologies informs what transpires in the classroom. This is an integral component of any transformational efforts.

Effective pedagogical strategies that impact the educational experiences include high impact practices and active learning. All high impact practices are designed to increase student engagement with faculty or other students as a means to improve student learning (AAC&U, 2011). The three high impact strategies that provided a focus for this study include learning communities, first year seminars/experiences, and writing-intensive courses. Through learning communities, students build bonds with their instructors and peers (Tinto & Russo, 1994; Zhao & Kuh, 2004). This engagement results in a deeper understanding of course content, a stronger sense of belonging, and increased persistence rates. Students who have opportunities to interact with instructors they perceive as being approachable, respectful, and available both in the classroom and outside of the classroom seem to have a higher level of academic confidence and motivation, both extrinsically and intrinsically (Komarraju, Musulkin, & Bhattacharya, 2010). Interdisciplinary learning communities also have a positive effect on teaching efficacy and faculty development through joint planning for a course and collaborative projects and assessments (Lester & Evans, 2009). In a study conducted by Willis & Allegretti (2013), they found that instructors teaching the First Year Seminar (FYS) experienced more positive effects on their teaching, including classes outside of the FYS, engaged in more reflective behavior and were more intentional in their assessment practices. Students enrolled in the FYS often benefit from the inclusion of multiple high impact practices in a course that is typically taken in the first semester of a student's academic program as seen by higher levels of engagement and persistence (Padgett, Keup, & Pascarella, 2013).

### *High Impact Practices*

The GSU First Year Seminar (FYS) was designed to include the HIPs of learning communities and writing intensive. Hotchkiss, Moore and Pitts (2006) found that participation in freshman learning communities was correlated with improved GPA and found that it could improve retention of some students. Likewise, Rocconi (2011) reported that learning communities were related to first year student gains because of increased student engagement. The emphasis on improving student engagement was important as faculty planned the FYS. A small study of FYS that was writing intensive found that students completing the course were better at planning writing and revising by using higher order writing processes (Kolb, Longest and Jensen, 2013). Aurora University (IL) uses an interdisciplinary FYS to introduce students to the importance of the whole general education curriculum and found that their design helped students appreciate the importance of general education (Vander Schee, 2011). This research highlights the importance of selecting the appropriate faculty to teach an interdisciplinary FYS.

### *Transformation at Governors State University*

As Governors State University made the change from being limited to upper division courses and students, an innovative structured four-year program was developed. The ability to start from scratch allowed faculty and administrators serving on the General Education Task Force to use solid research

and best practices to build the program. The GSU General Education Task Force read a variety of research to inform the design and early in the process decided to incorporate high-impact practices (HIPs) as described by AAC&U (2011). A longitudinal study by Kilgo, Sheets, & Pascarella (2015) reported that active and collaborative learning approaches in the HIPs had the most positive effects. To assist faculty in the implementation of these in the classroom, the GSU plan designated small class sizes and teaching by full-time faculty as core components of the program.

In addition, we anticipated that as a regional, public institution located in an economically disadvantaged area that we would serve many first generation students from under represented populations. The work of Rashne Jehangir (2009) on cultivating student voice informed our curricular design as well. She recommends the use of learning communities to combat the isolation that she found among first generation, low-income students. GSU designed the first three semesters around a student learning community model, that we called cohorts. The first component was a required First Year Seminar course.

First Year Seminar (FYS) courses are the most common and longest used HIPs in higher education (Brownell & Swaner, 2010). Authors have reported as many as 95% of four year institutions offer a first year seminar (Pascarella & Terenzini, 2005). Summary research indicates that student participation in an FYS results in greater likelihood to persist from the first to second year of college and greater likelihood to graduate from college (Goodman & Pascarella, 2006).

Recent calls from authors to enhance teaching for first year students are found in many places, one example is Bowen and McPherson (2016) on “the deadening effect of too much poor teaching of foundational courses...especially among less prepared students” (p. viii, as cited in Maimon, 2018). At GSU the commitment for full-time faculty to teach FYS and the other courses in the learning community (nine courses in three semesters) came from the faculty and the president. The focus was on increasing student and faculty interaction, in support of student engagement. As the GSU president commented in her recent book, “permanent faculty members are present and involved in the life of an institution outside of the classroom” (Maimon, 2018, p. 55). GSU identified these aspects of faculty availability beyond the classroom and care for student learning as foundational to the FYS course.

Komaraju, Musulkin and Bhattacharya (2010) found that positive faculty student interactions were important for development of student academic self-concept and achievement. They also reported on the importance of students feeling respected as part of these positive interactions, in agreement with the findings of Jehangir (2009).

Since many GSU faculty members had no experience teaching first and second year college students, we were concerned about supporting faculty so they could develop these important relationships with students. Other researchers have found that teaching an FYS course has an impact on the faculty member. Murray and Wolf (2016) found that teaching and Interdisciplinary FYS had a significant influence on faculty as they reached beyond their discipline. Faculty reported high satisfaction with benefits also to their morale, teaching, and research. Likewise, Willis and Allegretti (2013) found enhanced teaching after participation in collaborative teaching in FYS. The researchers found faculty reported that they reflected on their teaching, improved assessment and gained a sense of community with other faculty.

With a commitment to high impact practices (HIPs) the faculty established basic tenets that guided the development of our first freshmen class curriculum. Based on the research of Kuh, Cruce, Shoup, Kinsey, & Gonyea (2008), Upcraft, Gardner, & Barefoot (2005), Tinto (1987), and Bean (1981), the faculty determined that all first-year courses would be taught in small class sizes by full-time, fully dedicated, faculty members. As noted by Bettinger and Long’s study, “Adjuncts have positive impacts on introductory course grades but negative impacts on subsequent course enrollment and performance” (2004, p.6). Thus, full-time faculty were committed to teaching freshmen to ensure long-term student success.



Building this new curriculum had some unexpected barriers. There were challenges, but these challenges often led to opportunities and new avenues of thinking. Based on four years of experience, this report describes the journey and the processes used to design the general framework of the FYS course. The methods used to recruit full time faculty from all four academic colleges, bringing their expertise and academic passions to the teaching of the FYS course, and the identification of an agreed upon measure of student success are shared.

## Methods

The study examined the design decisions for the new the First Year Seminar (FYS) course and the extent that those purposeful design decisions influenced student learning. The focus of design decisions included which faculty were selected to teach the course and the application of High Impact Practices (HIPs) through course delivery and assessment. Student learning was measured using faculty assessment of student learning outcomes, course grades and responses to the National Survey of Student Engagement (NSSE).

### *Commitments for Course Development*

The Task Force determined that the FYS would be submitted and approved for transfer to Illinois institutions participating in the statewide articulation agreement as a three-credit Interdisciplinary Humanities course prior to offering it to students. Additionally, an intentional decision was that this course would be required for new first year students as part of a three-course block schedule taken in the Fall Semester, and that class size would be capped at 30 students. Three HIPs were embedded in all sections of FYS; they include first year experience, writing intensive, and learning community. A policy was written delineating requirements for writing intensive courses. Creation of the learning community occurred through scheduling students into the FYS with Writing Studies I and a History, anthropology, or geography course. Service-learning experiences and/or collaborative assignments to the course could be added at the discretion of the course instructor. The extent to which these agreed upon commitments were implemented was examined through the GE Council course approval process, student performance, and an ethnographic analysis of faculty learning community seminar reflections.

### *Faculty Selection*

The General Education Council (permanent replacement for the General Education Task Force cited above) sought faculty applicants each spring to teach FYS for the following fall. The application provided potential instructors with the approved syllabus and then posed some short answer questions. Faculty were asked to consider the theme they will apply to the course, their preparation to teach it, and willingness to teach multiple years (if invited). Only full-time faculty (tenure and non-tenure track) were eligible. A faculty committee reviewed the applications and the General Education Director notified faculty of their acceptance. When needed, a second call was sent for additional applications or the Dean of the College of Arts and Sciences nominated appropriate faculty in the humanities. After selection, a workshop was held at the end of the spring semester and again in early August to discuss pedagogy and partnerships with other linked courses. These interactive sessions were designed to encourage faculty exchanges among those with prior experience with faculty who never taught the course before. These meetings also facilitated the development of shared assignments across two of the three courses that students took as part of the learning community. Midterm meetings were planned to provide exchange of teaching strategies across the FYS faculty and to share

ways in which they exercised the option of using a junior or senior student as a peer mentor to the class. Data on the outcome of these professional exchanges were collected through ethnographic means of analysis of notes taken during the faculty meetings, and faculty interviews.

A purposeful approach in the design of the First Year Seminar (FYS) course was in the development of course outcomes, met within the context of the themed pathways of civic engagement, global citizenship, and sustainability. Thus an outcome statement such as, *generate evidence-supported arguments, which reflect sound interpretation of societal and ethical issues* was broad enough to be addressed within any of the themes, and allowed for the selection of faculty members representing multiple disciplines. Selection required a commitment to developing course activities and assignments that related to the chosen theme and that addressed the underpinning research from Tinto on interconnectedness and from Bean on the impact of external factors toward persistence (Cabrera, Nora, & Castenada, 1993). Moreover, this course was designated as *writing intensive*, which, by policy, meant it must include significant writing assignments with a minimum of 4,000 words total (may include a combination of non-revised assignments and revised assignments). In addition, a minimum of 40% of the course grade must be dependent on written assignments, and it should include instruction intentionally planned to support writing skills. The extent to which these decisions were met through course delivery and faculty interactions was captured in this study through examination of faculty seminar notes and analysis of data collected through scoring of signature assignments by faculty within the learning community.

#### *Faculty Learning Communities and other HIPs*

Faculty learning communities completed assessment of the FYS student learning outcomes (SLOs). During each spring semester, key assignments identified by the instructor are submitted to the General Education Director. The Director organized faculty learning communities to facilitate the review of these student artifacts. The learning community designed a rubric to measure achievement of the student learning outcomes in the foundational knowledge category of student learning outcomes (SLO). The group completed a norming activity and then applied the rubric to the student assignments. These results were presented to the General Education Council annually and result in recommendations for change; participation in these assessment activities was required by faculty, in fact, failure to participate has resulted in a faculty member not being invited to teach FYS in a subsequent year. In addition, the General Education Council reviewed student grade distribution data each year. Ethnographic data collected during the spring semester professional development session and analysis of the scoring of the foundational knowledge assignment were used in this study to determine how these data informed the development of and improvement to the working of the learning communities.

Because HIPs were a key component in the course design, it was important for GSU to measure those with students. The National Survey of Student Engagement (NSSE) was developed as a national tool that would provide “high-quality, actionable data that institutions could use to improve the undergraduate experience” (Kuh, 2009, p.9). The three core purposes include measurement of best practices in education, guide institutional enhancements, and provide public advocacy. Students self-reported their participation in a variety of educational activities, for this study only three areas were analyzed: participation in a HIP, participation in learning communities, and frequency of interaction with faculty members. The instrument has strong psychometric properties and is administered each spring to students at participating institutions (Kuh, 2009). In addition, the Faculty Survey of Student Engagement (FSSE), which poses parallel question sets to faculty, was used to measure the faculty’s perception of these valuable teaching practices and to help us evaluate our purposeful curricular design. In this study, the results were analyzed to determine how students and

faculty viewed their participation in HIPs and the frequency and types of faculty-student interactions for first year students.

## Results and Analysis

### *FYS Course*

Faculty learning communities designed a custom rubric to assess SLOs on foundational knowledge that were taught in the FYS course. Qualitative and quantitative data were generated. Assessment of the FYS artifacts prompted discussion about the relationship between the SLOs and the key assignments. The learning community concluded in their final report that:

*“The most glaring challenge was that there was a poor fit between the assignments and the Student Learning Outcomes. As other faculty learning communities have noted, FYS instructors felt that the SLOs have too many criteria included in each one of them. ...The learning community... noticed that students would meet the first part of the statement, but not the second. It is recommended that the statement be broken down into two SLOs. Also, too many criteria extended the breadth of some SLOs, making it very difficult for any one course or assignment to cover.”(GSU Faculty 2015).*

This feedback resulted in some revisions to the key assignments and started an ongoing discussion about the wording of the SLOs. Additionally, the members of the learning community realized that creating a rubric tailored to the common activity for that particular term, made it difficult to draw conclusions about overall success of the FYS over the last four years. Thus, during this fifth year of implementation, the faculty learning communities are considering the adoption of a standardized rubric, such as one of AAC&U VALUE rubrics for greater consistency.

### *Faculty Learning Communities*

A commitment to learning communities and the collaborative assessment of course activities were necessary attributes of the selected faculty member. During the spring semester meeting of the faculty from the themed pathways, ethnographic data were collected on their experiences in forging *learning communities*. Analysis of these data over the four years provided the following themes across the groups:

Theme 1: Understanding the level of student engagement:

- Faculty challenged to discover what freshmen students care about;
- Shared strategies on how to discover student interests;
- Desire to turn student led interests into research activities.

Theme 2: Community formation:

- Strain of forced community through course placement;
- Challenge of natural development through shared interests when already placed in the themed pathway.

Theme 3: Levels of support for service learning component:

- Required, but individually performed, missed opportunity to create community;
- Challenges of identifying project completed as a “cohort” community building activity.

Theme 4: Communication across different learning communities:

- Desire for more guidance in connecting faculty members;
- Concerns about forced and uncompensated time commitment.

Theme 5: Selection of common or linked assignments:

- Tied to common interests of students;
- Challenge of linking it to learning outcomes of all courses within the community.

### *Faculty Selection*

During the first four years of this model, all faculty teaching FYS were full time employees. During the first two years they represented all four of our academic colleges; however, more recently, the College of Business has not participated and the College of Arts and Sciences has provided more faculty. See Table 1 for the distribution of college representation.

**Table 1. Faculty teaching FYS by College**

Year	College of Arts and Sciences	College of Business	College of Education	College of Health and Human Services
2014*	3	1	4	3
2015*	2	2	4	3
2016*	5	0	1	4
2017*	7	0	1	0

\* Some sections were team-taught and some faculty taught more than one section

For some faculty, interest in teaching the FYS course has diminished since it is no longer novel, and it does require a significant commitment of time and energy. However, a core group of faculty, who are committed to the course, has begun to emerge. Although they are mostly concentrated in the College of Arts and Sciences, they do represent multiple disciplines, such as Philosophy, Performing Arts, Spanish, and English, which continues the interdisciplinary theme.

### *Student Performance*

Improvement has been seen over time in terms of student performance, based on grading in FYS. According to University policy, students must earn a “C” or better for general education courses to be accepted toward degree completion. The institution does not designate + or – in the grading system. See Table 2 for course grades of C or better earned in FYS by year.

**Table 2. FYS grades for full time freshmen**

	2014	2015	2016	2017
Cohort total	266*	241*	220*	192*
Number “C” or better	174	166	159	145
% “C” or better	65.4%	68.9%	72.3%	75.5%

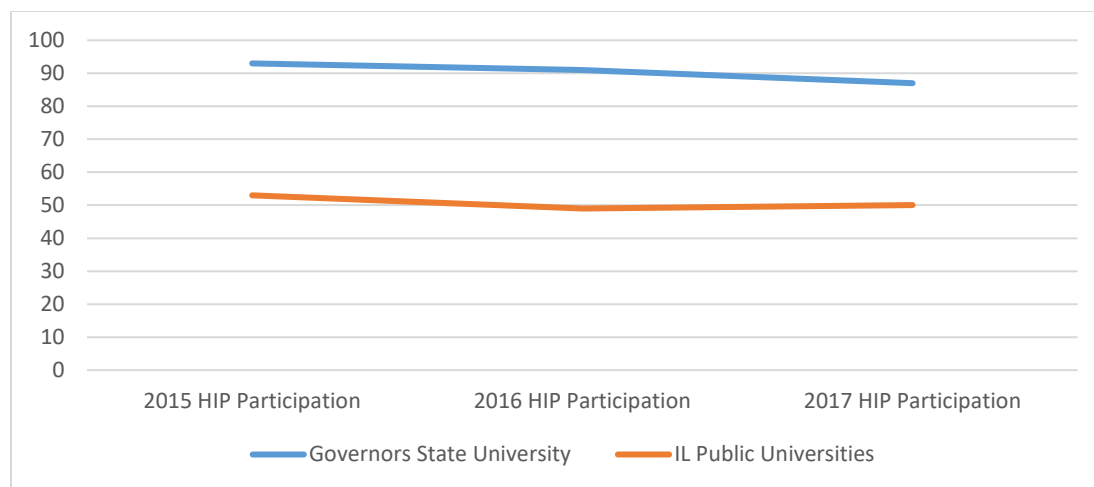
\* Includes students who repeated the course to earn a “C” or better

*Measurement of HIPs*

The National Survey of Student Engagement (NSSE) was first administered at GSU in the spring of 2015 to the first group of freshmen students and our senior students that were all transfers from other institutions. We have continued annual administration of the NSSE to develop baseline data. Results are shared across campus when they are available to help inform decision making about general education and student activities. The results for GSU are compared to the other Illinois public universities that completed the survey, which varies by year. In 2016, only four other Illinois public universities participated, but in 2017, participation increased to nine public institutions. Results on selected items for the freshmen are presented in Table 3 and Figure 1.

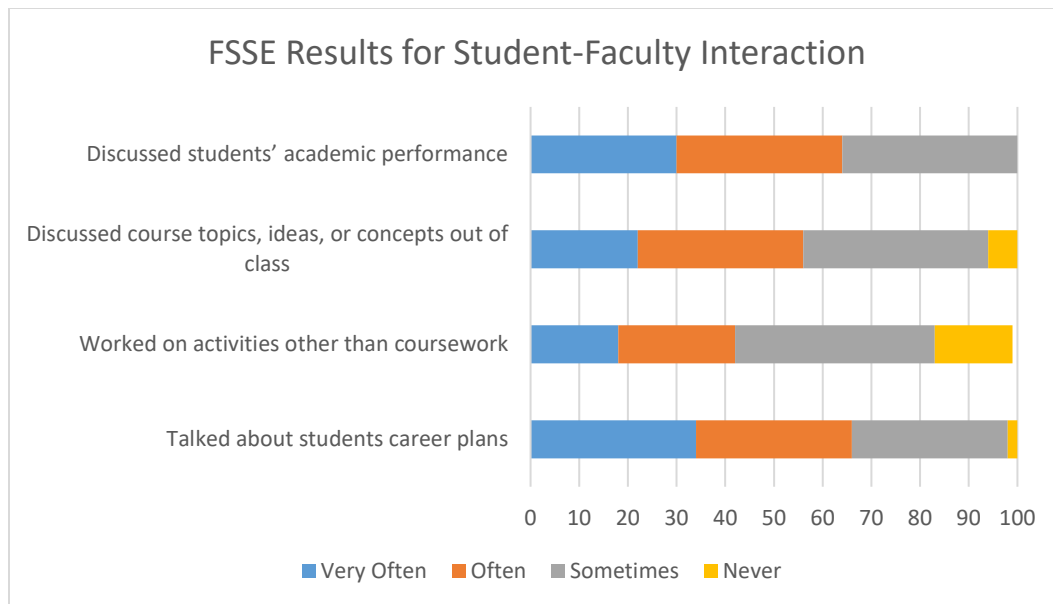
**Table 3. NSSE Results for freshmen**

	GSU 2015	IL Public 2015	GSU 2016	IL Public 2016	GSU 2017	IL Public 2017	GSU Average
<b>Response Rate</b>	21%	16%	19%	16%	14%	20%	18%
<b>Participation in HIP</b>	93%	53%	91%	49%	87%	50%	90.3%
<b>Student – Faculty Interaction</b>	26.2%	20.4%	20.0%	20.2%	25.4%	21.3%	23.9%
<b>Learning Community (done or in progress)</b>	30%	15%	16%	11%	44%	10%	30%

**Figure 1. NSSE Results for freshmen regarding participation in one or more High Impact Practices**

NSSE offers an optional module to survey faculty members about similar topics. GSU participated in the Faculty Survey of Student Engagement (FSSE) during the 2016-17 academic year. The results for 2017 included responses from 80 faculty members for a 33% response rate. Fifty percent of the participants indicated that learning communities are either very important or important for

undergraduates. Detailed responses for how often faculty interact with students in their courses or their advisees are summarized in Figure 2.



**Figure 2. FSSE Results 2017 for Student-Faculty Interaction (%)**

## Discussion

After four years of experience, this study presents the impact of the design of the FYS course, the role of full time faculty to teach it, and the application of selected HIPS. Faculty designed the General Education program, which included a required academic seminar for all first year students. The commitment of full time faculty to teach the FYS course has yielded a strong contingent of faculty teaching the course multiple times with improving student performance.

As we are learning from our examination of the data on the FYS, the challenges inherent with delivering a course with broadly written outcomes, a thematic context, an interdisciplinary approach, and a focus on social connections with full time faculty could be a daunting task for even the most seasoned faculty. Because of the work of the learning community's examination of signature assignments from the FYS, we have used the data to change the signature assignment to better align to the identified learning outcomes. The percentage of students earning a grade of C or better over the four years have improved with this change. Modification of course outcomes to reduce multiple criteria within a single statement, and improvement of the social connections of students with full-time faculty are a work in progress. The NSSE and FSSE data on faculty/student interaction indicate that we are outperforming others within Illinois, yet less than 30% of the freshmen students believe there is strong faculty-student interaction.

Faculty play a pivotal role in ensuring that students are engaged in high impact practices through the First Year Seminar (FYS). This study identified the importance of full-time faculty taking ownership of the development and delivery of the FYS. Though many of the faculty teaching the FYS were self-nominated, it became clear that having a range of disciplines represented in the FYS courses was essential to the robustness of ideas and connections presented. Over the four years, faculty gained a deeper understanding of how the FYS provides a foundation for the educational experience. Through the guidance of the faculty, students were able to experience a broad scope of disciplines and see the interconnectedness of their core general education courses.

One continued challenge is to sustain faculty interest across all four colleges in teaching FYS. Broader participation occurred in the first two years and then tapered off. The majority of the instructors are coming from disciplines in Arts and Sciences; however, the goal is to have the FYS seen as a university-wide course. We need additional efforts to attract faculty members to this first year experience. Having faculty who have taught the FYS share their experiences and the impact on the lives of our students at workshops, open forums, and Faculty Senate meetings will be a way of bringing in a more diverse pool of FYS faculty. Also giving special recognition to the FYS cadre of faculty may also raise the profile of teaching this fundamental course. Workload and team teaching are two additional areas that the General Education Council, faculty, deans, and chairs will continue to examine.

Through this study, it became evident that the majority of our faculty had limited experience teaching freshmen, developing a FYS course and integrating HIPs into their instruction. Providing appropriate professional development for faculty was a key component of the program. The use of faculty learning communities emerged as a valued network of support as they implemented HIPs into their FYS. In addition, the work of the Director of General Education to organize assessment activities was an essential component of faculty learning communities. Faculty members had a variety of previous assessment experiences and the GE Director's ability to structure the assessment sessions was important for improving faculty understanding of the assessment process. During the next year, the General Education Council will continue to apply the assessment findings to the structure of the program, planning changes to the outcomes in the FYS course, and continued professional development on building and maintaining learning communities.

The FYS course serves the purpose of introducing the students to GSU and building early relationships with faculty. The student learning communities are one HIP that supports the social connectedness that is crucial to student persistence. The high rate of participation among GSU freshmen for HIPs with 87-93% indicating that they participated in one or more HIPs during their first year is higher than the rates of other Illinois public institutions of 49-53%. This rate of participation is encouraging, although the FYS course alone is designed to incorporate three HIPs itself, indicating that 100% of freshmen are participating in HIPs. It is clear that most freshmen understand their involvement in HIPs, but not all recognize participation in HIPs during their first year.

The NSSE results on learning communities, which are one of the HIPs embedded in the first year curriculum with FYS, indicate that GSU freshmen think they are important at a rate of 16 to 44%, which is higher than other Illinois public universities (10-15%). However, the students did not rate learning communities as important as the faculty did at 50%. This indicates a need for further discussion about the value of learning communities and their role in student success. One potential improvement for GSU is the use of clear language because on campus we have used the terms cohort and learning community interchangeably, which is not accurate. A greater effort to define learning communities, their distinctiveness, and benefits should help the campus better define the role for these important structures and learning opportunities. More input from students about what they want in a learning community might also help improve these numbers.

The NSSE and FSSE results on faculty-student interactions are encouraging. According to GSU students, they interact with faculty outside of class at a rate of 20.2 to 26.2%, which is higher than other Illinois public universities (20.2-21.3%). Faculty value this interaction as indicated by the results that all respondents indicated discussing student's academic performance with students at least sometimes. This is an area with room for growth as faculty and students continue to work together beyond the classroom.

## Conclusions

This study described the course design elements, role of the faculty, and the use of selected HIPs to improve student success. GSU's opportunity to build an innovative general education curriculum from scratch was a unique chance to integrate current literature and best practices into new courses and sequences. As this study revealed, the decisions made to develop an interdisciplinary humanities course, with a conscious decision of having full time faculty members teaching the course, had some positive effects on student performance and persistence. The faculty learning communities that developed were able to reflect upon the wisdom behind course design decisions and use student performance data to make changes to the originally selected course outcomes to capture more precisely, the intended course purpose. Changes made from term to term, contributed to increased student success and persistence. Additionally, by using full-time faculty, the faculty learning communities that developed had stability, and they were able to regularly share ideas and strategies used in the FYS to build the connections between students and faculty. The outcome of the decision to select only full-time faculty members as FYS instructors supported the literature cited: faculty that taught the course found a new sense of connectedness with their colleagues; a renewed interest in teaching freshmen students, and their students reported via NSSE more positive connections with the faculty than other universities. Results from this study have prompted deeper faculty reflection and further investigation into instructional research and practices. Effective teaching and learning that promote student engagement require continuous refinement, and GSU faculty will continue to monitor the results from students and faculty to improve this course and strengthen the student's educational experience.

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## Developing Faculty Communities of Practice to Expand the Use of Effective Pedagogical Techniques

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*Abstract: The scholarship of teaching and learning literature is replete with examples of pedagogical techniques that have been demonstrated to be effective in improving learning, motivation, and student success. The extension of these techniques beyond the original context has tended to be slow, difficult, and incomplete. The following paper examines an intervention designed to encourage the exploration and use of a variety of pedagogical techniques by faculty in a traditional, four-year college faculty within the context of the AASCU Re-imagining the First Year Initiative. Small groups of six to eight faculty, joined and created communities of practice. The groups were known as Pedagogical Interest Groups, or PIGs for short. The faculty read about and analyzed a series of pedagogical techniques and committed to introducing at least one technique into their courses to further explore the techniques. When the techniques were successful, the faculty members redesigned entire classes to expand the impact. The communities of practice were successful in encouraging faculty to explore a wide variety of techniques. The average faculty group explored eight different pedagogical techniques. Faculty were able to use the opportunity to experiment with techniques with the support from their colleagues in their PIG. A dozen techniques were explored across the PIGs and dozens of class sections have been completely redesigned. To date, over 2000 students have experienced redesigned courses. Measures of student success, satisfaction, and interest in those sections have increased. The effort has been accompanied by a robust increase in the campus-wide retention rates.*

*Keywords: communities of practice, faculty development, gateway courses, retention, student success*

A central goal of the Scholarship of Teaching and Learning is the development and promulgation of effective, evidence-based, pedagogical techniques, methods, and strategies. The ultimate goal of this endeavor is the improvement of learning, motivation, and student success. While the development efforts have led to the identification, creation, and assessment of many techniques, the efforts to extend those techniques beyond the original contexts has not been as successful (Elmore, 1996; DeDe, 2016). One of the factors limiting the expansion of the techniques is simply a lack of knowledge of the mechanics and the advantages of particular pedagogies on the part of college faculty (Dillenbourg, 2017). Another is the limitations of the “better mouse trap” philosophy that underlays the promulgation of pedagogies. This approach posits that better methods and practice are self-explanatory and self-implementing. Once faculty see the better procedure, they will quickly adopt the new technique (Elmore, 1996). The flaw in this approach is that faculty do not know about how to teach through the continuing formal exploration of pedagogical techniques throughout their careers. In this paper, we explore the use of faculty communities of practice as an explicit instance of faculty development to encourage the exploration of a variety of pedagogical techniques, to increase breadth of pedagogical expertise in our faculty, and, ultimately, to improve student learning and academic

success, i.e. build and use “better mouse traps”. These efforts are focused primarily on foundational gateway courses which are often a barrier to student success (Flanders, 2017).

This project has been inspired by the Reimagining the First Year Initiative (RFY) sponsored by the American Association of State Colleges and Universities (AASCU). RFY is grounded in the belief that Colleges and Universities can do a better job of meeting the needs of our students and of responding to the current societal and academic mandates (McBride & Kanekar, 2015). RFY suggests that many models exist that point to better ways of reaching the needs of our students. Schools should study those models and endeavor to replicate their already learned lessons. These models concern a wide variety of practices that include both pedagogical and non-pedagogical components.

Over the past several decades, considerable scholarly effort, reflection, experimentation, and analysis have been expended in trying to develop pedagogical techniques that are effective in reaching the needs of a wide range of students. This can include students who may not have enjoyed a solid foundation in high school, who may be from groups who may not have attended college in previous generations, who enroll in less selective institutions, who are first-generation college students in their families, or who are from underrepresented groups. These techniques contrast with the traditional lecture and textbook based systems that have characterized higher education for some time (Hainline, et al, 2010). Often, the faculty of universities have attended schools that primarily used traditional lecture and textbook based systems, use those experiences as their models, and have not received appreciable formal training in teaching and little more than incidental exposure to modern alternative techniques.

### **Faculty Communities of Practice- Pedagogical Interest Groups (PIGs)**

In recent years, communities of practice as a vehicle for faculty development have grown in popularity (e.g. Abigail, 2016, Teeter, et al, 2011, Wenger-Traynor 2011, 2015). A community of practice is simply a group of people who form to pursue a common goal. They share a domain of interest, they engage in joint activities and discussions, and they develop a shared repertoire of resources/practices (Wenger-Traynor, 2011). We developed a series of faculty communities of practice to explore, learn about, and assess pedagogical techniques. Since our communities shared an interest in pedagogy, we referred to the groups as Pedagogical Interest Groups, or PIGs for short. This name was created by the first of the community of practice groups in this project and continues to the present. Our communities had six to eight faculty in them, usually from different disciplines. Initially, they were invited to participate by their Dean, though eventually faculty began asking to join a PIG. Each group selected the particular pedagogical techniques that they wanted to study. Each group read about and analyzed different techniques. Most frequently, faculty have heard about particular pedagogical techniques, were intrigued by them, but have not actually studied them. Overall, the members of the PIGs have studied about a dozen techniques. This includes: Active Learning, Belongingness, Collaborative Learning, Community-Based Learning, IU Career EDGE (Exploration, Development, Graduation, Completion) Modules, GoFar (achievement motivation intervention), Growth Mindset, Inclusive Learning, Nudges, Problem-Based Learning, Social Media Learning, Stereotype Threat, and Transparent Teaching.

Within the Communities of Practice, faculty read articles about how to arrange and use particular techniques, the academic contexts in which they had been deployed, and assessments of their efficacy. The members of the PIGs evaluated the techniques through a series of analyses. Did they have enough information to replicate the techniques? Did the techniques produce appreciable change in measures of student learning or in measures of student success? Were these techniques consistent with the general approach to knowledge and learning pursued by the individual instructor? Could these techniques be accepted by our students? The study phase for the PIGs lasted for about a

semester. By the end of the semester, each professor in the PIG selected one technique to attempt within a class. The initial extension was developed to help consider some of the questions posed above. For instance, could we arrange the technique? Could this technique work within our context? Thus, one could consider the first exploration as similar to a pilot study. At the end of the semester, individual teachers and the individual Communities of Practice (PIGs) assessed the pilot studies using self-defined appropriate criteria such as attendance, completion of a project, or grades or quality of an assignment. In addition, the Dean's office examined course grades, DFW rates, and retention rates. If the technique was successful, the teachers were encouraged to redesign the course using that technique as a basis.

Part of the specific context of these efforts are the characteristics of the school and of the student body. The university is a comprehensive regional state university with a diverse student body of approximately 3800 and offers Associate, Baccalaureate and Master's degrees in a variety of undergraduate and graduate programs. The student body is 46% underrepresented minority, 43% first generation, 70% female, 66% traditional aged and 67% fulltime. Over the past 5 years, the 6-year graduation rate has ranged from 24 to 27% and first to second year retention rate ranges from 64 to 67 percent.

## Findings

One of the most impressive outcomes of this project is that all the techniques improved aspects of student learning and with some techniques, the change was immediate. For instance, during the exploration of collaborative learning in a foundational mathematics courses, it was obvious from the first day that students were responding positively to the new techniques. About 100 students were enrolled in three sections of this class. Prior to the intervention, students had spotty attendance and were not always focused on the activities within the classroom. When the students were doing their first collaborative assignment, all attention was focused on the problem, the students were deep in conversation with each other, and engagement with the content was obvious. This pilot lasted two and a half weeks. During that time, there was nearly perfect attendance. Grades were higher on the examination at the end of this section and the mathematics faculty began redesigning the entire class to include collaborative learning assignments throughout the semester.

We have used Communities of Practice for about two years now. We have formed eight PIG groups, with 46 faculty from 13 different disciplines participating. So far, they have introduced 12 different techniques into 15 different classes. To examine their efficacy, faculty collected data on individual techniques as appropriate to the procedure. For instance, mathematics collected attendance data and exam grades. Others collected project completion rates, understanding of course material, or measures of the depth and sophistication of papers. The activities were all aligned with the learning outcomes, and the measures of efficacy consistently designed and employed across semesters. In all cases, standard measures of student success: course grades (course GPA), DFW rates, and one-year retention rates were collected. The measures of student success are displayed in Table 1 for courses that were offered after a complete redesign. These same measures from comparison courses are also displayed. These measures were collected from the same courses that were targeted for interventions during the last semester prior to the start of the RFY project. Typically, this was from the Fall Semester 2015, but for two courses, the class is not taught in the Fall and so we used data from the Spring 2016. The average grade in the redesigned classes was significantly higher than in the previous semester:  $t_{(910)}=4.581$ ,  $p<.001$ . DFW rates were one-third lower in the redesigned courses:  $\chi^2_{(1)}=80.508$ ,  $p<.001$ . The one-year retention rate was 10% points higher in the redesigned courses:  $\chi^2_{(1)}=68.001$ ,  $p<.001$ .

<b>Table 1: Measures of Student Success</b>			
	Prior to Intervention Fall 15 and Spring 16	Following Intervention Fall 16 through Spring 18	Significance
Number of Students	2217	2016	
Mean GPA	2.18	2.54	<.001
DFW Rate	36%	24%	<.001
One-Year Retention Rate	67%	77%	<.001

One final observation can be reported: the effort has been accompanied by an increase in the campus-wide retention rate. The one-year, fall-to-fall, first-time freshman retention rate calculated by the university for reporting to the Integrated Post-secondary Education Data System (IPEDs) has averaged 65.6% over the five years prior to the start of this project (STD=1.74). This past year, the one-year, fall-to-fall, first-time freshman retention rate was 67.9%. This was not an all-time high retention rate, but at 2.3 percentage points higher than the previous year, was an unusually good one. Based on chance variations it would occur about once every 10 years ( $p=9.68\%$ ).

## Discussion

The primary objectives of the study were demonstrated. 1) Faculty members were able to use faculty communities of practice to acquire an understanding of an array of pedagogical techniques. Cumulatively, the faculty read, analyzed, and added information about many techniques that they did not possess before. 2) Faculty members were able to introduce success-oriented pedagogies into gateway courses. Students experienced redesigned courses in Introductory Accounting, Biology, College Skills, Composition, Economics, Geology, History, Mathematics, Psychology, Sociology, and Statistics. 3) The redesigned courses were associated with improved student learning. Many of the interventions were accompanied with efforts to track aspects of student success such as direct comparisons of answers on quizzes from students who had learning within a traditional classroom and from a redesigned classroom. Overall, students from the redesigned classrooms demonstrated more mastery of the course material. 4) If students can learn more effectively, this should lead to improved grades within their classes, higher levels of student success, and a lower DFW rate. In fact, the redesigned courses were associated with better grades. The mean grade (as measured by a 4-point scale with 4 as an A) in those classes were more than a third of a grade higher than in those classes prior to the redesign. The DFW rate was significantly lower in the redesigned courses (24% versus 36%). 5) Over a longer time horizon, the improved student learning could lead to increased retention and graduation rates. Over a one-year period, the retention rate for students who enrolled in the traditional-style classes was 68%. Over the same duration, the retention rate for students who enrolled in the redesigned courses was 78%.

One of the important aspects of these faculty communities of practice is their size and their freedom to explore. The average size of each PIG was 6-8 faculty, which provided ample discussion time by all participants as well as a variety of techniques explored (as each faculty member in the PIG selects a different technique to present to the group). Additionally, the members of the PIGs decide collectively which techniques to learn about/explore. They are therefore, inherently interested and invested in the process and outcomes, which supports previous findings by Wenger-Traynor (2011) that indicate significant success factors for communities of practice are self-governance and a sense of ownership.

Another positive attribute of the PIGs was the extent to which it afforded communication between faculty and administrators and between faculty members. One example is that the PIGs

provided an effective way to transmit information about the values of the university as well as performance feedback. The efforts to improve student success are greatly enhanced by providing specific targeted feedback. For instance, our faculty are typically unaware of student success measures such as the DFW rate for their class or the retention rate of students enrolled in their classes. Our faculty have also been unaware of what sorts of techniques and strategies other faculty might use to address similar issues. The faculty did not have clear or consistent information as to the values and goals of the university such as whether the school is worried about grade inflation, or whether the school wants to use gateway courses as a de facto selection mechanism, for example. The PIGs served as a venue to discuss meaningfully these issues within small groups. This supports research by Wenger (2002) that suggests that communities of practice work well when the strategic goals and needs of the university intersect with the interests of the members.

The observed improvements in academic success are notable. However, the history of reform efforts in higher education suggests that improvements will not be sustainable without altering fundamental characteristics of the system (Elmore, 1996). In short, the academic, administrative, and incentive structures that enable and promote the features of the traditional classroom pedagogies are potent and persistent. To maintain the continuation and increased exploration of innovative curricula and pedagogy, campus administrative and faculty leadership needs to be engaged with the process and supportive of the goals. One example of academic, administrative, and incentive structure that can overwhelm a reform effort such as this one is the routine faculty evaluation systems. These can include promotion and tenure reviews, teaching award and course development grant criteria, performance evaluations, and salary reviews. Hainline (2010) suggests that linking measures of teaching effectiveness and recognition for innovative teaching are needed to sustain pedagogical transformations.

Scaling the innovations developed by the PIGs is imperative for student success on our campus. DeDe (2016) suggests that successful scaling requires depth (effectiveness), sustainability, spread, shift (decentralization of ownership) and evolution over time. The PIGs have demonstrated effectiveness of the techniques in our classrooms on our campus. They have sustained their efforts across multiple semesters so far. We are now working on the concepts of spread and shift. We are adding new PIGs every term. The number of faculty interested in being a member of a PIG is greater than our ability to add new PIGs at this point. One third of our full-time faculty who teach gateway courses are currently participating in PIGs and this certainly contributes to DeDe's concept of spread of practice. Additionally, we are piloting incentivized workshops for adjunct faculty to extend the products/techniques developed by faculty who participated in the PIGs to all faculty that teach the redesigned courses. These workshops will provide professional development opportunities as well as an opportunity for the adjunct faculty to contribute to creating the products used in the classrooms.

We believe that the processes that the PIGs have followed to date are well suited to our campus context. The successes are being expanded and sustained across terms as outlined above. We believe that these steps recognize that "designing an innovation for sustainability and scale is a multi-stage iterative process that involves teachers as co-evaluators and designers." And we hope that it will prevent "implementing a top-down intervention as a method of scaling up...(which) is a recipe for continued failure" (Dee Dee, 2016).

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## **A Case Study on Experiential Learning in a First-Year General Education Course**

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*Abstract: Experiential-learning provides opportunities for students that feature a variety of high-impact practices including first-year seminars, internships, community learning, collaborative projects, and capstone seminars. To offer these high-impact practices for students, faculty from across disciplines and majors must be willing to incorporate these opportunities within their courses and degrees. Indiana University Kokomo has offered two successful programs to support these high-impact practices. One program, the Kokomo Experience and You (KEY), supports faculty in the development and implementation of events and activities to support student learning. The other, the Student Success Academy Faculty Fellows Program, provided faculty members the opportunity to examine research and concepts so that they can better promote student success in their classrooms. Building on the success of these two programs, a third initiative, the Experiential Learning Academy (ELA), was launched in 2018, funded by a Reimagining the First Years mini-grant from AASCU.*

*Key Words: experiential learning, faculty fellows model, high impact practices, Re-imagining the First Year, case study*

### **The Re-imagining the First Year of College Initiative**

From 2016-2018, Indiana University Kokomo was one of 44-member institutions participating in the Re-Imagining the First Year of College (RFY) project, which was facilitated by the American Association of State Colleges and Universities (AASCU) and funded by the Bill & Melinda Gates Foundation. The participating institutions represented colleges and universities serving low-income, first generation, students of color; a subset of the student population that has been historically underserved by higher education. Working together, the 44 institutions developed and implemented institutional transformations to enhance the first year of college and to create sustainable change for student success. The driving force behind the RFY project was to redesign the first year of college – a critical year for student success with the highest rates of student attrition.

At Indiana University Kokomo (IUK) two institutional initiatives were implemented to meet the expectations of the RFY project. The first was a campus-wide experiential-learning program called the KEY (“Kokomo Experience and You”), which features a wide variety of high-impact practices, including first-year seminars, internships, community learning, collaborative projects, and capstone seminars, as well as other forms of active, transformative learning, such as retreats, domestic travel, and career development. Under the KEY, students complete at least one of these experiences each year (for a total of four experiences for those students who come in as freshmen for four-year programs). Through a wide variety of hands-on experiences, students learn to apply and integrate their knowledge and skills, collaborate with others, take initiative, and develop a mindset for success and service. Along the way, they make important connections with classmates, faculty, staff, administrators, and members of the larger community while developing the confidence to become their best selves.

The second initiative was the 2017 Indiana University Kokomo (IUK) Student Success Academy Faculty Fellows Program which provided a small group of faculty members the opportunity to research and study concepts (i.e. transparent learning, “Decoding the Disciplines,” etc.) so they could better promote student success in their classrooms. The IUK Student Success Academy emulated the faculty learning community model which was introduced out of Miami University in the early 2000s. Cox (2004) describes the faculty learning community as a “cross-disciplinary faculty and staff group...who engage in an active, collaborative, yearlong program with a curriculum about enhancing teaching and learning...” (p. 8). These communities of practice allow faculty members to investigate a teaching and learning topic through an interdisciplinary lens and eventually realize the connections and integration of disciplines in regard to teaching and learning. The faculty learning community model is routinely a program to allow faculty to work within an administration role for a limited period of time, so they can develop their expertise as teachers. The IUK Student Success Academy Faculty Fellows program was a yearlong program where eight faculty members came together once a month to learn about teaching and learning strategies focused on the first-year student. The group had a common book, attended workshops, met with guest speakers, and held monthly discussions. Each fellow was then required to report on what they had learned by providing a hands-on workshop for campus faculty members.

The success of the KEY program and the Student Success Academy Faculty Fellows program highlighted additional unmet needs of student-learning and faculty engagement. The first was a need to integrate high-impact, experiential learning activities into first-year, general education courses in particular, versus a broader implementation across any course, in any year. The second was a need to increase participation in these activities among nonresident faculty. In 2017, the IUK Center for Teaching and Learning (CTLA) was awarded an RFY mini-grant from AASCU to launch a third initiative called the Experiential Learning Academy (ELA) that would meet the expectations of the RFY while simultaneously addressing these two, unmet needs. The ELA was built on the concept of the faculty learning community model, but unlike previous models that focused on student success in general, the ELA focused on experiential learning in particular. Moreover, the ELA was especially interested in involving lecturers and adjunct faculty, many of whom teach courses enrolled by first-year students, but who represent a faculty base that has historically not been as engaged in the culture of experiential learning on the IUK campus. The overarching goal of the ELA was to meet the expectations of the RFY by focusing on the development and implementation of high-impact experiential learning activities into first-year courses through a collaborative fellowship of resident and nonresident faculty.

## **The Experiential Learning Academy**

### *Teaching and Learning Styles*

The Experiential Learning Academy (ELA) was launched to address unmet student learning needs and faculty engagement with a specific focus on experiential learning. The goals of the ELA were to address these needs by 1) integrating high-impact experiential learning activities throughout the curriculum, and not just as a one-time event; 2) focusing specifically on first-year, general education courses that enroll many undeclared students who, without an identified major, may miss out on discipline specific KEY events and, as a result, may feel less connected to the campus; and 3) actively recruiting nonresident faculty who disproportionately represent instructors teaching a first-year, general education course and can be essential in creating the connection between the student and the campus, and improving overall retention rates.

The theoretical foundation of the ELA was based on four teaching and learning styles with demonstrated and purposeful experiential learning activities that serve a diverse range of student learners (Caulfield and Woods, 2013; Kuh, 2008). These four teaching and learning styles were selected by the faculty participating in the ELA in an effort to create uniformity across each course, regardless of the high-impact, experiential learning activity implemented in each individual course and because they have evidence-based approaches to teaching first-year courses (Lindblom-Ylance et al, 2006; Hativa and Birenbaum, 2000). The four teaching and learning styles that guided the development and implementation of the high-impact, experiential learning activities included:

*First-Year Seminars and Experiences* – the first-year seminar provides collaborative learning opportunities for students through frequent interactions with faculty that emphasize critical inquiry, writing, intellectual and competency skill development (Kuh, 2008).

*Collaborative Assignments and Projects* – the focus of this teaching and learning style is to enhance collaborative problem-solving skills and to increase active and empathetic listening skills. The collaborative focus of these goals increases a student's broader understanding of others from different backgrounds and life experiences (Kuh, 2008).

*Diversity/Global Learning* – teaching and learning activities developed with a focus on diversity and global learning emphasize student exploration of cultures and life experiences that are diverse from their own realities, ranging from local to global differences (Kuh, 2008).

*Service Learning, Community-Based Learning* – the focus of this teaching and learning style is to provide students an opportunity to apply what they are learning in their course work to a real-world setting via community outreach, service learning, or some other community-university collaboration. Overwhelmingly, the goal is to provide students a structured environment to give back to the community while reflecting on how their academic work is connected to their social citizenship (Kuh, 2008).

The first ELA meeting focused on identifying, defining, and discussing these four learning styles, with faculty developing an initial curricular plan to integrate one or more of these teaching and learning styles into their course. Throughout the semester, the ELA focused on each of these four teaching and learning styles individually through readings, guest speakers, workshops, and discussions.

### *Faculty Recruitment*

The faculty coordinator for the ELA facilitated two faculty recruitment efforts. In the first, the faculty coordinator met with the Academic Deans overseeing disciplines that represent the largest offerings of general education courses. The purpose of this meeting was twofold: to introduce the Deans to this new initiative; and to solicit recommendations for nonresident faculty the Deans identified as someone who would benefit from participating in the ELA. There are many nonresident faculty teaching on the IUK campus, and the Academic Deans served as the best resource for recommending those faculty that would continue to teach for IUK, that were interested in improving their experiential learning pedagogy, and had shown an interest in enhancing student learning through the KEY and other experiential learning opportunities. The second recruitment effort was a campus-wide call-out to all resident and nonresident faculty to apply to the ELA. Resident and nonresident faculty were eligible for the ELA if they met the following criteria:

- They were scheduled to teach a first-year, general education course during the 2018 Spring semester
- They could commit to attending bimonthly meetings facilitated by the ELA faculty coordinator throughout the 2018 Spring semester

- They would develop and implement at least one, high-impact, experiential learning activity into their first-year, general education course
- They would assess and share student learning outcomes based on the experiential learning activities they develop and implemented out of the ELA

Interested faculty members were asked to submit their 2-3 paged application responding to the following prompts:

- What interests you most about this opportunity?
- Share an idea on experiential learning for first-year, general education courses you would like to begin to implement or explore.
- Identify which general education course(s) you will work on during the Experiential Learning Academy.
- What experiences or expertise will you contribute to a faculty fellows program? (e.g. collaborative work with faculty, teaching presentations to faculty, previous experiential learning projects, etc.)
- What are some ways you want to impact the quality of your students' learning? What are some differences in learning that you would like to see as a result?

Nine faculty fellows were selected to participate in the ELA, representing disciplines from Criminal Justice, English (two faculty fellows), History, Philosophy, Psychology (two faculty fellows), and Sociology (two faculty fellows). These disciplines are all housed in the School of Humanities and Social Sciences which offers the most general education courses on the IUK campus. The nine ELA faculty fellows included two tenure-track assistant professors, one non-tenure-track clinical assistant professor, five lecturers, and one adjunct professor.

### *The Faculty Fellows Model*

The ELA was modeled from the Student Success Academy Faculty Fellows program that brought faculty from multiple disciplines together to collaborate on improving their pedagogical approaches towards experiential learning. Unlike the year-long Student Success Academy Faculty Fellows program which included a faculty presentation after the program concluded, the implementation of the ELA was limited to one semester, per guidelines established in the RFY mini-grant.

To accommodate this condensed timeline, recruitment and acceptance into the ELA occurred in December 2017 and the first ELA meeting was scheduled for early January 2018. From January through May 2017, there were bimonthly meetings that included discussions and workshops on how to develop and refine teaching methods to enhance student learning through experiential learning, there were invited guest speakers, readings on experiential learning and student learning, and a peer-review of each ELA faculty members experiential learning activity. The focus of the peer-review was to provide feedback on assessing student learning outcomes for the experiential learning activities, to address sustainability of the project, and to identify which theoretical teaching and learning student the activity supported. The overarching purpose of these bimonthly meetings, workshops, discussions, and peer review was to ensure that the ELA was meeting the criteria outlines in the RFY mini-grant, and that ELA faculty fellows would develop a set of tools and skills needed to continue integrating

high-impact, experiential learning activities for all their first-year, general education courses in particular, but all their courses in general.

### *Course Profiles*

Faculty fellows had the option to develop or revise an existing high-impact, experiential learning activity to meet the expectations of the ELA. All the high-impact, experiential learning activities were scheduled to occur late in spring semester, allowing faculty fellows time to collaborate on, and revise their high-impact, experiential learning activities based on material and resources gained in the bimonthly ELA meetings. There were eleven courses taught by the nine faculty fellows in the ELA. One faculty fellow from English integrated two different high-impact, experiential learning activities in two different English courses. Another faculty fellow from Psychology used the same high-impact, experiential learning activities in two separate sections of an Introduction to Psychology course. In total, 328 students were enrolled in an ELA identified course during the spring semester 2018. Table 1 provides a summary of the course titles and student enrollments.

**Table 1. ELA Courses and Student Enrollments**

Course Title	Student Enrollments
Introduction to American Criminal Justice	35
Introduction to World Masterpieces	09
Introduction to Drama	12
Elementary Composition	20
History of Western Civilization	28
Introduction to Philosophy	37
Introduction to Psychology (3 sections)	121
Introduction to Sociology (2 sections)	66
Total # Enrolled Students	328

What follows are brief descriptions of the course-specific high-impact, experiential learning activities developed or revised, and implemented as part of the ELA.

*Introduction to American Criminal Justice – Mock Trials:* Students were asked to research a news story, movie, or novel that presented a socio-moral dilemma as well as provided enough information to stage a mock trial with a prosecution and defense team. In small teams, students worked to collect evidence for either their prosecution or defense arguments. Students who were not acting as legal counsel were the jurors. Only primary sources and evidence relevant to the time could be used in the trial.

*Introduction to World Masterpieces – Analyzing Social Reactions to Murder:* The purpose of this assignment was to help students relate the societal frenzy of Jack the Ripper to the creation of *The Lodger* by Marie Belloc Lowndes (2015). Through use of historical documents and modern perspectives, students determined what led to the murders, how and why the killer(s) chose the victims, and who they think Jack the Ripper might have been. Using those conclusions and a systematic, logical approach, students developed their own theories about whether modern technology could have been useful in solving the cases.

*Introduction to Drama – Students Teaching a Community Play:* The purpose of this assignment was to give students an opportunity to share their insights and to teach others about a play with the goal of encouraging others to read or view it. As part of a small group, students selected a one-act play that discussed a significant current issue; students chose *Trifles* (domestic violence), *Am I Blue?* (neglect

and abuse), and *The Wedding Story* (relationship choices and miscommunication). In groups, students gave a teaching presentation of the play, with discussion focused on the play's issues pertinent to a campus-wide movement to increase awareness of sexual and physical abuse.

*Elementary Composition – A Blog for Student Writers:* The assignment was designed for students to construct a blog, from start to launch, minimal facilitation from the instructor. Key benchmarks for the assignment were established, but the instructor adjusted those based on the direction students took the blog.

*History of Western Civilization – Reacting to the Past:* Students in this class participated in a *Reacting to the Past* mini-games focusing on Greek and Hellenistic philosophy. The game takes the form of an in-class student debate about several major themes that were debated by historical philosophers during the decline of the Classical Period of Greek history. The week before the in-class debate each student was assigned the role of a historical philosopher and provided background information on their assigned philosopher, as well as readings composed by, or about him or her. Students were required to read secondary and primary sources before preparing a position paper from the perspective of their philosopher so they were prepared to debate with other student/philosopher roles in class.

*Introduction to Philosophy – Communities of Inquiry:* Students were introduced to five community of inquiry sessions at the end of each learning module where they were presented with a unique learning stimulus (i.e. a short children's book, music, poem, film clip, thought experiment, or short philosophical reading). Students were tasked with developing questions for the stimulus and then they gathered in a community of inquiry to answer the questions and complete a metacognition reflection of the original student questions. Throughout the semester, the instructor gradually transferred the role as facilitator to student leaders.

*Introduction to Psychology – Taking Sides:* Students were assigned a series of readings that present various controversial topics. In response to an overarching question, the readings provided a position in support of, and a position in opposition, to the question. There were two topics selected for the course – the instructor provided both topics. For the first topic on whether addiction is a brain disease, the instructor provided the questions for the students. For the second round, the instructor provided students a choice of topics from which two sections chose gun control and one section chose whether or not video games are harmful to minors. In addition to reading the assigned readings, students were expected to do additional research to support their position, complete pro/con worksheets, self-reflection statements, and participate in online and in-class discussions and debates.

*Introduction to Psychology – Art and Meditation:* Students in this class spent a semester researching the health benefits of meditation and art. Students organized two campus-wide meditation and art workshops where students could meet for an hour to do some art (e.g. color, paint, draw) and participate in student-led meditation.

*Introduction to Sociology – Text to Life:* This multifaceted assignment began with students reading the memoir *I am Malala: The Girl Who Stood Up for Education and Was Shot by the Taliban* (Yousafzai, 2013), writing a short essay summarizing and analyzing the account from a sociological perspective, then engaging in a student-led, active class discussion. Next, students learned about educational inequalities in the U.S., specifically related to access to early childhood education through additional readings and a community partnership with Kokomo's Very Early Childhood Education Center (VECEC). Students visited the VECEC and worked together to collect books for the center via collection boxes on campus and in local businesses. Finally, students completed the "Text to Life" assignment, which included a reflection piece that asked them to rate the learning activities and assess their own learning.

*Introduction to Sociology – Group Deviance Project:* Randomly assigned student groups worked to develop and implement a deviant act on campus or the community. Deviant acts could not be illegal, could not result in any property damage, or impose any physical or emotional harm to other persons.

Examples included playing tag in the library or sitting at a restaurant table with strangers. Students recorded their deviant acts, presented this to the class, and wrote a group paper on the sociological relevance of their deviant acts.

These course profiles provide evidence of the effectiveness of the ELA to integrate high-impact, experiential learning activities into first-year, general education courses. Participating faculty fellows utilized information gleaned from the ELA discussions, workshops, trainings, and peer feedback to develop and implement these particular activities into their courses. Since a disproportionally high percentage of students enrolled in these courses are undeclared students, the ELA was successful in providing high-impact, experiential learning opportunities that were not linked to a specific major, increasing rates of student engagement among undeclared students. Finally, by including Academic Deans as part of the initial recruitment effort, the ELA was able to recruit a majority nonresident faculty to participate as faculty fellows (77% faculty fellows were nonresident faculty). The Deans assisted in the identification of nonresident faculty that would benefit from participating in the ELA, but moreover, their support of both the ELA and the participating faculty established the significance of high-impact, experiential learning across the general education curriculum, as well as the recognition that all faculty should have an opportunity to enhance their pedagogical toolkit to develop these types of learning activities.

## **ELA Outcomes**

The goal of the ELA was twofold: to integrate high-impact, experiential learning activities into first-year, general education courses, and to increase nonresident faculty participation in this curricular development. The outcomes of these two goals can be observed across three broader areas including the implications for first-year, general education courses; the implications for experiential learning activities; and the implications for the professional development for nonresident faculty. In this section, we address the implications of the ELA for these three groups.

### *First-Year, General Education Courses*

The KEY program has successfully established the significance of experiential learning as part of student learning. Through the KEY, departments receive support to develop and offer experiential learning opportunities for students that directly map to the students degree of study. These KEY events are essential in demonstrating the applicability and relevance of a particular major in real world settings. This is a strength and limitation of the KEY, because so many KEY events are offered for students as part of their major. The first implication of the ELA was recognizing that experiential learning needs to occur across all stage of a student's college experience, even before they declare their major. By offering these types of activities within first-year, general education courses, students who have yet to declare a major will have increased opportunities to engage in experiential learning. The long-term effects of offering experiential learning activities within first-year, general education courses may improve retention rates for students who are still searching for their major while they are working towards completing their general education requirements. Furthermore, since all students, including transfer students, will enroll in at least one general education course on campus, the ELA approach ensures that all students have an opportunity to participate in an experiential learning activity that is based on the course they are taking and not the major they have declared.

### *Experiential Learning Activities*

A second implication of the ELA was using a theoretical foundation to develop and implement high-impact, experiential learning activities that could be integrated throughout the semester within a first-year, general education course. Faculty fellows in the ELA spent the semester identifying, defining, and analyzing high-impact practices using the four teaching and student learning styles addressed earlier. The purpose of this focus was to establish a theoretical foundation as the motivation for the experiential learning activities. While many of the experiential learning activities that are offered on our campus are linked to specific degree outcomes, developing these types of activities for a general education course required a different approach, one that could be replicated across any general education course and could serve a diverse student body.

### *Nonresident Faculty*

The ELA was particularly interested in recruiting nonresident faculty fellows. Since the RFY mini-grant required a focus on first-year, general education courses, including nonresident faculty, who disproportionally teach these courses, made logistical sense. The third implication of the ELA outcomes was having a majority representation of nonresident faculty participate on this initiative. Often times nonresident faculty are not considered for these types of initiatives; a consequence of their contractual employment terms (i.e. these are not faculty seeking tenure). However, these faculty represent the majority of instructors who are teaching, interacting, and mentoring first-year students as they decide about their major, or even decide about returning for a second year. While the campus provides unique training opportunities for all resident and nonresident faculty, the ELA was one of the first initiatives that over-recruited from nonresident faculty, to increase their participation in a campus-wide initiative. As a result, many of the nonresident faculty from the ELA have been included on subsequent grants to integrate experiential learning activities across general education courses.

## **Conclusion**

Building on the foundations of the KEY program and the Student Success Academy Faculty Fellows model, the Experiential Learning Academy provided faculty teaching a first-year, general education course opportunities to learn evidence-based practices in teaching and learning that focused on experiential learning in particular, instead of student success in general.

One of the largest measures of success stemming from the ELA was observed among faculty efforts to scale-up high-impact, experiential learning activities at an institutional level. For example, at the conclusion of the ELA, faculty fellows established a long-term goal to continue developing and implementing high-impact/experiential learning activities across all their courses. To accomplish this goal, the ELA faculty fellows established clear pathways between student learning outcomes, general education outcomes, faculty professional goals, and departmental outcomes. Faculty fellows spent time evaluating how their coursework is both influenced by, and complementary of their departments.

For these reasons, one of most significant outcomes of the ELA was outlining an ideal, reciprocal relationship that promotes high-impact, experiential learning activities and outcomes meeting the needs of the students, the faculty, the department, and the University. The faculty fellows spent time brainstorming systematic approaches to improving the loop between these four levels that is sustainable, rewarding, and attractive to each of the four groups. From these discussions, the faculty coordinator received a small grant to support faculty interested in running a Reacting to the Past game during Spring semester 2019, following the same structure of the Faculty Fellows Model with a specific focus on implementing one particular high-impact, experiential learning activity.



The ELA is an initiative that could be replicated across any campus that is committed towards integrating high-impact, experiential learning activities across first-year, general education courses. No matter the delivery of general education on any campus, utilizing theoretical foundations to develop and implement high-impact experiential learning activities serves the student, the faculty and the University. Furthermore, as the proportion of adjunct, lecturer, and non-tenure track resident faculty continue to rise across campuses, developing opportunities for these faculty to develop evidence-based, high-impact practices will improve overall student learning.

The culmination of the high-impact, experiential activities implemented with support from the ELA has left students with a greater understanding of the college experience, and enhanced confidence to accomplish their goals. If you provide students with meaningful purpose and the tools for exploration and discovery, they will exceed expectations, create something new and usually quite good, and find the people they want to be.

### Acknowledgements

This project was possible due to a Reimagining the First Years (RFY) mini-grant from the American Association of State Colleges and Universities, to help RFY campuses incorporate High Impact Practices into their first-year curriculum. The authors would also like to thank the KEY Initiative and the Center for Teaching, Learning and Assessment at Indiana University Kokomo for their support.

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## **Empowering Faculty to Support Academic Persistence through a Blended, Scholarship-Based Faculty Professional Development Program: The Persistence Scholars Program**

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*Abstract: While it is well-known that faculty-student interaction is key to student success, few institutions have directly leveraged faculty in supporting academic persistence. Many myths about persistence proliferate, and faculty can unwittingly hinder persistence by implementing the wrong kinds of practices. Faculty are most empowered to support student persistence when they understand and care about this issue. They are also better equipped to help when they have a good, current command of the body of knowledge relating to persistence. To address this, we created a blended faculty development program to engage faculty in the scholarship of academic persistence, addressing myths and misconceptions about persistence, and expanding understanding of what it is like to be a first-year student at our university. The Persistence Scholars Program engaged a total of 32 faculty over two semesters, beginning with pre-readings and an in-person daylong workshop followed by an eight or ten-week course. The curriculum was built around a central text, *Completing College* by Vincent Tinto, and selected empirical and germane articles. Participants engaged in online discussions and two experiential projects, including one that asked them to complete an activity that would enhance their understanding of first-year students' experiences. Assessments of this program focused on participant ratings of target competencies (e.g., the ability to identify and dispel myths about why students persist), perception of usefulness of different specific assignments and materials, and suggestions for how the program can be refined for future cohorts.*

*Keywords: academic persistence, mindset, faculty professional development, student retention, first-year students*

Given the social, health, and economic benefits of an undergraduate education, there is a national call to increase college completion rates and reduce inequities. According to the Commission on the Future of Undergraduate Education (2017, p. 4), “about 60 percent of students who pursue a bachelor’s degree complete one. And about 30 percent who pursue a certificate or associate’s degree earn the credentials they seek. And completion rates, when analyzed by gender, race, ethnicity, and socioeconomic status, reveal substantial inequalities.” Northern Arizona University’s participation in the AACSB Re-Imagining the First Year of College (RFY) initiative grows out of our commitment to improve undergraduate education—particularly for underserved populations—and the premise that changing the college experience for students during their first year is the key to achieving that goal.

We know that the institutions that are most successful in retaining students are the ones in which there is concerted, coordinated effort across the institution to help students persist. To make the most of student persistence initiatives, everyone in the institution needs to be working together:

leadership, advising, residence life and yes, faculty. Faculty hold the keys to the student academic experience, which in turn, plays a critical role in retention and degree completion. Vincent Tinto puts it this way:

If institutions are to significantly increase the retention and graduation of their students, especially those from low-income backgrounds, their actions must be centered on the classroom. They must focus on improving success in the classroom, particularly during the first year and lead to changes in the way classes are structured and taught and, in turn experienced by students, especially those who have not fared well in the past. (Tinto, 2012, p. 15)

Given the fundamentally important role that faculty play in student success, we focused our RFY attention on building the capacity of faculty to more fully engage in our efforts. Complementing our institutional efforts such as monitoring predictive analytics, sending automated alerts to students, redesigning curriculum to make pathways clear and coherent, expanding advising and offering supplemental instruction, we aim to empower faculty to become informed, effective advocates for practices that support student persistence. Faculty have the power to positively affect persistence through the ways in which they teach and interact with students, as well as by advocating for the right kind of institutional policies.

Academic persistence is backed by a rich and informative literature about how academic persistence works among students from diverse backgrounds and in diverse settings. However, the people best placed to influence students' persistence in college courses—faculty—tend to have less familiarity with this work. In other words – just as faculty sometimes enter the profession without direct instruction on how to teach, they enter without understanding how to help students persist. This lack of familiarity can include the body of scholarly work and also knowledge about one's own home institution.

In such an environment, myths about persistence proliferate, and faculty who are otherwise quite committed to student success can unwittingly hinder persistence by implementing the wrong kinds of practices or giving the wrong kinds of messages to students. Furthermore, even those who do implement the right practices may stop when they encounter criticism from peers or other types of pushback. Even if the majority of faculty don't believe outdated ideas, such as that college should be a weeding-out process or that the only way to promote retention is to admit better students, the more vocal critics can dominate the dialogue.

Faculty are most empowered to support student persistence when they understand *and* care about this issue. They are also better able to overcome pushback when they have a good command of the body of knowledge relating to persistence, students' experiences at their institution, and their institution's efforts to support student success. This mastery is best created by offering the opportunity for critical inquiry, application to one's own discipline, and active interrogation of data, as opposed to passive exposure to facts, figures, and prescriptive advice.

### **The Persistence Scholars Program**

We created the Persistence Scholars Program (PSP) to empower faculty to become informed, effective users of and advocates for practices that support student persistence. We envisioned this program as a faculty professional development experience, but unlike most such experiences, which tend to be organized as one-to-three day conference or workshop events, PSP extends over multiple weeks within a semester.

Besides the extended time of participation, there are other important characteristics that set PSP apart from typical faculty professional development programs. PSP is structured as a blended learning course, with face-to-face components bracketing an asynchronous online course. Core readings, consisting of a central text—*Completing College* by Vincent Tinto—and selected empirical articles,<sup>1</sup> anchor these parts of the program, serving as the basis for the online discussions. These readings were chosen specifically for their focus on institutional and pedagogical factors that can help or hinder academic persistence. In contrast to typical faculty professional development programs, they did not focus on development of basic pedagogical skills, which we believe are adequately served by other resources and programs.

Another key component of PSP are two assignments, the Field Project and the Application Project. Conceived not as conventional academic research papers but rather as documentation of self-designed experiential learning projects, these assignments offered the opportunity for participants to put into practice the concepts encountered in the scholarly readings side of the course. With the overarching goal of building deep understanding of issues (social, emotional, logistical, academic) relating to persistence, the intent of these assignments was to engage faculty in experiencing some aspect of campus life from the student perspective and to encourage them to make substantive changes to their own practices based on what they learned in the program.

We designed the course to engage university faculty across disciplines, with an approach that emphasized a combination of scholarly work and first-person application and perspective-taking. Our desired outcomes for participants were that they be able to:

- Explain the major factors that contribute to student attrition at the course level and institution level
- Identify trends, disparities and other important patterns in student persistence data at national, university, and department/college levels. In other words, participants will be able to give an evidence-based answer to the question: Who persists, who drops out, and why?
- Identify and dispel some of the major misconceptions about attrition and persistence
- Discuss and apply concepts from the research literature on persistence
- Use the capabilities listed above to effectively advocate for practices that promote student persistence

In this article, we will describe the Persistence Scholars Program, including its initial iteration in Fall 2017 and the second, revised iteration in Spring 2018. Following the presentation of quantitative and qualitative assessment data for both iterations, we offer observations that include the perceived strengths of the program, unexpected outcomes, and recommendations for institutions wishing to set up similar professional development programs focused on academic persistence.

The primary way we recruited participants was by connecting the PSP to another large, established program at our institution: the [First Year Learning Initiative](#), or FYLI. The FYLI program certifies gateway and lower-division courses that, through a process of reflection and redesign, have implemented design and pedagogical practices that support student success (for additional details on FYLI, see Miller & Scarnati, 2014). This program provided us with a ready-made audience of over 100 faculty and staff affiliated with these courses, whom we could contact with recruiting emails in the months leading up to the launch of the PSP. We also offered FYLI courses the opportunity to extend

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<sup>1</sup> Our reading lists, program syllabus, instructions for interactive learning activities, and complete assessment instruments are all available on request. For copies, please contact the corresponding author, Michelle Miller, via email: [michelle.miller@nau.edu](mailto:michelle.miller@nau.edu).

the certification of their courses—which otherwise involved a fairly demanding set of recertification activities—if two or more core faculty members completed the PSP. In addition, we provided an honorarium of \$150 in professional development funds and a copy of *Completing College*. Michelle Miller (MM), the Director of the FYLI program, facilitated the first PSP cohort.

## Cohort 1: Fall 2017

### *In-Person Kickoff Meeting*

This was the only synchronous or face-to-face component required of participants. Lasting approximately five hours, the kickoff meeting was intended to build enthusiasm, frame the program topics and objectives in a powerful way, offer an opportunity to address questions, and allow participants to get acquainted with one another and with the facilitator prior to the online component. It also included a hands-on data exploration exercise, described below.

Participants were asked to complete several readings and view a 25-minute video prior to the meeting. Table 1 gives an overview of the program schedule as well as a week by week break down.

**Table 1. Overview of program schedule and components.**

Week number	Main activities	Due from participants
Week 0	In-person kickoff meeting	Complete pre-reading and Tinto Chapter 1 and view assigned video on student persistence
Week 1	Read Tinto Chapter 2, “Expectations”	Post about Chapter 2
Week 2	Read Tinto Chapter 3, “Support”	Post about Chapter 3
Week 3	Read Tinto Chapter 5, “Involvement”	Post about Chapter 5
Week 4	Read article on lay theories and mindset	Post about the lay theories article in online discussions, Submit plan for the field project
Week 5	Read article on transparency in course design/pedagogy	Post about the transparency article in online discussions
	Work on field project	
Week 6	Read article on the impact of small-stakes assessment on achievement gaps	Post about the achievement gap article in online discussions
	Work on application project	
Week 7	Self-guided learning about	Post a finding about persistence in online

	persistence at NAU	discussions, Share resources for NAU persistence data in the course wiki
Week 8	Complete field projects	Post about field project in online discussions Submit write-up of field project
Week 9	Complete application projects	Post about application project in online discussions, Submit write-up of application project
Week 10	Wrap up week	Post reflections in online discussions Exit assessments

*Introductions, framing presentation, and discussion.* After leading an icebreaker introduction exercise and offering an overview of the day, the facilitator invited participants to write down on a half sheet of paper one or more reasons they have heard, or that they themselves believed, about why students drop out of college. Example reasons included “lack of social support,” “lack of interest in content,” “working long hours,” “immaturity,” and “do not know what the discipline is.”

Participants posted these sheets on an 8’x4’ “sticky wall” that allowed them to easily review all the posts at once. The subsequent discussion focused on whether these reasons were supported, or not supported, by evidence, and any patterns participants noticed.

The framing presentation followed this discussion. It consisted of slides interspersed with discussion, anchored around “Five Key Claims” about persistence, which served as a philosophical anchor and framework for the rest of the program. Table 2 lists the Five Key Claims.

**Table 2. Five key claims**

1. Persistence matters (for individuals, for communities, for the nation and world).
2. Significant disparities exist with respect to persistence; these both reflect and perpetuate ethnic, class, and economic inequalities.
3. We know a lot about how persistence works:
  - a. The kind of teaching that students experience matters
  - b. Institutional environment and policies matter
  - c. The early college experience is especially important
  - d. Student expectations of us, our expectations for students, belongingness/connections, and support are all major influences
4. There are effective strategies for addressing disparities and increasing persistence in general, although these are not always easy or cheap to carry out in a sustained fashion.
5. Faculty have the power to positively affect persistence through the ways in which they teach and interact with students, as well as by advocating for the right kind of institutional policies.

*Guided data exploration activity.* This one-hour activity involved participants in exploring empirical evidence relating to claims about academic persistence. For example, if they believed that work hours predicted persistence, they could search online for data relating paid work to metrics such as GPA or graduation rates. Participants worked in pairs and reported out to the larger group at the end of the hour. We provided loaner laptops, and representatives from the university library circulated during the activity to answer questions and provide additional guidance.

*Guest presentation.* Our Associate Vice President of the Office of Enrollment Management and Student Affairs provided an overview of the history of and major milestones in the academic study of persistence.

### *Online Course*

The online component of the PSP was divided into three modules: Setting Conditions for Persistence, Interventions and Strategies, and Persistence at NAU. There was also an abbreviated closing module called Wrapping Up. Each of the three main modules was divided into three one-week segments.

Most of the one-week segments focused on one or two assigned readings, either chapters from *Completing College* or journal articles. We provided framing questions prior to the readings and facilitated an online discussion about the readings. The discussion prompts were typically open-ended, asking participants to offer their reactions, insights or other comments pertaining to the readings.

As an example, below is the assigned reading and framing questions for week 2 of the course, within the Setting Conditions for Persistence module:

*Please read - Tinto book, Chapter 3: Support*

*This chapter focuses on the role of support – academic, social, financial – on student success.*

*As you read it, please pay particular attention to Tinto's claim that academic support is the most important form of support. How does academic support work, according to Tinto, and what are the most effective ways of providing it to diverse student populations?*

*Also consider: What are the most important things you think faculty should know about other forms of support (financial and social)? Are there particularly successful or interesting interventions (for any type of support) that you notice from the example institutions Tinto presents?*

The online course also focused on the two projects. Participants posted about their projects within discussion boards, and the module folders also contained reminders and information about the projects. The first of these was the field project, as follows:

*The purpose of this assignment is to give you a first-hand experience of some aspect of what it is like to be a student at NAU, through the student perspective. You'll choose some activity, or realistic simulation, that captures some aspect of the student experience. For example, you might go on a campus tour, attend an orientation for a program, sit in on a gateway class, or complete a simulated advising appointment. Please feel free to be creative and choose something that will give you a new view of our institution from the student side.*

This assignment was split into two parts, first, an informal 1 to 3 page description of the planned activity and reasons why the participant chose it. The second part consisted again of an informal 1 to 3 page summary and reflection about the activity.



For the second of the two projects, the application project, participants submitted another short written summary of how they planned to apply what they learned in the PSP to either their own practice, or how they planned to disseminate it to colleagues.

### *Assessment*

We designed two online exit surveys to serve as assessments, focusing on participant perceptions and self-reported impacts, particularly those that mapped onto the desired outcomes. These included open-ended comment-style questions as well as closed-ended Likert-style questions.

These were split into two separate surveys, one non-anonymous and one fully anonymous. Having one of each type allowed us to require the survey as a condition of completing the course, as we could see who finished the non-anonymous one (and offer personal reminders to those who had not turned in the survey), while allowing participants to submit completely candid responses on the anonymous one.

### *Outcomes and Observations from Cohort 1*

*Completion rates.* Twenty-two participants signed up for the program and attended the kickoff workshop. Of these, 19 (86%) completed all or most of the online coursework, and were awarded certificates of completion, while the remaining were missing major parts of the online coursework, and/or stated partway through that they would not be able to complete the program.

*Projects.* Application projects tended to focus on participants' own teaching practices, although several did choose dissemination to colleagues as an option for applying concepts from the program. Example planned applications included:

*I will change my teaching practice by more meaningfully implementing lay theory.*

*I am curious to what impact it may have on exam grades if the students take a quiz every Thursday throughout the semester, except when they have exams or when we have guest speakers on those days.*

*I plan to incorporate the small stakes assignment in a class I have not taught before.*

*I would like to create a resource for the Academic Transition Programs, and then post it on our ATP Resource Folder housed on BBLearn.*

Several participants reported that they had piloted or implemented these proposed changes during the PSP semester, including:

*The NAU 120 course that I am teaching this semester includes mandatory weekly meetings with a biology mentor to review BIO 181 content as well as provide a mentor relationship for each student.*

*My goal was to encourage my students to use the Writing Commons to get support on their final paper. As an incentive, I offered them 25 extra credit points.... Out of my approximately one hundred NAU 130 students, I would say at least one-third told me they planned to use the writing center.*

Field projects were, in our opinion, the standout experience of the PSP. The most popular types of field experience were those in which the participants went through some resource or program, such as advising or tutoring, in the role of a student. Participants frequently reported that this

highlighted the importance or value of these resources, or gave other insights about how they might help support student success:

*The field project that I chose was to observe biology mentors during their tutoring sessions with my NAU 120 students.... I have observed several mentoring sessions over the past couple of weeks and so far I have been impressed with the level of knowledge that each of the mentors have, not only of BIO 181 content, but also about NAU and the college experience.*

*For my Field Project Experience, I scheduled an appointment with the Writing Commons.... For a more “real” experience, I searched for a paper I wrote a few years ago while in graduate school at NAU.... I learned quite a bit from this experience. It was helpful for me to understand the process because I can now tell students what to expect. I am offering Extra Credit to my students to visit the Writing Commons for the final paper. I actually took my edited paper into my classes and showed them that even I was able to get helpful feedback on a graduate level paper. I think that also helped normalize the idea of going for many of them.*

*I chose NAU’s Academic Success Centers as my project site in order to learn what sort of academic support students could get on campus, and how that support is related to the student retention rate. Thus, I conducted tutoring observations and individual interviews with the staff and tutors.... This triggered a shift in my understanding of the problem as I had earlier assumed that students struggled more with lesson content rather than with more general issues related to transitions and/or adjustments. These findings came as a significant ‘ah-ha’ moment for me and delivered a larger understanding of the problem.*

*Here, I report on my experience for attending an initial pre-med advising workshop at NAU.... The workshop was run by two advisors who delivered a presentation on the different types of medical programs and how to prepare for medical schools applications while at NAU. They described the entrance requirements and how to work towards satisfying them. Also, they outlined how to compile an application and mentioned some tricks to stand out.... My favorite part of the presentation was a schedule that specified what to do and when.*

In a twist on the student-perspective approach, several participants chose to attend one or more classes in an unfamiliar discipline (e.g., math and physics, in the case of an English professor, or a first-year seminar, in the case of a Global Languages professor):

*One of the things that I noticed is that the Peer TA is referred to as the Peer Facilitator. And his role during that class period was exactly that. He was participating in the discussion and adding insightful information about the topic and [at] the end of the class he was suggesting new topics to discuss with the instructor for upcoming classes.*

*The instructors and the approach to instruction made it okay for me to be a little lost or to be wrong. I’m so grateful to work at a university where teaching is a priority and folks are good at it. Really good! The students at NAU are really lucky.*

*Exit assessment surveys.* Seventeen participants (94% of program completers) responded to the non-anonymous survey and 19 responded to the anonymous survey (100% of program completers, or 86% of all those who started the program; we are unable to determine whether any non-completers completed the survey as it went out to all who enrolled).

The first, non-anonymous survey began by asking about any planned changes to one’s own teaching practice based on the program. Example comments included:

*Emphasizing formative assessments more in my classes; speaking directly to the factors that increase persistence*

*Announcing a course plan that lays out how many assignments are required and when they will be announced/due*

*More culture, added support for learning methods outside of the classroom, more quizzes, more emphasis on participation at university events*

Communication with colleagues was then queried. Example comments on this topic included:

*I think I will be more confident and proactive in discussing misconceptions as well strategies that colleagues could use to support students.*

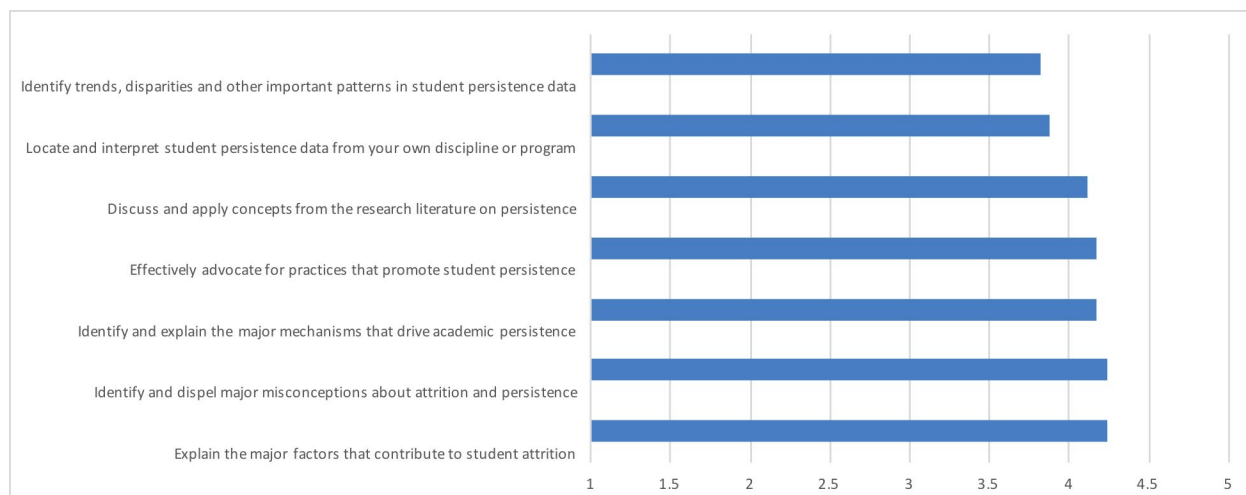
*While my colleagues are quite attuned to student needs, I plan to reinforce the statistics and interventions we have learned about in class.*

*I feel like I have already made changes this semester with respect to discussions with colleagues and topics we covered in this program. Some of my colleagues have always sort of just blamed the students if they are not doing well, but I have already started discussing different factors that make it difficult for many students, like having to work full time, and what are some things we can maybe do to help them.*

Participants were then asked to list the three most important takeaways from the program. Of takeaways listed as first in importance, 35% involved values or conceptual understanding pertaining to persistence, e.g., “persistence and belonging go together” or “student persistence is complicated and multi-layered.” The next most prevalent responses, 24%, involved concepts from the readings, e.g., “learning about the concept of transparency in teaching.” Responses involving student support techniques and resources were next at 18%, e.g., “engagement with students.” Remaining responses involved appreciation of student perspectives, e.g., “appreciation for the struggles students go through,” and specific teaching/course design techniques, e.g., “small-stakes assignments” (12% each).

Subsequent items asked participants to self-rate their knowledge about student persistence before and after the program, using a Likert-style scale where 1 = *Not knowledgeable at all* and 5 = *Very knowledgeable*. Mean ratings before the program were 2.59 ( $SD = 1.23$ ), compared to 4.18 ( $SD = .73$ ) after the program, a difference that was statistically significant at an alpha level of .05 (paired  $t = -6.154$ ,  $df = 16$ ,  $p < .001$ ).

Participants also rated their competency with skills pertaining to persistence, where 1 = *I could not do this at all* and 5 = *I could do this very well*. Mean ratings are presented in Figure 1. Ratings for these items were all well above midpoint, with the lowest-rated skill being “Identify trends, disparities and other important patterns in student persistence data” ( $M = 3.82$ ) and the highest-rated skill being “Explain the major factors that contribute to student attrition” ( $M = 4.24$ ).

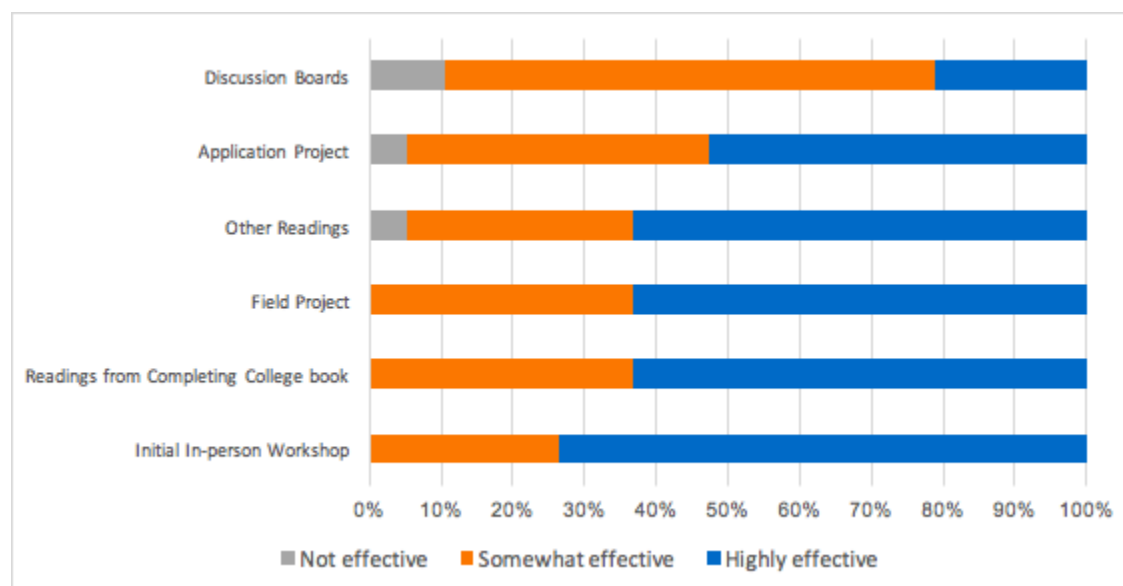


**Figure 1. Mean self-rated competency on skills pertaining to persistence, ranked from lowest-rated to highest-rated.**

Comments pertaining to who would benefit from the program in the future included several who mentioned new faculty, and several who cited faculty who teach a large proportion of first-year students, or who taught FYLI courses. Interestingly, several other respondents cited the opposite, including faculty who do *not* teach first-year students regularly and senior/tenured faculty, as well as upper administration. The final item inviting comments about the program elicited remarks from only four individuals; all four comments were variations on having learned a lot from the program.

Turning now to the anonymous survey, the first item asked participants to rate their overall opinion of the value of PSP as a professional development experience, on a scale where 1 = *Not very valuable* and 5 = *Very valuable*. The mean rating was 3.95, with *Very valuable* as the most frequently selected option (11 out of the 19 total responses, or 58%). Participants could offer comments on this question as well; of the six comments offered, four were uniformly positive, e.g., “As a new instructor at NAU, this course did help me think about various issues from different angles. Sharing ideas with other peers was definitely helpful.” The two remaining comments were mixed, e.g., “Content is generally useful, but way it was presented made it less engaging.”

The next several items asked about the effectiveness of specific components of the program on a three-point scale, 1 = *Not effective*, 2 = *Somewhat effective*, and 3 = *Highly effective*. Frequencies for these are shown in Figure 2. Ratings for these different components were generally good, with the lowest-rated being the online discussion boards and the highest-rated being the initial in-person workshop).



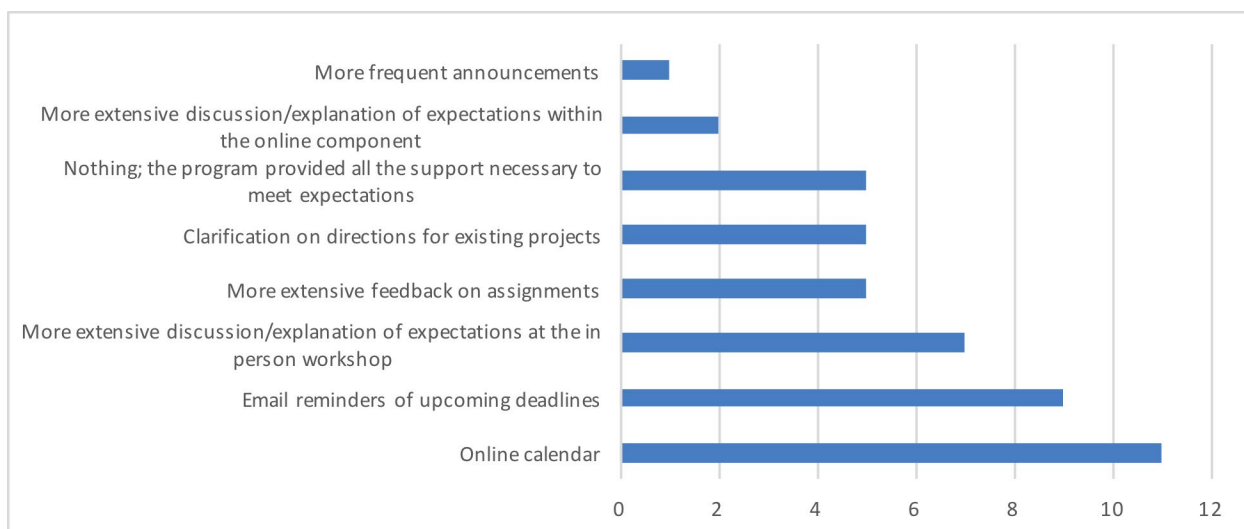
**Figure 2. Frequency counts for the effectiveness of different components of PSP, ranked from lowest-rated to highest-rated.**

The overall high ratings for the kickoff workshop are important, especially given that this part is particularly labor- and resource-intensive. However, a caveat is that 4 of 6 open-ended comments were either moderately negative (“could have drilled in to major information in a more direct fashion”), or mixed (“it was great to be with other faculty, but I would have liked to engage more with those folks and the material in person”). Only two were entirely positive, and one of those simply stated “I do better with face to face.”

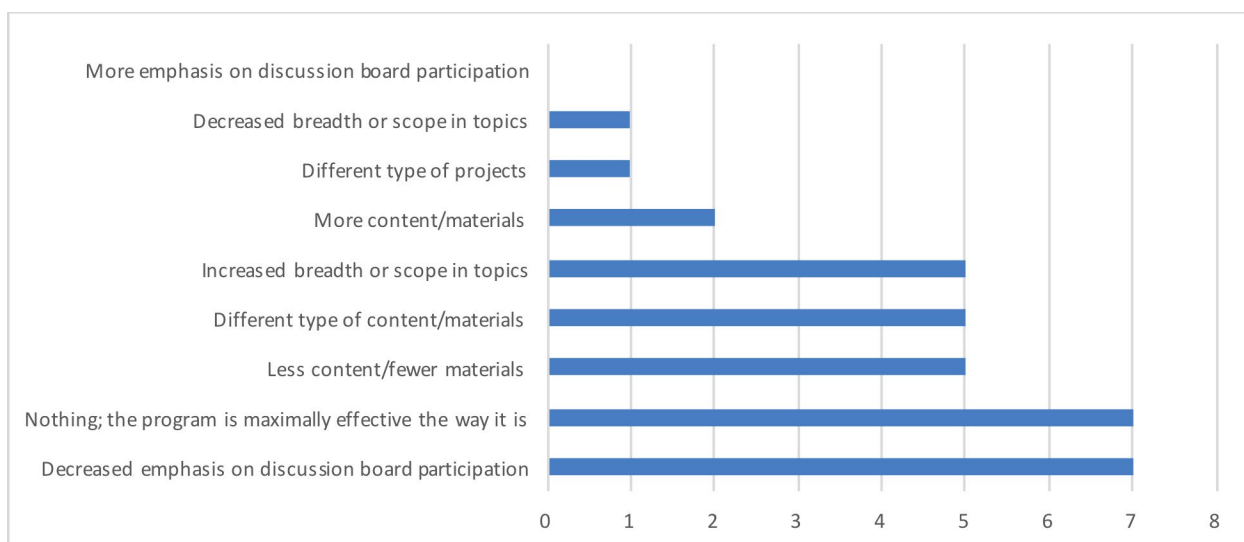
This last comment in particular echoes some other suggestions that faculty are not generally enthused about the blended format, with comments on later items such as “I have never been a fan” of online discussions or that they were confused about how to use the wiki function within BlackBoard Learn. Several respondents stated that they would have preferred additional workshops or other types of face to face meetings.

Ratings on other items followed this pattern of generally positive, but mixed. Regarding the length of the program, responses were: 50% *about right*; 33% *somewhat long*, 11% *definitely too long*, 6% *somewhat short*, and 0% *definitely too short*. For the pace of the program, responses were: 55% *about right*; 6% *somewhat slow*, 6% *definitely too slow*, 33% *somewhat fast*, and 0% *definitely too fast*.

Particularly important for our second iteration of the program were the ratings on the two survey items asking what resources the participants believed would have helped them meet the expectations of the program, and suggested changes that would make it more effective. Figures 3 and 4 give the count of responses for each option. (Because these questions were formatted as check all that apply, we have provided response counts instead of percentages). For helpful resources, an online calendar and email reminders were the most frequently listed, followed by more extensive discussion and explanation of expectations. For suggested changes, decreased emphasis on discussion board participation was the most frequently cited, although an equal number of responses cited *nothing; the program is maximally effective as it is* (i.e., no changes are needed).



**Figure 3. Response counts for which resources would help participants meet the expectations of PSP, ranked from fewest to most responses.**



**Figure 4. Response counts for what changes would make PSP more effective, ranked from fewest to most responses.**

On the remaining survey items, participants rated whether they would recommend the program to a colleague, and made other summary comments about the quality and effectiveness of the program. Several commented that the program workload seemed excessive, or that the workload was appropriate but difficult to manage given other demands on their time during the semester. However, there were several overall positive comments as well, including “Strong point is that education becomes a collaborative and mutual endeavor among all aspects of the institution and student,” and “Overall, very good program.” In response to whether participants would recommend PSP to colleagues, 65% said *Yes, definitely*, 30% said *Yes, maybe*, and 4% (one response in total) said *No, definitely not*.

## Cohort 2: Spring 2018

Rachel Koch (RK), serving as the Interim FYLI Director, facilitated the second PSP cohort. RK brought a participant-centric perspective to the facilitator role, having been a participant in the first PSP cohort. Based on participant feedback and assessment data, slight modifications were made to the schedule, assignments, and the frequency of in-person engagement.

### *In-Person Kickoff Meeting*

Similar to the first cohort, the in-person kickoff meeting was intended to build enthusiasm, frame the program topics, offer an opportunity to address questions, and allow participants to get acquainted with one another and with the facilitator prior to the online component. Participants were asked to complete the same assignments prior to the meeting. At the meeting itself, the progression of activities and topics was as follows.

*Part 1: Introductions and framing of persistence.* After a brief introduction, the facilitator led a 7-minute writing activity. Participants were asked to answer the following questions:

- Why are you here?
- What do you hope to get out of this program?
- What are some of your goals for Persistence Scholars?

Participants shared responses with a neighbor, and following the group discussion, each participant introduced him/herself to the group by answering Attendance Questions when their name was called (name, department, number of years teaching, a goal you hope to achieve from this program). Activities like the Attendance Question activity were directly discussed and offered as models for options attendees might explore in their own courses.

Following the icebreaker, the facilitator shared her goals with participants: to share ideas, to build community, to engage with one another and students in a new way, and to close some loops/locate new resources.

As a way to extend the initial activity—and help familiarize participants with the online learning management system (LMS)—they then posted a response to one of the following questions into the Persistence Scholars BBlearn shell:

- How might this Attendance Question activity be modified for one of your own classes?
- Do you do something similar to engage with students (and take attendance/learn names in a class you teach)?
- Do you have a good idea for an attendance question you could ask your students?

The next hour was devoted to an overview of the kickoff session and a discussion of the pre-session readings in groups. Opportunities for attendees to collaborate were carefully cultivated. Questions about what stood out and how these items relate to their work at the university allowed for an in-depth and meaningful conversation.

A framing of persistence followed this discussion. First, small groups discussed why they believe students fail to persist (including what they hear from other people). Ideas were written on the board and shared in the main group. The “Five Key Claims” about persistence, detailed in Table 2 were also shared to serve as a framework.

## *Part 2: Guest presentation, coursework, and projects*

In addition to the academic study of persistence presentation described above, a business analyst provided an overview of retention and persistence tracking efforts at NAU. The presentation included how data are captured, organized, used, and reported, and also described the role of predictive analytics in identifying and supporting student persistence. Participants were encouraged to think about how they might work with data for their Application Project later in the semester.

After lunch, the facilitator spent time reviewing the syllabus, including expectations for the online component, the two experiential assignments, and the upcoming in-person session. As a way of framing the course, participants were asked to approach the course as a conversation: with themselves, one another, the instructor, and with students.

### *Online Component*

The online component of the PSP was divided up by time period instead of modules. The pre-orientation materials and each of the eight week's readings and discussion questions were accessible by date. The online discussions and experiential assignments were similar to the first cohort, each one-week segment highlighted one or two assigned readings, either chapters from *Completing College* or journal articles. The only major difference was that participants were asked to present their Field Projects to the class in the style of a 3-Minute Research Project.

### *In-Person Session # 2*

The second in-person session took place halfway through the eight-week program. It was intended to be a check-in with participants and an opportunity to review the student data approaches that were introduced in the Kickoff session. The session lasted two and a half hours. Participants began by detailing progress on their Application Projects which afforded an opportunity to provide feedback and/or suggestions to the participants as they moved forward.

The second part of the session focused on dissemination. Participants presented their Field Projects to the group in the style of the 3-Minute Research Project. All presentations were recorded and were uploaded on the LMS for participants to download for future use.

### *Outcomes and Observations from Cohort 2*

*Completion rates.* Thirteen participants started the course, though only 8 completed the program (60%).

*Exit assessment surveys.* The same two online exit surveys served as assessments. Five participants responded to the non-anonymous survey and 6 responded to the anonymous survey. While this response rate represents a reasonable proportion of the overall cohort, it is a small number of surveys overall. We therefore want to strongly qualify all of the quantitative findings for the second cohort, noting the limitations of drawing conclusions based on so few data points.

The non-anonymous survey comments about planned changes to teaching practice included:

*Although I provide lists with links to NAU resources, I will be more proactive with students about discussing them. In addition, I will address more specifically the transition to college.*



*Accentuate the seminar methodology of discussion-based interaction based on assigned materials whereupon students in a collaborative atmosphere grapple with thoughts and concepts derived from readings or discussions. By grappling with thoughts and concepts, the goal for students is threefold, (1) learn to develop and ask questions about the thoughts or concepts, (2) learn to form arguments, supported by facts, and effectively communicate their evaluation regarding the thoughts or concepts, and (3) learn to evaluate presented arguments for consistency and coherence.*

*More referrals, more academic skills exercises, incorporating evidence about note-taking and with regard to memory cues*

For communication with colleagues, example comments included:

*I am already as strong an advocate as I can be for my students, and for course and program quality.*

*During the next fall faculty retreat, [E] and I will lead a discussion about persistence and specifically address ways faculty can be proactive in their courses.*

*I'm not sure... It would be situational.*

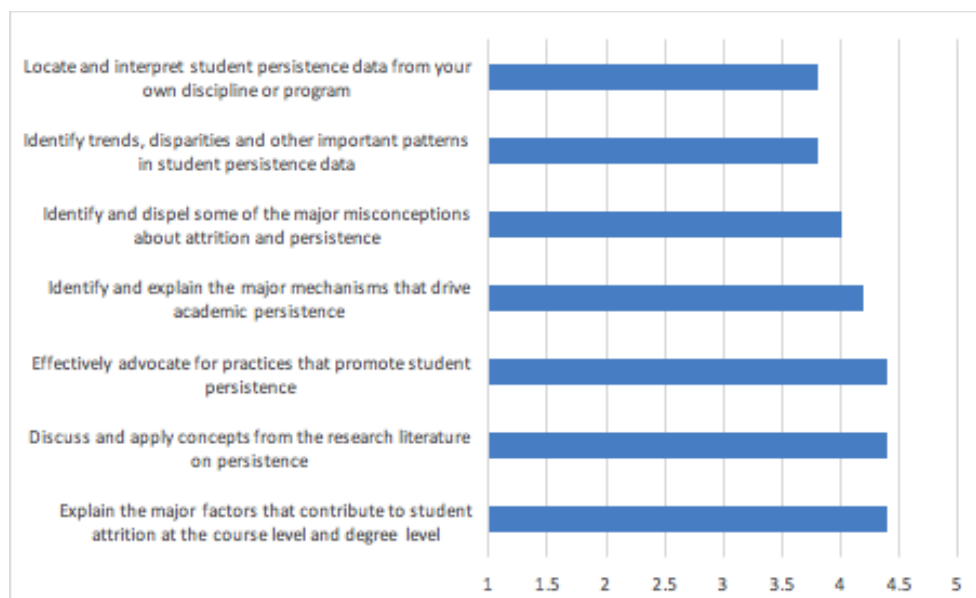
*Planning a presentation for the faculty retreat to share all of these new concepts, but also feeling energized about teaching in general and hoping to share that with others*

*First, I would address the value of the program and the [opportunity] to reframe my approach and methodologies to develop curriculum, create classroom dynamics among students and instructor, and be more attentive to students as persons.*

Of the takeaways listed as first in importance, three specifically referenced learning about lay theory, e.g., “I appreciated learning about lay theory. It seems like a no-brainer, but the authors of the article together with my experience on the campus tour really made me think of the importance of addressing the transition to college.” Of the two remaining comments, one mentioned expectations, and the other mentioned the importance of the instructor-student relationship.

Mean ratings (on a five-point scale) for self-rated knowledge about student persistence before the program were 2.4 (SD = 1.67), compared to 4.4 (SD = .55) after the program. (We did not test for statistically significant differences between these given the small number of data points.)

Mean ratings (on a five-point scale) for competency with skills relating to persistence are presented in Figure 5. Ratings for these items were all well above midpoint, as they were in Cohort 1, with similar patterns; the two lowest-rated skills and the highest-rated skill and the highest (“Explain the major factors that contribute to student attrition”) were identical.



**Figure 5. Mean self-rated competency on skills pertaining to persistence, ranked from lowest-rated to highest-rated, Cohort 2.**

Comments pertaining to who would benefit from the program in the future included new faculty, personnel involved in veteran and military services, and several who cited chairs and others responsible for undergraduate curriculum.

The final item inviting comments about the program elicited additional comments about the impact of the program:

*The important thing is to keep bringing more Faculty into it so it puts the issues up front for them.*

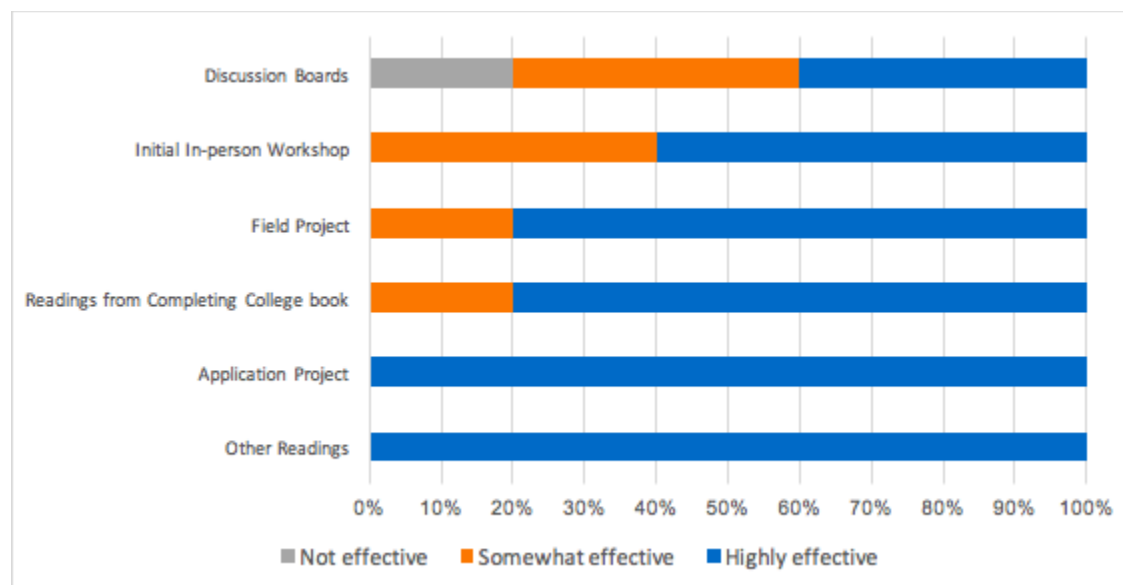
*I appreciate the care that went into crafting the program and the availability of the instructors to address questions and comments.*

*There was an impact on my personal mindset and awareness of the issues, the data, the processes, which in turn will impact my teaching and interaction practices.*

Turning now to the anonymous survey, the mean rating for the overall opinion of the value of PSP as a professional development experience, on a five-point scale, was 4.83, with Very valuable as the most frequently selected option (5 out of the 6 total responses). This is nearly a full point above the rating on the same item from Cohort 1 (3.94); again, due to the small sample size we did not conduct statistical testing on this difference, but it speaks well of the improvements and relative impressions of the second iteration of the program.

Of the comments offered on the overall opinion item, all three were uniformly positive, e.g., “The program provided me with an insightful skill set and knowledge to include and apply teaching elements for student retention, understanding, and success;” I’ve been teaching 12 years and this program was a gift to better myself, develop understanding and compassion toward students, and to revise my methodologies,” and “So much professional development is targeted at the disciplinary level. While this is of course valuable too, I think all faculty should do more professional development related to student needs and pedagogy.”

The frequency of responses regarding the effectiveness of specific components are shown in Figure 6. Ratings for these different components were generally good, with the lowest-rated being the online discussion boards, as in Cohort 1. Unlike in Cohort 1, the application project and other readings were the highest-rated.



**Figure 6. Mean ratings for the effectiveness of different components of PSP, ranked from lowest-rated to highest-rated, Cohort 2.**

Below are some of the additional comments from the question about the Kickoff:

*This initial event provided the excellent introduction to the program and my involvement.*

*I prefer the dynamics of face-to-face even when some cannot be present.*

*Good intro but the stats folks need to do a workshop with real data (and interaction) rather than just talking about what they can do*

Comments in this section echoed in-person and email communication about the Kickoff session and the preference for in-person sessions and collaborations being favorable to working online.

Ratings on other items were nearly uniformly positive. Regarding the length of the program, five responded “about right” and one responded “somewhat long.” For the pace of the program, four responded “about right,” one responded “somewhat slow,” and one responded “somewhat fast.”

Regarding what would have helped them meet the expectations of the program, and suggested changes that would make it more effective, three respondents cited an online calendar and two cited more extensive discussion/explanation of expectations at the in-person workshop. Two said that nothing else was needed as the program was maximally effective as is. For suggested changes, decreased emphasis on discussion board participation was once again the most frequently cited (3 responses), one response cited increased breadth or scope in topics, and one response stated no changes were needed.

In response to whether participants would recommend PSP to colleagues, every one of the respondents said “Yes, definitely,” and some of the additional written comments were as follows: “I’ve mentioned this to several colleagues and what I had learned and how I can apply the concepts,” and “Exposure like this keeps the important teaching activities and research in the forefront.”

Other general comments on the program included mostly positive responses, specifically that the in-person and collaborative nature of the course as well as the projects and readings were useful. However, two respondents commented that they would have liked more explicit discussion about the expectations and time commitment.

With the caveat again that we had a very small number of responses to work with, these assessment data for Cohort 2 are encouraging, with the overall pattern of responses suggesting that participants had a valuable experience in return for time invested. As in Cohort 1, participants were somewhat critical of the online components, especially the discussions, but in general their impressions were highly positive. Participants also seemed to want more upfront information about the structure and expectations of the course, in particular, exactly when in-person meetings will take place. Conversely, they did not seem to appreciate the option of flexible or “to be determined” scheduling.

### *Conclusions*

Given that faculty members are critical to the success of students, comprehensive faculty professional development programming is necessary. There is no silver bullet or one-size-fits-all approach to bolstering faculty members’ practices based on a solid understanding of factors that influence academic persistence. We share our approach and experiences in the hopes of stimulating further developments in this neglected area of faculty professional development. This section is divided into observations, limitations, and recommendations.

*Observations.* We are encouraged by the results from the first two cohorts of the PSP. Faculty participated in and completed the program, an achievement that should not be taken for granted given the extraordinary limitations on faculty time particularly during the academic year. Comments from participants, work submitted as part of the application project, and ratings on our quantitative assessments all suggest a strong intent among participants to change their practices in ways that are likely to support student success.

Similarly, participant comments and ratings indicate that the program built important conceptual knowledge about academic persistence. In particular, participants referenced learning theories and concepts relating to mindset (e.g., lay theory), suggesting that these important ideas made substantial impacts on participants. A number also reported that in the course of the PSP, they felt more empathetic about or better understood the challenges faced by contemporary students.

This realization reflects what we believe is a more global objective for this type of program, which is for faculty to recognize the tremendous responsibility they have for student success. Barr and Tagg (1995) argued that in order to substantially improve student learning we must help faculty shift their focus from “teaching students” to creating learning environments that help students learn. For many faculty, this represents a significant mindset shift of their own. Traditionally, they may have focused solely on conveying content within a discipline, but this new mindset requires them to expand this focus to also include very mindful consideration of how they interact with students, what kind of feedback they offer and how they structure course features, such as formative assessments, to maximize learning. Umbach and Wawrzynski (2005) state that faculty members’ “behaviors and attitudes affect students profoundly, which suggests that faculty members play the single most important role in student learning” and retention (p. 21).

Coordinated, systematic professional development efforts are related to improved student outcomes, including higher retention and graduation rates as well as greater faculty satisfaction, engagement, and sense of belonging (Condon, Iverson, Manduca, Rutz, & Willett, 2016). The coupling of a supportive, empathetic atmosphere for learning about student success with a scholarly view of multiple dimensions of academic persistence, sets the PSP apart as an innovative approach to faculty professional development (FPD). Many FPD programs take place in concentrated workshop—or conference—style formats, which is necessary when such programs are built around guest presenters or when scheduling limitations take precedence. In these traditional faculty professional development opportunities, participants typically learn about just one or a few concepts at a time but might not integrate across concepts into a larger conceptual framework with the potential for larger impacts on practice. For example, faculty might learn about belongingness in one workshop and about giving effective feedback in a different workshop, though explicit connections are not integrated into the programming, thus potentially reducing the likelihood that they are integrated into teaching practices.

PSP's extended format (8-10 weeks) incorporated meaningful, authentic assessments with a focus on reflection and application, emulating active learning-focused teaching that we encourage our faculty to practice in their classes. Given our goal to create a network of faculty who are recognized for their interest and knowledge related to student academic persistence, the cohort model provided faculty an opportunity to interact with and learn from colleagues from across the institution. In addition, PSP's extended time, highly collaborative, highly interactive format incorporated asynchronous online format and face-to-face sessions (blended learning or mixed modality techniques) to maximize the amount and quality of engagement, while minimizing the logistical issues (e.g. lack of flexibility in faculty schedules) and time pressures that limit faculty participation in FPD.

This blended strategy, however, gave rise to some surprising and ironic findings. The modality of the program was the source of most of the negative commentary from participants, with a number specifically stating that they preferred a face-to-face interaction for this type of work during existing in-person sessions and in personal communications. In an effort to adapt to the needs of the participants, more in-person sessions were made available, yet the same participants failed to attend.

*Limitations.* The feedback from faculty provides some important caveats, but we stand by the potential of blending as a model for FPD. Given the growing importance of online and mixed modalities for learning in higher education (see, e.g., Garrison & Vaughan, 2008; Talbert, 2017), the blended model of PSP provided an important opportunity for faculty to understand and appreciate what it is like to be a student in this type of learning environment. Given that “expanding the use of blended and other technology enhanced course designs” is one of NAU's stated strategies to reach our student success goals, it is imperative that we provide relevant opportunities for faculty professional development.

Participant attrition was another limitation of the program. Although most participants who began PSP did complete it successfully, not all did, and this was felt to a greater degree in the second cohort because it was smaller to begin with. We can only guess the reasons for this might relate to the additional scheduled, in-person session where participants were asked to present the Field Project to the group. PSP saw 23% of this cohort drop during this time, likely due to the synchronous and public nature of the presentation.

PSP leaders also saw missed deadlines, requests for extensions, and a number of incomplete assignments. While this is to be expected in an FPD program, most PSP participants were receiving “credit” towards the recertification of a FYLI course, giving more weight to their course completion.

A final limitation we wish to acknowledge is that we do not yet know whether the impacts of the program will translate into substantive, lasting impacts on faculty practice nor do we know whether

any lasting impacts will translate into measurable gains in student success metrics such as course completion, degree progress or retention rates.

*Recommendations.* What should institutions wishing to establish similar programs keep in mind as they begin their planning? Here are our recommendations and lessons learned:

- Incentives are important for recruiting but need not—and ideally will not—be solely financial. We were successful in finding candidates by collaborating with an initiative already in progress, which could offer a different type of incentive (the opportunity to recertify within the program) as well as reach individuals who were already intrinsically interested in pedagogy and student success.
- Model the type of learning environment that you want faculty to create for students. Kuh, Kinzie, Buckley, Bridges, and Hayek (2006) found that students learn more in active, collaborative, and problem-focused classrooms where the environment is supportive and expectations are clear. We strongly emphasize experiential and active learning in the online as well as the face-to-face components.
- Consider a blended strategy but anticipate some significant faculty pushback. In future iterations of the program, we may address more explicitly the reasons for and the benefits of blended learning early in the program.
- Anticipate that there will be significant issues with late work, missing work, and attrition and have a plan for how these will be handled. Both MM and RK noted that it would be useful to have clearer expectations for success in the beginning of the program. This might mean that 80% of assignments need to be completed in the style of specifications grading (Nilson, 2015) in order for participants to successfully complete the program.
- Note that participants will need advanced planning, reinforced deadlines, and several reminders about upcoming assignments. Our participants even recommended the online calendar in the LMS.
- Choose materials and readings that are not only applicable, but also meet high standards of scholarship. Faculty respond well to approaches that emphasize critical inquiry and empirical evidence, and these can complement the more empathic, interpersonal side of teaching.
- Realize that cohort size plays an important role in the participant experience, particularly with respect to how participants interact with the facilitator. Having a larger cohort can be useful in creating a diversity of experience at the university but can be more difficult for the facilitator to manage during in-person sessions and in online discussion boards. Smaller groups might allow for personal relationships to develop among participants/the instructor, but it might feel more casual.
- Recognize that the mere act of creating a class environment for faculty is useful. Several participants commented about how PSP reminded them of what it was like to be a student again: having deadlines, struggling with technology, navigating texts, etc. They claimed that this experience helped them to be more empathetic towards students. In a personal communication with one participant, this was clearly evident: “I’ve been out of town since last Friday. I had thought that I had submitted my assignment, but as I’m prepping my 3-minute talk, I realize that I hadn’t! I’ve uploaded the assignment to BbLearn. I feel like I’m more in tune with the student experience already!”

We encourage other institutions to share their efforts to leverage faculty as part of their student success efforts. We implore institutions to invest in faculty professional development as a fundamental part of their overall strategic plan for improving graduation rates and ensuring student success.

### Acknowledgements

We obtained Institutional Review Board approval for reporting assessment data and participant comments for this project. Portions of this project were also presented in a [guest blog post for WCET](#) and some of the text from that post also appears in this publication. We would like to thank NAU's Office of Curriculum, Learning Design and Assessment, the Registrar's Office, Enrollment Management and Student Affairs, the Office of Faculty Professional Development, and the E-Learning Center for their gracious support in the form of expertise, staff time, and support to the PSP facilitators. We offer heartfelt thanks as well to the 2017-2018 Persistence Scholars for their time, hard work, and willingness to be a part of a new and evolving program.

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## **Students' Sense of Belonging: The Development of a Predictive Retention Model**

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*Abstract: Educational institutions increasingly recognize the role that student belonging plays in retention. Many studies in this area focus on helping students improve a sense of belonging before they matriculate or identifying belonging as a reason for their departure. This study measures students' sense of belonging at key transition points during the first year and finds that social belonging and academic performance are both strong predictors of retention that are not necessarily correlated. These results suggest that a comprehensive, focused outreach protocol that encompasses both social and academic factors could have a positive impact on student persistence.*

*Keywords: social belonging, retention, predictive measures, higher education*

Soon after St. Cloud State University joined AASCU's Reimagining the First Year initiative, which encourages institutions to think and act boldly when promoting the success of new incoming students, we turned our focus to belonging, which we recognized as the foundation for other strategies we planned to implement to improve students' experience. For more than forty years, researchers have recognized the critical role that social and academic integration play in students' decisions to remain in college and persist through to graduation (Tinto, 1975; Tinto, 1993; Tinto, 1997; Berger & Braxton, 1998). Hurtado and Carter's (1997) sense of belonging measure focused on students' attachment to the campus community as a whole while other researchers focused on attachment to various external communities or other university contexts (Hoffman, Richmond, Morrow, & Salomone, 2002; Kember & Leung, 2004; Lee & Davis, 2000). Zea, Reisen, Beil and Kaplan (1997) showed that both academic and social integration experiences impacted student persistence in college. In a study of 512 first-year students, Beil et al. (1999) found that academic and social integration predicted students' institutional commitments, which in turn influenced their persistence in college after three years. Researchers also have identified distinctions in the way that a sense of belonging to a campus community can be promoted for members of different student populations, including first-generation students (Woosley & Shepler, 2011; Stephens, Hamedani, & Destin, 2014) and students of color (Hurtado & Carter, 1997; Steele 1997; Lee & Davis 2000; Lane 2016). More recently, Jorgenson, Farrell, Fudge, and Pritchard (2018) have shown the importance of engaging students in defining what holistic social connectedness looks like on campus. Interventions such as orientation experiences, first-year seminar courses, mentoring, and promoting more intentional engagement with campus activities have all been shown to improve students' sense of belonging, and also their persistence.

The work of Walton and Cohen (2007, 2011), Walton and Yeager (2011), and Yeager *et al.* (2016) demonstrates that it is possible to improve students' sense of belonging before they matriculate,



and that a short, online activity designed to normalize students' concerns about making the transition to university had a long-lasting, measurable impact on a variety of success measures, including retention. This impact was especially noticeable among students of color and first-generation college students, who represent a key focus of the Reimagining the First Year project.

These and other studies clearly demonstrate the association between belonging and student persistence and that intervention can have a positive impact. What we still hoped to find, however, was a reliable way to measure students' sense of belonging so that we could identify at-risk students and engage them in more focused, individualized outreach designed to improve their chances of persisting to Terms Two and Three. This measurement would need to begin early in students' first term, when they are in the process of deciding whether to stay or leave (Levitz & Noel, 1989; Woosley, 2003; Woosley & Miller, 2009). By providing this information to faculty and staff members, we would be able to conduct timely, focused, and meaningful outreach that could have an impact on a student's decision to remain enrolled.

Fortunately, our campus community was already comfortable using predictive measures to guide interventions. We currently equip advisors of first-year students with information derived from two predictive tools – the Quality Points Predicted (QPP) score, which forecasts students' GPA at the end of the first term, and a retention index – to guide and inform their outreach. Each of these measures, however, is based primarily on pre-matriculation academic factors, such as ACT score and high-school GPA, along with various demographic factors. While these metrics serve as useful tools for identifying at-risk students, we knew that they did not reveal the whole story. We would consistently lose significant numbers of students whose academic indicators suggested a high probability of retention at the same time we were retaining students whom our existing models suggested would be likely to leave. Since we know that belonging plays a critical role in student persistence, we set out to establish a new predictive index to supplement our existing ones, a model that would allow us to measure first-year students' sense of belonging early in their first term and therefore help us make struggling students more visible to people who could help (Berger & Braxton, 1998). We were encouraged by a study conducted by Woosley and Miller (2009) that demonstrated early assessment was indeed predictive of real challenges to persistence and not “merely temporary struggles during a normal college transition.” Krumrei-Mancuso, Newton, Kim, & Wilcox (2013) have also recognized the predictive relevance of psychosocial factors that include involvement with college activity.

The tool we developed, which we refer to as a Sense of Belonging Index, adds a critical layer to our existing predictive modeling strategies to provide a more complex and complete picture of students' experience on campus. In addition to allowing us to identify and intervene with students who were struggling with a low sense of belonging, this index, when collected at key transition points, can also be used to measure the effectiveness of other student success initiatives and suggest ways to improve them as needed. Through that improvement, we hope to see increases in both student retention and completion rates at St. Cloud State University, particularly for students from traditionally under-represented backgrounds.

### **Developing a Sense of Belonging Index**

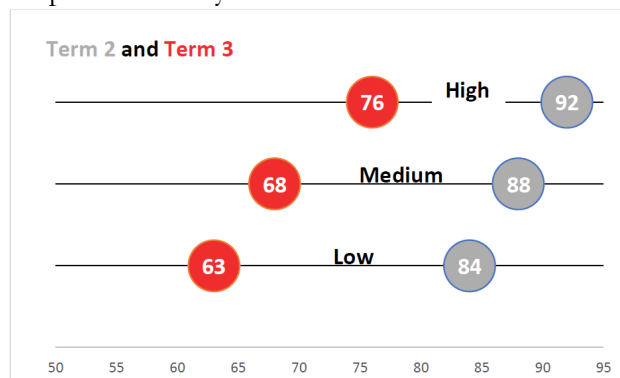
The Sense of Belonging index we have developed includes two aspects of belonging: belonging to institution and belonging to major, which we refer to respectively as Social Belonging and Academic Belonging. The index measurements were initially developed from the results of a Mapworks survey given to new entering first-years who started in 2014 and 2015. The survey consisted of 218 multiple choice or short answer questions and was designed to gauge students' attitudes towards social, financial, and academic aspects of life as a new campus member. These 218 questions were divided

into Factors, each of which measured a different aspect. Table 1 contains the Mapworks factors that were considered for the project, along with a short description.

**Table 1. Mapworks Factors 1 to 22**

Factor	Description
Factor 1	Commitment to the Institution
Factor 2	Self-Assessment: Communication Skills
Factor 3	Self-Assessment: Analytical Skills
Factor 4	Self-Assessment: Self-Discipline
Factor 5	Self-Assessment: Time Management
Factor 6	Financial Means
Factor 7	Basic Academic Behaviors
Factor 8	Advanced Academic Behaviors
Factor 9	Academic Self-Efficacy
Factor 10	Academic Resiliency
Factor 11	Peer Connections
Factor 12	Homesickness: Separation
Factor 13	Homesickness: Distressed
Factor 14	Academic Integration
Factor 15	Social Integration
Factor 16	Satisfaction with Institution
Factor 17	On-Campus Living: Social Aspects
Factor 18	On-Campus Living: Environment
Factor 19	On-Campus Living: Roommate Relationship
Factor 20	Off-Campus Living: Environment
Factor 21	Test Anxiety
Factor 22	Advanced Study Skills

Factors 1 and 11-20 were used to determine a baseline Social Belonging Index (SBI) and factors 7-10 and 21-22 were used to determine a baseline Academic Behaviors Index (which differs from the Academic Belonging Index, or ABI, which will be introduced later). Students answered questions on a scale from 1 to 7 and we averaged responses to determine each student's belonging indices. Indices were grouped using quartiles as cut scores to sort students into Low, Medium, and High belonging groups. Figures 1-2 and Tables 2-3 present the results from the 2014 and 2015 Mapworks surveys correlated with Term 2 and Term 3 persistence and GPA.

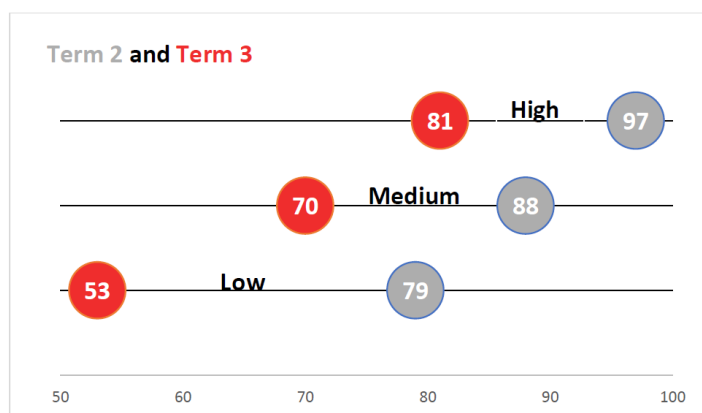


**Figure 1. Academic Behavior Groups and Retentions Rates: Term 2 and Term 3**

**Table 2. Academic Behavior Groups versus Term 1 GPA**

Level	Avg. GPA	Lower 95%	Upper 95%	N
Low	2.51	2.43	2.60	494
Medium	2.69	2.63	2.75	1072
High	3.05	2.92	3.17	248
<b>Total N</b>				<b>1814</b>

These results, which show an association between Academic Behavior Index, GPA, and retention, mirrored what we would have expected from our existing retention prediction model. The results from the Social Belonging Groups (Figure 2), however, revealed that social belonging played a more significant role in predicting persistence to Term Two and Three than we had anticipated (Woosley & Miller, 2009).

**Figure 2. Social Belonging Groups and Retentions Rates: Term 2 and Term 3**

While the persistence rate difference between the High and Low on the Academic Behaviors scale was 12% in Term 2 and 13% in Term 3, the difference between High and Low on the Social Belonging was significantly larger: 18% and 28%, respectively. These results indicate that Social Belonging had a much higher impact on retention than Academic Belonging (Tinto, 1993; Woolsey 2003).

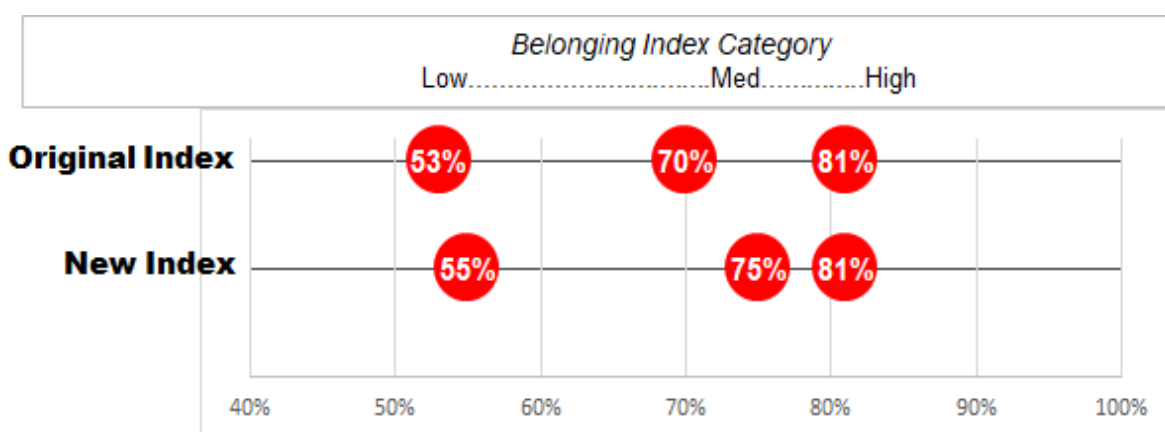
We also note that GPA was not strongly correlated to SBI level (Table 3), which suggests that a social belonging measure might capture academically high-achieving students at risk for non-retention or allow us to change our strategy for outreach to academically low-achieving students who have a high belonging score and are therefore more likely to persist.

**Table 3. Social Belonging Groups versus Term 1 GPA**

Level	Avg. GPA	Lower 95%	Upper 95%	N
Low	2.71	2.61	2.81	397
Medium	2.66	2.59	2.71	1149
High	2.83	2.71	2.95	268
<b>Total N</b>				<b>1814</b>

Having demonstrated the importance of social belonging as a critical factor for determining retention, we sought to construct a more streamlined survey that would allow us to track students' sense of belonging at critical transition points throughout their time on campus. We also wanted to find an academic measure that moved away from self-reported classroom and study behavior, and instead focused on students' perceptions of their position and relative sense of belonging in a classroom setting (Steele & Aronson, 1995; Steele, 1997; Dweck 2008).

An analysis was conducted for each of the eleven factors that contributed to Social Belonging and their related questions to determine their correlation and significance to Term 3 retention. The results found that Factors 1, 11, 13, 15 and 16 had the strongest effect. Two corresponding questions to each of these five Factors were selected based on their strength in predicting Term 3 retention. A second Social Belonging Index analysis was run on these ten questions using the 2014 and 2015 Mapworks data, referred to in Figure 3 as New Index, to see if the retention rates for each belonging category aligned with the original index.



**Figure 3. Retention Rates: Original Social Belonging Index and New Social Belonging Index**

Given the close alignment of retention rates and Social Belonging categories for both the Original and the New Indices, we felt confident moving forward with the ten chosen questions reflecting the five Social Belonging factors for use in predicting retention. Questions were reworded to improve clarity and allow questions to stand on their own. Mapworks questions are in clusters, with groups of questions sharing common starting language. Our questions are designed to be answered independently, so students can answer the survey without scrolling on their device.

Additionally, ten new questions were developed for Academic Belonging based on the work of Dweck (2008). These new questions were split into two factors: Social Aspects within Major and Classroom Aspects within Major. Examples of these Academic Belonging questions are given below.

*Social Aspects within Major*

To what degree are you

- hanging out with other students in your major?
- making friends with others in your major?
- satisfied with the social activities in your major?

*Classroom Aspects within Major*

In your classes, to what degree do you

- trust your instructors have faith in your potential, even when you do poorly?
- trust your instructors are committed to helping you learn?
- wish you could fade into the background and not be noticed?
- feel there is support available should you need it?

With these twenty new questions in place, ten for social belonging and ten for academic belonging, we moved the survey to Qualtrics, which allowed us to reach students on a variety of platforms and settings and for the researchers to alter the order of the questions, branch as needed, and change their appearance.

## New Survey Pilot Study

### *Participants*

The entire population of new entering freshman (NEF) was sent the newly developed Qualtrics survey in Fall 2017. For the current analysis, we chose to study only domestic students, knowing that international students often face distinct challenges that impact retention, such as access to visas. Of the 1,486 domestic students who received the survey, 837 responded, resulting in a 56% response rate. Of the responders, 187 were students of color (22%), 486 were female (58%), and 326 were Pell-Eligible (39%).

### *Procedures*

Participants were sent a personalized link to the survey via email, which we followed up with periodic reminders to non-responders. We asked instructors of courses with large populations of NEFs to provide five to ten minutes during class for survey explanation and response, as well as to offer extra credit to students who showed proof they completed the survey.

### *Data Analysis*

Data analysis of the pilot study data began with a comparison of the new survey data to the Mapworks data results, adjusting the Mapworks scale from 7-point to 5-point using a scalar (Tables 4 and 5).

**Table 4. 2014-2015 Mapworks Data: 10 Social Belonging Questions Selected for New Survey**

100%	maximum	5.0
75%	quartile	4.4
50%	median	4.0
25%	quartile	3.5
0%	minimum	1.0

**Table 5. Fall 2017 Qualtrics Data: 10 Social Belonging Questions Selected for New Survey**

100%	maximum	5.0
75%	quartile	4.3
50%	median	3.9

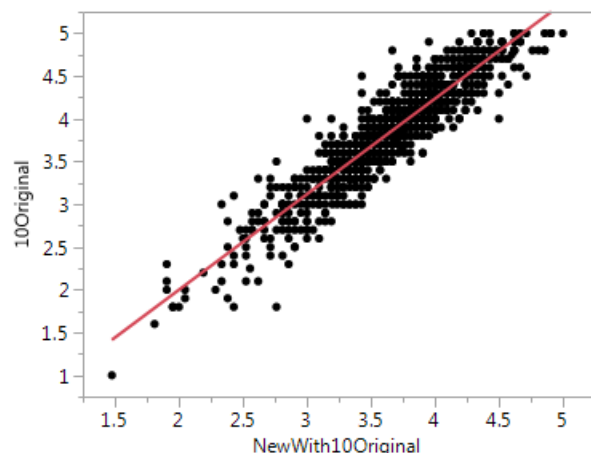
25%	quartile	3.5
0%	minimum	1.0

The ten questions produce similar results in both the original data from 2014-2015 and in the new Fall 2017 data. From here we needed to establish what belonging category cut-offs might look like for the data that include the new survey questions for Fall 2017 and how all of the questions correlate.

**Table 6. 2017 Qualtrics Data: New Academic Belonging Questions plus 10 Social Belonging Questions Selected for New Survey**

100%	maximum	5.0
75%	quartile	4.0
50%	median	3.8
25%	quartile	3.4
0%	minimum	1.0

The quartiles in Table 6 for all belonging questions, both social and academic, appear to be close to the quartiles in both the Mapworks and the Qualtrics results of the ten original questions. Further analysis (Figure 4) shows a high positive correlation between the ten original questions and these questions plus the new academic belonging questions, with an adjusted R-squared of 0.855, indicating that the new survey and its resulting index should produce results close to those found from the Mapworks data.



**Figure 4. Fall 2017 Qualtrics Survey: 10 Original Questions v. New Questions + 10 original**

## Results

SBI continues to show the students whose score places them into the Low Belonging category are at much higher risk for non-retention (Table 7). A new finding shows that non-response is also a risk category for non-retention. Except for the No Response category, GPA is similar across groups, which led us to identify what impact students who earned a zero (0) GPA in Term 1 would have on these groups (Table 8).

**Table 7. Social Belonging Index**

<b>Belonging Level</b>	<b>Number of Students</b>	<b>Fall 2017 GPA</b>	<b>Day 9 Retention</b>
High	151	2.84	99%
Medium	443	2.86	93%
Low	180	2.80	82%
No Response	610	2.44	84%
<b>Total</b>	<b>1384</b>	<b>2.66</b>	<b>88%</b>

**Table 8. Social Belonging Index without 0 GPAs**

<b>Belonging Level</b>	<b>Number of Students</b>	<b>Fall 2017 GPA</b>	<b>Day 9 Retention</b>
High	150	2.86	99%
Medium	438	2.90	94%
Low	176	2.87	84%
No Response	560	2.65	91%
<b>Total</b>	<b>1322</b>	<b>2.79</b>	<b>92%</b>

While students with a zero GPA in Term 1 were part of each belonging category, they were largely clustered in the No Response category. This leads us to conclude that No Response is a higher risk of immediate drop out, in particular when paired with GPA.

**Table 9. Academic Belonging Index**

<b>Belonging Level</b>	<b>Number of Students</b>	<b>Fall 2017 GPA</b>	<b>Term 2 Retention</b>
High	153	2.91	97%
Medium	408	2.90	92%
Low	203	2.68	88%
No Response	620	2.44	84%
<b>Total</b>	<b>1384</b>	<b>2.66</b>	<b>88%</b>

According to results shown in Table 9, Low belonging and No Response categories have lower retention for ABI, as was true with SBI. Further analysis was conducted by removing the students whose Term 1 GPA was zero (Table 10). As with the SBI, we see a significant difference in the No Response category once students with a Term 1 zero GPA are removed. Analysis also indicates that SBI and ABI are correlated to each other, but neither is correlated with GPA (Table 11).

**Table 10. Academic Belonging Index without 0 GPAs**

<b>Belonging Level</b>	<b>Number of Students</b>	<b>Fall 2017 GPA</b>	<b>Term 2 Retention</b>
High	151	2.95	97%
Medium	403	2.94	93%
Low	200	2.72	89%
No Response	570	2.66	91%
<b>Total</b>	<b>1324</b>	<b>2.79</b>	<b>92%</b>

**Table 11. Correlations of SBI, ABI and GPA**

Correlations	
<b>0.65</b>	SBI with ABI
<b>0.04</b>	SBI with GPA
<b>0.08</b>	ABI with GPA

Since we have been using academic measures such as GPA in our retention models, we decided to compare the academic retention model to actual Term 2 retention in the light of the SBI belonging index categories (Table 12). While overall retention rates are essentially the same, actual retention by SBI belonging category indicates a large discrepancy, which suggests that we have been overlooking a key aspect of why students stay and what factors cause them to make that decision.

**Table 12. Academic Retention Model versus Actual Retention**

	Predicted Retention	Actual Retention
High	88%	98%
Medium	88%	91%
Low	87%	84%
No Response	86%	83%
<b>Total</b>	<b>87%</b>	<b>88%</b>

The analysis above indicates our current prediction models for retention based on academic measures alone have been missing a key component: a sense of social belonging. We can break this overall theme into four key findings.

*Finding #1:* There are at least two identifiable categories of at-risk students: academic performance risk and social belonging risk. The academic performance risk can be predicted by the traditional prediction models using Fall GPA and demographics. The present study, however, shows that social belonging risk must also be assessed and included in retention prediction models. This risk appears to be well predicted using the new survey created to measure a student's Social Belonging Index.

*Finding #2:* Survey taking behavior is an indicator of retention. Students who do not take the survey are at higher risk for poor academic performance, and therefore Term 2 retention.

*Finding #3:* The two at-risk groups are stochastically independent. The study results indicate that belonging and academic performance are not correlated and therefore are not predictors of each other. Both must be considered when predicting retention.

*Finding #4:* ABI and SBI are correlated, but SBI is a better predictor of retention.

## Conclusion

The information this survey provides allows us to use predictive measures beyond academic performance to assist first-year students in achieving their goals. A group of students, faculty, staff, and administrators is currently developing a new outreach protocol that takes social belonging into account to complement our existing efforts. Students whose challenges might otherwise have gone unnoticed can now be offered support that is tailored to their specific needs. This work has also



prompted us to identify ways our campus can promote social and academic belonging more broadly, including pedagogy workshops, seminars, and a speaker series. Together, these efforts will continue to shape the way we reimagine the first year of college for our students.

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## **Increasing Student Success through a Cocktail of Cognitive Interventions**

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*Abstract: We extended a series of interventions developed in modern cognitive psychology to a group of students who had been academically dismissed and were at high risk to not complete college. Students learned how to respond adaptively to academic failure, how to embrace challenge, how to set realistic goals, and how to persist until their goals are achieved. The interventions were delivered within a sophomore seminar course. Within the class, students learned about, considered and practiced aspects of growth mindset, goal orientation, grit, stereotype threat, and belongingness. Before beginning the class, the 68 students had a mean cumulative GPA of 1.45, a course completion rate of 60%, and it was expected that over half would drop out of college within the next year. Following the intervention, students earned a mean semester GPA of 2.39, a course completion rate of 73%, 72% were retained for the next semester, and 58% were still enrolled one year later. These findings provide support for the benefits of these techniques used together to afford student success in a population of students that have previously struggled academically.*

*Keywords: Re-imagining the First Year (RFY), sophomore seminar, at-risk, persistence, retention, cognitive interventions*

A vitally important question facing higher education has been how to promote successful learning in students who may not have particularly good preparation for college. In recent years, a series of effective evidence-based pedagogical techniques, methods, and strategies have been developed and published (Hatch, 2005). The ultimate goal of this endeavor is the improvement of learning, motivation, and student success. Following good research methodology, the techniques have largely been examined in isolation. Also, they have typically been studied as an examination of theories and techniques. An alternative approach could include attempting to extend techniques in an explicit effort to alter student success. This serves as the starting point of this project, which was inspired by our participation in the American Association of State Colleges and Universities (AASCU) Re-imagining the First Year (RFY) initiative. RFY is grounded in the belief that Colleges and Universities can do a better job of meeting the needs of our students and of responding to the current societal and academic mandates (McBride & Kanekar, 2015). RFY suggests that many models exist that point to better ways of reaching the needs of our students. Therefore, we deployed a set of pedagogical techniques developed in modern cognitive psychology. These techniques have each been individually demonstrated to improve measures of student learning with the goal of improving learning and student success in a population of continuing students who have not enjoyed academic success and

who have been academically dismissed. We embedded interventions based on growth mindset, goal orientation theory, grit, stereotype threat, and belongingness into a sophomore seminar-style student success course.

The course met twice per week for one semester. The instructor presented information about the various interventions and led classroom discussions concerning the content of the interventions and the students' experiences with them. They provided learning models of how to use these concepts appropriately and how to identify thoughts and actions that violate the concepts. They also discussed how to practically apply the concepts to the students own lives. Writing was an important component of every class meeting. Students had daily writing activities that reinforced the content of the interventions, helped them develop appropriate models of adaptive thoughts, attitudes, and behaviors, and practice the techniques introduced.

### **The Techniques Used**

The class embedded a series of exercises to develop a sense of belongingness. A sense of belongingness refers to whether the students feel welcomed in their specific contexts. In colleges, belongingness has been shown to be related to engagement, persistence, grades, and academic motivation (Hurtado & Carter, 1997; Strayhorn, 2012; Walton & Cohen, 2007). Students who have experienced lower levels of success often are troubled by thoughts that they are the only ones who are failing and doubt their ability in this situation and wonder if they should be in college. Within the intervention class, students learned about belongingness and considered their own belongingness thoughts. The students interviewed and wrote about friends of theirs who exemplified the ends of the belongingness spectrum. They also developed a person library. This was a list of people who have interesting and illustrative life experiences and stories that illustrate principles from the class. The library can be accessed by future students who can check out and learn from the individuals archived in the library. Most importantly, they worked towards developing evidence that they are competent, valued, accepted and that they matter.

The students also worked on developing a growth-mindset approach. Growth-mindset is concerned with beliefs about intelligence (Burnette, O'Boyle, VanEpps, Pollack, & Finkel, 2013, Dweck, 2006). It suggests that students may pursue fixed- and growth-mindsets. Students who pursue a fixed-mindset believe that intelligence is innate and unmalleable. They believe that talent, or intelligence alone, is responsible for success. Students who pursue a growth-mindset believe that dedication and practice can lead to improvements in intelligence. Students who pursue a growth-mindset learn more, faster, more thoroughly, will embrace challenge and exhibit more perseverance (Dweck, 2006). Within the intervention class, students learned about fixed- and growth-mindset, considered their own mindset thoughts, and wrote about models of students who adopt growth-mindset and students who pursue fixed-mindset thoughts. Most importantly, they worked towards developing the belief that intelligence is malleable and that practice and hard work are instrumental in becoming more intelligent.

Students also learned about goal orientation theory. This intervention is similar to growth mindset. The theories underpinning goal orientation and growth mindset are variations of the same theory. The growth mindset interventions were inspired by Carol Dweck's 2006 book and the goal orientation intervention was inspired by Dweck and Leggett's 1988 journal article. Goal Orientation theory posits that students may pursue either of two goals, mastery goals and performance goals. Students who pursue mastery goals seek to develop competence and learn information. Students who pursue performance goals want to obtain evidence of competence. One feature of goal orientation theory is the meaning of feedback. For students pursuing learning goals, feedback provides information about their progress towards mastery. For students pursuing performance goals, feedback

is a judgement of their competence (Elliott, A.J., 1999; Hoyert, O'Dell, & Hendrickson,, 2012). In the intervention, students learned about mastery and performance goals, considered their own goals, and wrote about models of students who pursue learning and performance goals. Most importantly, they worked towards developing the pursuit of learning goals, and worked on learning about how to respond adaptively to negative feedback.

Throughout the course, students were asked to consider their futures as college graduates. They completed a series of [Indiana University EDGE](#) modules in which students set goals over both the near term and the long-term. They focus on developing career awareness in students, and help them explore values, strengths, and interests in relation to degrees and careers. Using EDGE Modules, students learned about Grit. Grit is associated with perseverance and passion that can help individuals work diligently towards a goal even if confronted with obstacles, set-backs, and distractions (Duckworth, Peterson, Matthews, & Kelly, 2007). In the intervention, students were asked to envision and practice alternative techniques that could help overcome challenges such as developing study and support groups, how to build optimism, and how to find purpose.

The final intervention explored Stereotype threat which is a situational predicament in which people may experience decreased performance as the result of conforming to stereotypes about their social group (Aronson, Fried, & Good, 2002; Cohen & Garcia, 2008; Johns, Schmader, & Martens, 2005; Koch, Muller, & Sieverding, 2008). Stereotype threat can cause individuals to attribute failures to their own ability. The intervention asked students to be aware of sources of stress and helped them develop techniques to re-evaluate stress. Further, students were provided with the message that diversity is valuable. The theory suggests that allowing individuals to feel as though they are welcomed into a desirable group makes them more likely to ignore stereotypes and be less susceptible to stereotype threat. As a result, the students in the intervention class worked to develop a realization that they were beginning their careers in the General Studies Program, a classic liberal arts program that follows the curriculum of prestigious programs similar to what the great presidents and intellectuals of the past have enjoyed.

These multiple interventions across the course of the semester should support each other and provide concrete ways for students to re-envision their college career in self-affirming and academically useful ways.

### **The Students Involved (Academic Success before the Class)**

The basic opportunity explored in this study is how to help students who have not enjoyed high levels of academic success. The students in this study had been academically dismissed as a result of poor academic success and were assigned to General Studies as a recovery program. In many respects, these students were like the overall student body as shown in Table 1. The university is a comprehensive regional state university with a diverse student body and offers Associate, Baccalaureate and Master's degrees in a variety of undergraduate and graduate programs. Over the past 5 years, the 6-year graduation rate has ranged from 24 to 27% and first to second year retention rate ranges from 64 to 67 percent. The students in this study had a mean cumulative GPA (on a 4-point scale where 4 is an A) of 1.45. The average number of credits attempted per semester was 10.5. The completion rate for those credits was 59.6%. The mean number of semesters completed before entering the General Studies program was 5.7. The one semester retention rate for General Studies' students with a 1.45 GPA is 66% and the one-year retention rate is 53%.

<b>Table 1. Student Demographics</b>		
	<b>Students in Sophomore Student Success Course</b>	<b>General Student Population</b>
<b>N</b>	68	3800
<b>% underrepresented minority</b>	65%	46%
<b>% female</b>	75%	70%
<b>% full-time</b>	72%	67%
<b>Combined SAT mean</b>	901	910

### Academic Success after the Course

Not all students were able to take advantage of the variety of interventions; 18.5% of the enrolled students failed to attend, failed to engage with the activities, and failed the class. Overall, the DFW rate for the intervention course was 33.3%. However, most of the class attended and participated. They seemed to be especially receptive to the concepts of growth mindset and tried to compare other interventions to growth mindset. Overall, the mean grade earned in the class was 2.58. Students earned slightly higher grades in the intervention course than in the rest of their courses ( $M=2.58$  vs  $M=2.37$ , post-hoc  $t(53)=-2.34$ ,  $p=.023$ ).

Most importantly, students in the intervention class earned higher grades in all their classes during the semester in which they enrolled in the class than they had during previous semesters,  $F(3,60)=7.54$ ,  $p<.001$ . These results are displayed in Table 2. The improvement continued in the semester after the intervention and persisted further to the semester one year after the intervention. Completion Rates (the number of credits with a passing grade/the number of enrolled credits) as well as the number of credits completed were significantly higher after the intervention ( $F(3,60)=10.66$ ,  $p<.001$ ;  $F(3,60)=23.93$ ,  $p<.001$ ) and remained higher one semester and one year after the intervention. Students also enrolled in more credits during and after the intervention, rising from 10.6 credits to 13.1 credits, which should facilitate individual student completion goals ( $F(3,60)=8.85$ ,  $p<.001$ ).

<b>Table 2: Academic Success Before and After the Intervention</b>					
	Before the Class	Semester of the Class	One Semester after the Class	One Year after the Class	Significance
GPA	1.45	2.39	2.20	2.38	$p<.001$
Completion Rate	60%	73%	74%	80%	$p<.001$
# of Credits Completed	6.4	11.3	10.8	9.8	$p<.001$
Retention Rate	53%	Na	73%	58%	$p=.084$

Finally, retention rates were examined. A baseline retention rate was estimated by drawing a semi-random sample, matched for GPA of General Studies students enrolled in the Fall 2014 semester and following their enrollment during the next semester and the next year; 66% of the students in the sample returned during the next semester and 53% returned one-year later. For the students who

enrolled in the intervention course, 73% returned one semester later and 58% returned one year later. The differences are in the predicted direction, but are not significant ( $X^2=4.948$ ,  $p=.08$ ).

## Discussion

One of the primary objectives of the study was to determine if modern cognitive pedagogical techniques could be effective in helping students who are extremely at risk for not completing a degree get back on track academically. For two-thirds of the students who attended the class, multiple measures of student success improved significantly over the duration of the semester in which they enrolled as well as each of the next two semesters. In fact, students earned more As and Bs during the intervention semester than they had cumulatively during the semesters leading up to academic dismissal. In informal conversations with the students, they frequently mentioned recognizing the need to overcome obstacles, expressed a confidence in meeting these challenges, endorsed a desire to finish their degrees, and reported a belief in self-improvement and growth achieved through concentrated study. Further, it appeared that they were on the path towards graduation.

Another way to evaluate change in possible outcomes in these students is to estimate their probability to be retained or to graduate. In general, students who earn high grades are more likely to return and to graduate than students with low grades (Gifford, Briceno-Perriott, & Mianzo 2006; Pascarella & Terenzini, 2005; Stewart, Lim, & Kim, 2015). That relationship is often very robust and serves as the starting point for studies seeking the underlying conditions that drive grades and then retention and graduation. For instance, 61 (89%) of the students who registered for the intervention class had GPAs less than 2.0. Based on historical data from our school, only 35% of students with GPAs that low return for the next year and less than 10% of those students graduate. At the end of the intervention semester, 22 (32%) students had earned a semester GPA between 2.0 and 3.0. Historically, the probability of returning for students with this GPA is 70% and the chance of graduating is 40%; 19 (28%) students had earned a GPA between 3.0 and 4.0. Students with GPA's that high return for the next year 90% of the time and have a 70% chance of graduating.

The intervention was primarily concerned with helping students develop more adaptive patterns of thoughts, beliefs, and actions. The interventions did not include any components addressing content within any of their other classes. Those other classes used the pedagogies their teachers considered to be most appropriate. No effort was made to arrange for academic assistance, tutoring, supplemental instruction, or to change advising. Despite this, grades in the students' other classes were significantly higher by the end of the intervention semester.

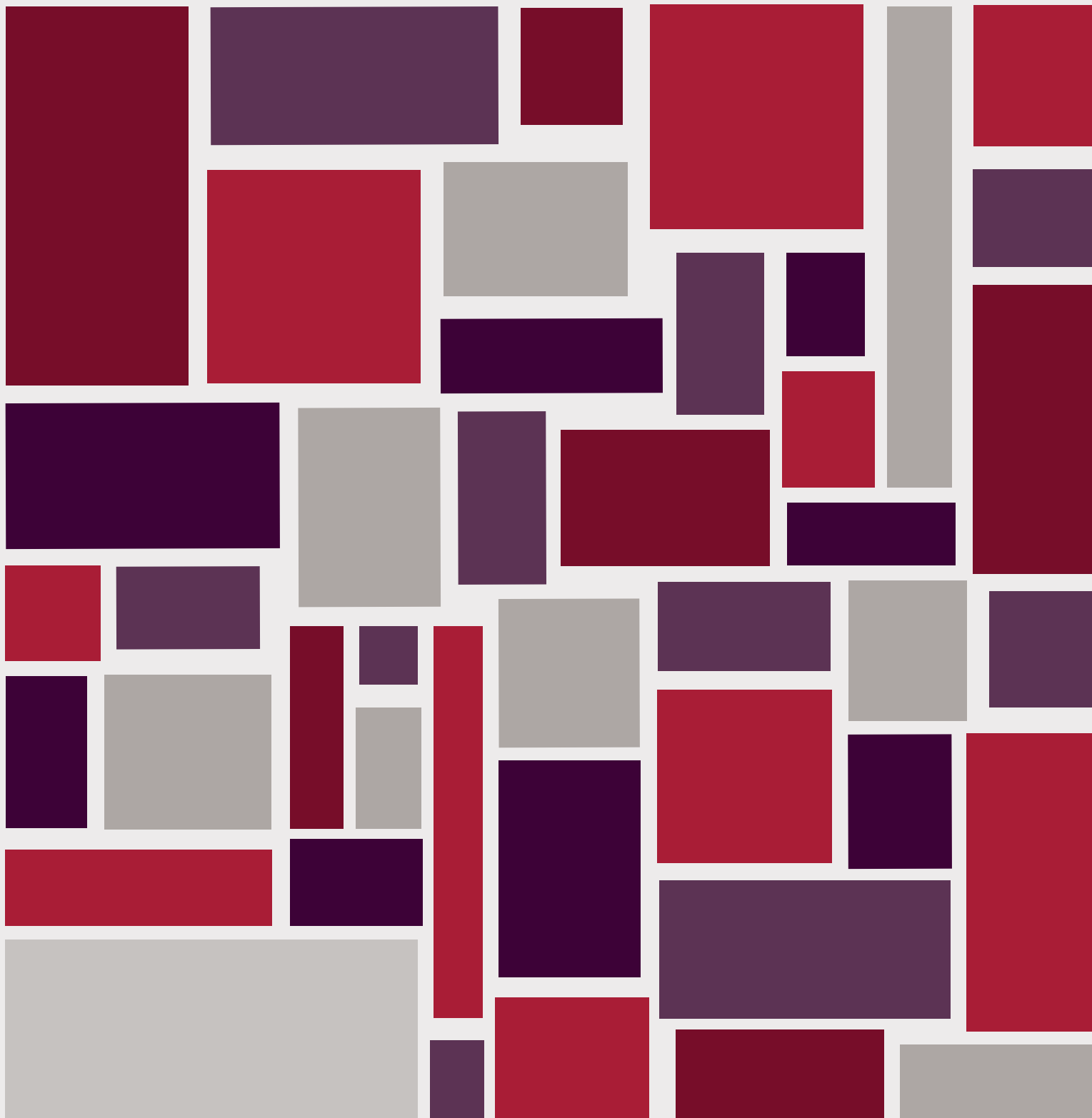
The study effects relied upon the combined influence of five different interventions. The study did not use a design that would enable an internal comparison between the various interventions employed. Each of the interventions has previously been demonstrated to provide robust improvements in measures of student success. It would be interesting to learn if it was a combined, sole, or underlying effect. Future directions could include considering the distinctions between the interventions to improve the content and outcomes for this course as well as provide support for other student success courses on campus. We could also consider expanding the interventions to try to reach the third of the students who were not responsive to the current set of interventions. We will continue to offer this sophomore seminar for General Studies students as we believe it has proven very successful in assisting struggling students to find a successful path forward towards completion.

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