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A Successful 2-week Innovation- and Student Success-Focused Bridge Program for First-Year Students

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Abstract

Despite the vital role innovation plays in scientific advancement, opportunities to develop innovation skills remain limited, especially for low-income students. Training in innovation principles and processes are frequently extra-curricular pursuits, such as unpaid internships with start-up organizations, shadowing innovation professionals, or obtaining an additional business degree that covers innovation principles. These pursuits often require financial means or connections in the field – both of which are often unavailable to low-income students. Without an academic route in which STEM degree programs are embedded with innovation instruction and exercises, innovation training will remain out of reach for most low-income students.

The bridge program engages students in a specially designed 3-credit hour course where 2-credit hours are dedicated to teaching students about innovation and developing their innovative thinking and behaviors. One-credit hour is devoted to student success strategies and developing feelings of being welcome at the university through guest speakers. Outside of class, bridge students participate in cohort building and mentoring activities. The bridge program included 12 NSF S-STEM students as well as 12 non-STEM students, all of which are participating in the Honors College Path Program which is designed to increase retention of underrepresented students. This allowed multidisciplinary collaboration for diversity of thought.

Introduction

With funding from the NSF Division of Undergraduate Education (EHR/DUE) of an S-STEM grant, researchers at the University of Arkansas aim to increase the number of low-income students who graduate with a STEM degree and who have training in innovation. As a first step, a 2-week bridge program was designed and implemented for the first-year scholars.

Assessment of the bridge program will be presented. Some data highlights on the 3-credit hour course include: 96% of participants felt that the class was valuable in developing their understanding of innovation and appreciating the importance of innovation; 88% felt it helped them develop their thinking to be more creative and innovative in the future; 92% felt more comfortable with taking risks and expressing their ideas after the class; 100% felt that the course provided information that will help them be more successful at the university; and 88% said the course made them feel welcome and enhanced their sense of belonging on campus. On the bridge program as a whole, data highlights include: 88% felt they were provided with social connections that created community and helped them feel a sense of belonging on campus; 88% felt they gained valuable knowledge in helping them understand the importance of finding balance between academic and social life; and 100% reported that the information on self-care has encouraged them to take it seriously and to take self-care action in their own lives. The course syllabus, bridge program activities, participant surveys, lessons learned, and additional assessment data will be provided.

Background and Literature

Traditional coursework can benefit from borrowing ideas related to innovation, leadership, and entrepreneurship [1]. Several organizations have on-going efforts to incorporate innovation into coursework including National Collegiate Inventors and Innovators Alliance (NCIIA), The Kern Entrepreneurial Engineering Network (KEEN) and the Kauffmann Foundation. Raviv [1] suggests that innovative coursework necessitates a "student-centered" environment and a focus on incorporating problem-solving, "big picture", personal and social skills. Raviv et al. [2] further define these skill sets where problems solving skills include critical thinking, intuition, estimation, imagination, and the ability to act on ideas. "Big picture" skills include observation of problems through different contexts and considerations from different disciplines. Personal skills include persistence, curiosity, risk taking, teamwork, and communication, among others, and social skills include economic, political, cultural, and environmental awareness. While hands-on and project-based learning have been successfully incorporated into many programs and shown to have a positive effect on students' academic achievement [3], it is becoming more evident that students need skills beyond solving prescribed problems and need experience navigating innovativeness, multi-disciplinary collaboration, and real-world problems [4].

Many schools and programs are taking different approaches to expose students to creative, innovative, and entrepreneurial mindsets beginning with the first-year curriculum. For example, Sattele et al. [5] have worked to ensure entrepreneurial mind-set elements are incorporated into first-year engineering labs. Sattele et al. [5] analyzed existing labs to identify entrepreneurial minded learning elements (EMLs as defined by KEEN) and identified key areas where additional EML objectives could be incorporated. These EMLs include elements of curiosity, connections, creating value, communication, character, and collaboration. Bringardener et. al [6], created a Rapid Assembly and Design (RAD) challenge to allow first-year students to design and create open-ended projects. Bringardener et al. [6] adapted their existing first-year course to include guidance for their students to take their design from conceptual to reality using their makerspace. Through this process, they have found that lab exercises, trainings, instructional videos, and mentorship are critical to the success of these open-ended projects for first-year students. Mitchell and Light [7] introduced stakeholder engagement in first-year design education to increase student empathy. Their Introduction to Design program takes messy, real-world problems and forces students to consider stakeholder input to make important decisions. In doing so, the students are forced to identify the appropriate stakeholders, interview these stakeholders, and analyze the problem from the stakeholders' points of view. Another approach was taken by Korach and Gargac [8] where they re-vamped first-year curriculum by incorporating active learning exercises into the existing curriculum. Korach and Gargac [8] found that both instructors and students benefited from the addition of entrepreneurial mindset activities. Instructors found the activities better engaged students in the course and generated excitement around the engineering field while the students developed beneficial skills for a successful career. There is no one size-fits all approach to re-vamping and incorporating innovative thinking into curricula, but the benefit of these skill sets in addition to traditional design-oriented courses are documented and becoming more popular in higher education.

The state of Arkansas has faced many economic, social, and educational challenges for decades. Arkansas lags the nation in terms of population growth, employment growth, household income, food security, some infrastructure (including broadband internet) and educational achievement.

In most cases these lags on most pronounced in the rural regions of the state. Often these areas are home to the state's underrepresented (by race, ethnicity, and/or income) populations [9].

Nationwide, enrollment in many STEM disciplines by students of color, low income and other underrepresented groups remains low [10], [11]. The reasons are manyfold. First, high schools serving underrepresented students often have lower social, financial, and instructional resources than those serving other students, leading to lower student achievement levels than for other students [12], [13]. Second, in recent years, many improvements have been made, such as better access to Advanced Placement (AP) courses, by students at unrepresented group serving schools [14], [15]. However, enrollment and success rates in these courses at these schools remain lower than in other schools [16], [17]. Third, even with increased access to standardized testing, a recent study shows that due to the methodology used in scoring, the ACT and SAT tests contribute to discrimination against admission of minority and low-income students at selective colleges [18]. Finally, these and other factors can lead to students feeling little confidence in their ability to succeed in STEM disciplines in college [19]- [22].

High schools and other college preparatory programs have made some inroads into increasing the number of underrepresented students who later enroll in STEM disciplines by, among other things: 1) addressing the gender bias [23], [24]; 2) developing extracurricular programs to interest students in STEM [24]-[26]; and 3) engaging the students' families and friends in the career decision process [11], [26], [27]. However, once in college, retention of these students in STEM disciplines remains a challenge.

While no one-size-fits-all solution exists, factors have been identified in the recent literature that can positively influence retention and success. The factor that is most often cited is instilling a sense of belonging among underrepresented students, particularly when they attend a large, predominantly white and median income serving institution [28]-[36]. This sense of belonging can be enhanced in several ways beginning with a deliberate, targeted, and specific recruitment process that engages prospects on the individual level [37]. Once the student is on campus, success can include fostering positive relationships with faculty and staff mentors [11], [32], [38]-[41]. It can also be enhanced by creating strong cohorts through participation in summer bridge programs [42]-[46], engaging in a living learning community [39] and enrolling in introductory level courses as a cohort [34], [47]. Other factors identified included having students engage in high level academic activities such as research [40], [47]-[49] or an Honors program [39], [47].

Numerous campuses have developed diversity programs as resources for students from underrepresented populations to persist and complete STEM undergraduate degrees [50]-[52]. These programs integrate some or many of the success factors mentioned above). In 2014, the Honors College at University of Arkansas launched the Path Program. This program was created to prepare exceptional high school students from underrepresented populations to excel in both STEM and non-STEM majors at the University of Arkansas. Through its extensive mentorship program, the Path Program encourages academic success and leadership development for each student. Many Path students have participated in research, joined the Honors College, secured internships or study abroad opportunities and participated in leadership experiences on campus and beyond. Path students graduate and graduate with honors at higher rates than the general university population. Of its first four cohorts (entering 2014 to 2017) comprised of 51 students, 92% of these students have completed their degrees at University of Arkansas, almost all in four

years or less, and nearly half of them have graduated with honors [53],[54]. In 2018, the Honors College Path Program partnered with University of Arkansas colleagues in STEM disciplines to create the Path to Graduation (PTG) program. This program builds upon the best practices of Path and other University of Arkansas STEM-focused diversity programs on campus to provide support and opportunities for engineering, math and NSF defined science students from rural and underserved areas to help students succeed [55]. The first cohort of PTG students program entered in 2018. Early research suggests that the program has been successful in recruiting and attracting students from low-income and/or underrepresented populations into STEM majors [56], with retention and honors admissions rates higher than for the general University of Arkansas population [57]. Now again we expand our efforts and focus on expanding opportunities for low-income students to develop innovation skills, starting with a successful two-week innovation and student success focused bridge program for engineering, math, and natural science fist year students.

Bridge Course (Academic and non-Academic)

The bridge program was offered as a two-week (10 day) 3 credit-hour course prior to the start of the first fall semester. The program was made of two hours of innovation course content and one hour of student success content each day. The innovation content was developed as an overview of the innovation process with the objective to expose students to new vocabulary and provide a general understanding of innovation concepts before enrolling in a more in-depth course in the fall semester. The class meetings were a combination of lectures, active-learning activities, and guest speakers from the College of Engineering and the Walton College of Business. During the first week of the course, two topics were covered via mini lectures and supported by hands-on group activities. During the second week of the course, a topic was covered in the first hour and students used the second hour to work in groups on an innovative design project (Table 1). After each class, the students completed a concept quiz over the day's content and watched a video (typically TED Talk) and read an article (typically from Harvard Business Review) related to the next day's content (Table 2). The course content promoted open discussion, creative thinking, variable design, clear communication and diversity and inclusion.

The course developers assumed that the students had no prior knowledge of content related to innovative design thinking. The first week provided an overview of the differences in innovation, entrepreneurship, and invention. Course content covered obstacles to creativity, discussed differences in disruptive and sustaining innovation, and marketing strategies of technology pushes vs. market pulls. Students were introduced to several methods of idea generation including Alex Osborn's Rules of Brainstorming and guided through responsible decision making via Edward De Bono's Six Thinking Hats. Students were then introduced to group work dynamics, project management and leadership.

The first week of the course culminated with a field trip coordinated by the University of Arkansas Office of Entrepreneurship & Innovation. The purpose of the field trip was to connect students to resources in the community that promote innovative and growth mindsets. The students first toured the on-campus McMillon Innovation Studio which serves as an innovation hub to students across the University of Arkansas campus. Students who participate in Studio activities are given access to valuable mentorship and resources, given space to cultivate creative skills and given guidance to deliver impactful innovation through organizational, social, and entrepreneurial change. The

students then toured the Brewer Family Entrepreneurship Hub which is an interdisciplinary venue, working space and training center for new and early-stage entrepreneurs in [our region]. The Hub hosts workshops and seminars, design competitions and hackathons, expert office hours as well as a series of public events on timely topics of interest for the general entrepreneurial community. Lastly, the students toured the University of Arkansas Start-up Village which provides desk and office space for faculty, student, and alumni start-ups in the seed-stage.

The course developers felt that hand-on participation in the class was paramount to its success and thus incorporated a group project that made up approximately 25% of the course time. The project applied the innovation process discussed during the first week of the course to the development of an ultimate backpack for incoming first-year students. We chose the backpack project, because we wanted the students to practice the innovation process with a product with which they were already familiar before applying the process to their own innovative idea that they would pursue in the upcoming fall semester class.

For the project, students were placed into groups so that maximum diversity was achieved considering planned college major and self-identified personality type [58]. For the project, each team was required to complete multiple customer interviews and research existing backpacks currently on the market. Teams used this data to develop perceived user value (PUV) of each product which was defined as the value customers perceived a product to have based on its features or attributes. Each group then used the PUV to determine a competitive price point for their own product. Teams created a pitch presentation and presented their data and product designs on the last day of the course.

Table 1: Breakdown of topics covered in the innovation portion of the INNOV Bridge Program

Day	**Topic**
Day 1	Introduction to course: • Syllabus • Introduction to Innovation
Day 2	Process of Innovation: • Disruptive vs. Breakthrough • Tech Push vs Market Pull
Day 3	Idea Generation and Decision Making: • Alex Osborn's Rules of Brainstorming • Edward De Bono's Six Thinking Hats
Day 4	Intro to Group Work- Dynamics and Leadership: • Personality Types • Project Design Brief: Designing the Ultimate Backpack
Day 5	Field Trip: • McMillon Innovation Studio • Brewer Family Entrepreneurship Hub
Day 6	Market Research and Consumer Interviews:

Day	**Topic**
	• Talking to Consumers • Group Homework 1: Market Research and Consumer Interview
Day 7	Perceived User Value: • PUV Charts • Group Homework 2: Perceived User Value
Day 8	Product Design: • Design Considerations • Group Homework 3: Product Design
Day 9	Product Pitch: • Creating Pitch Decks • Group Homework 4: Product Pitch Deck
Day 10	Final Presentations

Table 2. Daily homework assigned to prepare students for the next innovation topic.

Day	Preparatory Topic	Reading Assignment	Video Assignment
Day 1	Process of Innovation	A Good Digital Strategy Creates a Gravitational Pull [59]	The Innovators Dilemma by C. Christensen Book Summary [60]
Day 2	Idea Generation and Decision Making	Deciding How to Decide [61]	Before You Decide: 3 Steps to Better Decision Making [62]
Day 3	Into to Group Work	Crucibles of Leadership [63]	How Diversity Makes Teams More Innovative [64]
Day 4	Field Trip	None	None
Day 5	Market Research and Consumer Interviews	Data is Great—But It's Not a Replacement for Talking to Customers [65]	Want to help someone? Shut up and listen! [66]
Day 6	Perceived User Value	How Customers Perceive a Price Is as Important as the Price Itself [67]	Life Lessons from an Ad Man [68]
Day 7	Product Design	A Process for Empathetic Product [69]	Pirates, nurses, and other rebel designers [70]
Day 8	Product Pitch	What Makes a Great Pitch [71]	How to Stand Out in Life and Business [72]

Day 9	Final Presentations	8 Ways to Deliver a Great Presentation (Even if You're Super Anxious About It) [73]	Speaking Up Without Freaking Out [74]

The third hour of the class is dedicated to student success strategies and building a sense of belonging on the university campus. Through presentations by guest speakers, students were introduced to resources and given the opportunity to expand their support network on campus. During each class session, students learned of a different concept or resource on campus which was supplemented by activities outside the classroom. This portion of the class was delivered in partnership with the Honors College Path Program, a scholarship and mentorship program that supports students from a similar background as INNOV participants.

Students participating in the program were high achieving in high school, a goal of the program is to support them to continue to excel academically in college. To this end, the one-hour component placed a high focus on preparing students for the new academic expectations and accessing the resources that will support their academic goals. The academic component began by presenting the importance of connecting with faculty and understanding the course expectations. To understand the course expectations, students reviewed a sample syllabus and reviewed the different components of the document. The students were encouraged to review and compare the expectations for each course to understand those expectations and be prepared for the workload throughout the semester. They were also introduced to time management tools to help manage time to complete assignments. Students reviewed this information with their peer mentor at the beginning of the fall semester. As part of the INNOV program, students are expected to meet with all their professors to discuss their academic progress. To help students become comfortable with interacting with faculty, they were encouraged to email, introduce themselves, and thank all the presenters from each class session. While email communication can be less intimidating for students, it is still a new experience for many students. Although the majority did reach out to all the presenters, some did not. For future cohorts, it would be beneficial to provide students with a template for the email introductions.

In addition to building skills, students were introduced to resources available on campus to support their success. The Honors College Librarian presented to the students the resources available through University Libraries. After class, students received a tour of the main campus library, including the newly renovated student-centered floors. To further introduce students to the benefits of an honors education, the Honors College Future Hub, a group of planning professionals dedicated to helping students make the most of their college experience.

The final academic component of the course focused on resiliency and wellbeing. As high achieving students, program participants are accustomed to academics coming more naturally. The rigors of college and adjusting to campus life can be an unexpected challenge for students, the sessions were designed to give students the tools to manage difficult situations when they arise.

To build their sense of belonging at the University of Arkansas, students were introduced to campus leaders who welcomed them to the institution and who spent a significant amount of time answering questions and sharing advice. An opportunity available to few students overall attending the university. During their first session the Provost and the Dean of the Honors College welcomed

the students to campus. Students were encouraged to make the most of their college experience by becoming engaged and making connections. The Provost dedicated most of the session to answering questions from the students about his career, research interests, and being successful students. Students also met with the Vice Chancellor for Diversity, Equity, and Inclusion, who shared the university's commitment to being an inclusive and welcoming community. During the interactive session, students participated in a level setting presentation and learning how they can contribute towards an inclusive environment. Finally, students were also introduced to the opportunities for engagement on campus. With over 400+ registered student organizations, there are numerous opportunities for students to pursue professional and personal interests and connect with likeminded peers.

Bridge Activities Outside of Class

Activities outside the classroom were designed to help students build a sense of belonging and community on campus and become familiar with the Northwest Arkansas. These activities were intended to supplement what students were learning in the classroom, some had an academic focus, but most were social and engaging.

After class workshops were designed to supplement the information students were learning in the classroom. Research shows that finances are a major stressor for students from low socioeconomic backgrounds, so the first workshop was a guided explanation of understanding financial aid packages and communications sent from the treasurer's office. Students were also given the opportunity to meet one-on-one with an advisor from the Path Program to review their individual financial aid package and ask specific questions. A second session designed to help students have difficult conversation was part of the Resiliency class session. During the class, students learned general information about resiliency and the difference between a growth and fixed mindset. During the afternoon workshop, students participated in activities that encouraged them to reflect on personal experience with failure and overcoming challenges. This discussion-based component encouraged students to utilize their support networks and sought to normalize asking for support. Finally, students received a tour of Mullins Library from the Honors Librarian to build comfort interacting whit the space and accessing resources. The tour included visiting the newly renovated floors of the library and they were some of the first students to see the new space.

To familiarize students with campus and additional resources, students participated in a campus search and R.O.C.K. Camp. The campus search required students to walk to different offices and take a photo of themselves in that space. It included locations such as different tutoring locations, the Physics Library and Math Lab, study abroad office, the Pat Walker Health Center, etc. The students had to identify the locations themselves and supported by their peer mentors. In the future, mentors will be stationed at "help stations" around campus to encourage more independence in the process instead of having someone walk them to the location. After the first week of intersession students attended R.O.C.K. Camp, a program offered through the New Student and Family Programs (NSFP) office to introduce incoming first-year students to campus resources. The NSFP team designed a version of the program for students participating in the INNOV intersession bridge and a partner program serving a similar demographic of students. Participating in R.O.C.K. Camp gave the students an opportunity to meet peers from a similar background and expand their social network. The content for this specially designed program focused on building community between

participants of the two programs and learning university traditions while familiarizing themselves with different parts of campus.

Program participants were assigned mentor groups led by a peer mentor to help navigate their transition to campus. Mentors are older Path Scholars who are also pursuing STEM majors. During the bridge, students would have a one-on-one meeting with their mentor once a week for guided conversations. During intersession, the meetings were an opportunity to get to know each other and establish a mentor/mentee relationship which will extend into the full academic year. In addition to mentee meetings, mentors had lunch and dinner with the students every day and planned social activities to help students build a sense of community within their cohort. Evening social activities included movie nights and different games designed to get students to know each other better.

Finally, students had the opportunity to learn about the Northwest Arkansas community. While most students in the program are from Arkansas, they are from across the state and have had little opportunity explore the area prior to coming to the University of Arkansas. During intersession students had the opportunity to see the production of American Mariachi at Theatre Squared, a local professional theatre that donated tickets for all program participants. Students also visited Crystal Bridges Museum of American Art. At both venues, students were welcomed by leadership of the institutions and learned about volunteer opportunities at both.

Surveys

An innovation inventory survey [75] was deployed to measure the bridge program students' innovation capacity and behavior at the beginning (pre-survey) and again at the end (post-survey) of the 2-week summer bridge program. The objectives of the surveys were to: 1) assess whether the bridge program's course helped develop students' innovation mindset and abilities, and 2) assess the preparation the bridge program provided for the concepts and approach of the two-semester first-year innovation course (3 credit hours each semester). This survey is grounded in the literature on creativity and contemporary innovation inventories [76-84].

In addition to the innovation inventory survey, the researchers developed a bridge program exit survey designed to measure students' self-assessed changes in innovation capacity due to the bridge program innovation course and the self-assessed impact of the bridge program's student success components in and out of the classroom. The survey also asked for feedback on the best parts of the program and suggestions for improvement.

Assessments and Results

The exit survey of the Bridge program consists of mainly three components, and the sample size is 24. The first component is about students' rating of the Innovation Academic Portion using a Likert scale of 1-5 as well as students' qualitative comments on various aspects of the program. The second component is about students' rating (Likert scale 1-5) of the Path Portion of the 2-week class and their qualitative comments. The third component is about students' rating of various aspects of the part of the Path Intersession Bridge Program outside of class. The Likert scale 1-5 uses strongly disagree to strongly agree with the statement. Example statement of the three components include "The Innovation academic portion of the HNRC 102VH class helped

me develop my thinking to be more creative and innovative in the future", "The Path portion of the HNRC 102VH class provided me with connections and access to people and resources that will help me be successful", and "The Path Intersession Bridge Program was valuable in helping me understand the importance of finding balance between my academic and social life", respectively. Overall, the students rated highly about their perception of the benefits provide by the Bridge Program. The mean ratings of the thirteen items were about 4.5, with the rating of some items around 4.80. The mean and standard deviation of the 13 items are listed in Table 3. Based on the qualitative comments, students thought highly of the program in terms of its benefits.

Table 3. The Mean and Standard Deviation of the Bridge Program Exit Survey
Note. Std = standard deviation

Innovation Academic Program	Mean	Std
Item 1	4.50	0.72
Item 2	4.25	0.68
Item 3	4.25	0.74
Item 4	4.46	0.66
Path Portion		
Item 1	4.83	0.38
Item 2	4.88	0.34
Item 3	4.58	0.72
Item 4	4.63	0.49
Outside of Class		
Item 1	4.63	0.58
Item 2	4.50	0.72
Item 3	4.50	0.72
Item 4	4.63	0.49
Item 5	4.25	0.90

To examine the impact of the Bridge Program on the students' perception of five constructs related in Innovation, the results of pre-survey that was administered before the start of the program and the post-survey that was administered after completion the 2-week program was compared. The average score of the five constructs were compared and there were negligible differences between pre- and post-survey scores. The mean and standard deviation of the five constructs are listed in Table 4.

Table 4. Student's Perception of Innovation – Bridge Program.
Note. Std = standard deviation

	Pre-survey		Post-survey	
	Mean	Std	Mean	Std
Innovative Behavior Inventory	4.01	0.32	4.02	0.49
Imaginative Scale	5.51	0.58	5.51	0.77
Mindfulness	3.92	0.76	3.60	0.70
Core Self-evaluation	3.56	0.51	3.53	0.52

Study and Well-being Survey	5.26	0.73	4.92	0.86
Risk-aversion	3.53	0.94	3.68	0.97

To investigate the influence of the program on students' academic achievement in the Fall, 2021, the GPA of the 24 students who attended the Bridge Program and the general cohort of students that were not part of the program. An independent t test showed that the GPA of the Bridge Program students were significantly higher than their peers ($t\ (23) = -3.05$, $p = .01$). The Mean GPA of the Bridge Program students was 3.48 whereas that of their peers was 3.11. This indicated that the students that participated in the Bridge Program achieved higher than their peers academically in the Fall of 2021. Also, the students' perseverance was compared with their peers. There was no obvious difference between the Bridge program students (retention rate: 95.83%) and their peers (retention: 93.54%).

Lessons Learned

Bridge programs run as intersession courses (3 credit hour course taken over 10 days) are intensive and fast paced. Keeping students engaged in the material was key for learning success. Incorporating a variety of speakers and hands-on activities kept the students interested in the material and motivated them to participate in course content. The small number of students in the course (n=24), who also lived and participated together in outside of class activities, contributed to the course's success, because students felt comfortable working together and actively participating in class discussions. The data collected showed that 96% of participants felt that the class was valuable in developing their understanding of innovation and appreciating the importance of innovation; 88% felt it helped them develop their thinking to be more creative and innovative in the future. While this shows that most students benefited from the course, we do not have a clear understanding of why some students did not connect with the course material.

The goal of the third hour session was to introduce student success strategies and build a sense of belonging on the university campus. While most speakers and presentations were interactive for students, working with all guest speakers to present information in a way that will be engaging for students.

While students were encouraged to connect with all guest speakers, some were not comfortable with reaching out to administrators or faculty. In the future, it would be beneficial to provide students with a template for how to approach this type of professional interactions. It would also be beneficial to create an opportunity for a one-on-one introduction before or after the class period. This is something that was not possible during the intersession because of the pandemic and maintaining physical distance. The program encourages students to introduce themselves to all their professors early in the semester, it would be beneficial to give them the opportunity to practice during intersession in a safe environment.

Due to scheduling constraints, the workshops that aligned with class content were not always on the same day. For the following cohort, having the class session and afternoon workshop on the same day or within a day or two would help reinforce content in a way that would be more relevant for students.

Summary

The bridge program is designed to engage students in a specially designed 3-credit hour course where 2-credit hours are dedicated to teaching students about innovation and developing their innovative thinking and behaviors. One-credit hour is devoted to student success strategies and developing feelings of being welcome at the university through guest speakers. The bridge program included 12 NSF S-STEM students as well as 12 non-STEM students, all of which are participating in the Honors College Arkansas Program which is designed to increase retention of underrepresented students and allowed multidisciplinary collaboration for diversity of thought. The data collected showed that 96% of participants felt that the class was valuable in developing their understanding of innovation and appreciating the importance of innovation; 88% felt it helped them develop their thinking to be more creative and innovative in the future. Based on the feedback, evaluation, and analyses, iterative improvements will be incorporated into the next cohort's intersession.

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