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Teaching Tip
Using a Digital-Ready Mentorship Program to Develop the Future Technology Workforce

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ABSTRACT

Careers in information systems and technology are top-rated and growing, yet universities are challenged to recruit students into information technology (IT) majors and organizations struggle to find talent with IT and digital skills. Experiential mentorship programs offer an opportunity for both academia and industry to attract students into university programs and ultimately into IT positions when they graduate. Therefore, to address the goal of developing digitally proficient, meaning technically and analytically strong, students and talent, this teaching tip presents a digital-ready mentorship program designed to connect technology students with industry as a part of their undergraduate education. This program has been in place since fall 2019 and has facilitated a total of 50 students in five cohorts. As a part of this work, we present the digital-ready mentorship program, teaching approach, lessons learned, and evidence from the project outcomes and learning experience. We hope sharing this program will inspire other universities to develop similar programs with industry partners and ultimately address the IT labor shortage.

Keywords: Information systems education, Industry partnerships, Mentoring, Internships & co-ops, Career development, Employment skills

1. INTRODUCTION

Careers in information systems and technology are reliable and frequently rated as top-paying and available jobs in the market (Best Technology Jobs of 2025, 2025). According to the U.S. Bureau of Labor Statistics, employment in computer and information technology occupations is projected to have more than 377,500 openings each year from 2022 to 2032 which is much larger than the average for all occupations (Computer and Information Technology Occupations, 2024). While the information technology (IT) industry is growing, organizations are challenged to find talent and are increasingly seeking students with IT and digital skills (Benamati et al., 2010; Leidig et al., 2019; Muraski, 2023; Muraski & Iversen, 2022). This is not only true for hiring managers in IT departments, as nearly all employees and new hires need to be comfortable with technology (Colbert et al., 2016).

Experiential mentorship programs offer an opportunity for both academia and industry to attract students into university programs. Successful academic and industry partnerships between IT organizations and technology programs (information systems, analytics, computer science, cybersecurity, etc.) can ultimately place students into IT positions when they graduate. Previous research has explored the development of academic programs with industry partnerships (Muraski & Iversen, 2022) as well as field experiences, such as work placement or work study programs (Ling et al., 2021), as these types of programs allow students the opportunity to apply course concepts in a longer, structured format. Such partnerships help to bridge the gap between classroom work and real-world application (Chauncey & Cukier, 2004). Additionally, the mentoring that takes place as a part of these partnerships helps students identify a suitable career path and gain a realistic view of the workplace (Chauncey & Cukier, 2004). Social Learning Theory has even been identified as a way to better understand the role mentoring can play in the knowledge transfer and behavioral skills development of students (McLeod & Rao, 2004).

From an industry perspective, academic partnerships provide value as they can help in establishing a pipeline to attract, train, and retain new employees. Organizations looking for new talent may find interest in university partnership programs that can help with attracting, training, and retaining employees as these are key priorities for workforce development. In fact, attracting and retaining employee talent is a priority for organizations and a key issue leaders struggle with (Keller & Meaney, 2017) and many large companies find that they have to train new student hires before they can actually start working (Saltz et al., 2013).

Some researchers have suggested that the evaluation of professional mentoring—specifically traditional, formal mentoring where mentors are assigned to help develop mentees, as opposed to other types of coaching or sponsorship-based support—has been limited in information systems and

technology programs (Bagley & Shaffer, 2015; Chauncey & Cukier, 2004; Joers et al., 2024; McLeod & Rao, 2004; Saltz et al., 2013). Thus, the efforts of this work seek to address: *How can a digital-ready mentorship program be designed to connect students with industry and what program outcomes and value can be achieved from such a program?* To address the goal of developing digitally proficient, meaning technically and analytically strong, students and talent, we present a digital-ready mentorship program designed to connect students with industry as a part of their undergraduate education. This program has been in place since fall 2019 and seen a total of 50 students in five cohorts participate. In this teaching tip, we present the digital-ready mentorship program, teaching approach, lessons learned, and evidence from the project outcomes and learning experience. We hope that sharing this program will inspire other universities to develop similar programs with industry partners and ultimately address the IT labor shortage.

2. BACKGROUND

2.1 Necessary Skills for IS Students

Information systems (IS) education has many goals, but ultimately is intended to develop students in the area of business and technology and prepare them with relevant skills that will be useful upon graduation (Chilton, 2012; Woods, 2020). There has been much attention devoted to identifying the skills necessary for students in information systems and technology majors. Certainly, technical concepts and skills development have been identified as a priority for technology students including specific technologies such as Microsoft Office, Structured Query Language (SQL), programming languages, enterprise system software, web development software, project management software, and statistical packages (Leidig et al., 2019). Other research has made the case for soft skills development as a necessary educational component for future IT professionals who will need to manage projects, communicate systems requirements, and effectively work in professional, globally distributed teams (Beard et al., 2008; Del Vitto, 2008; Mitchell & Benyon, 2018; Osmani et al., 2016; Venables et al., 2013). One study concluded there are twelve competencies needed by a digital workforce including accountability, adaptability, business acumen, collaboration and teamwork, conceptual thinking, decisiveness, digital literacy, global mindset, innovation, openness to learning, results orientation, and risk taking (Petter et al., 2018).

Not only has research emphasized the importance of both technical and soft skills development in IS education, research has also suggested IS educators should work to link higher education with current professional practices to ensure relevancy and to meet the needs of the IS industry (Leidig et al., 2019; Pedersen et al., 2010). This is especially important as the demand for IS majors persists as there are increased job openings in the area of IT and a shortage of available talent for hire (Benamati et al., 2010; Leidig et al., 2019; Muraski, 2023; Muraski & Iversen, 2022). Indeed, one case study noted that students were not getting enough experience with digital skills to be prepared for their future (Muraski & Iversen, 2022).

Relatedly, there is some research suggesting undergraduate students can become more attracted to a major if they have some subject matter interest and are exposed to career-related factors such as job growth opportunities, salaries, job security, and other related topics early in their academic programs (Koch et al., 2010; Li et al., 2014). This research suggests that if IS programs can introduce undergraduates at the freshman and sophomore levels to technology industry professionals and opportunities, the IS major could become even more appealing to students, resulting in more IS majors and ultimately more IT job candidates.

2.2 Experiential Mentorship Programs in IS

Previous research has explored the development of academic programs with industry partnerships helping to bridge the gap between classroom work and real-world application (Chauncey & Cukier, 2004; Muraski & Iversen, 2022). For example, engagements have been established through the development of real-world projects or experiences including work placement or work study programs (e.g., Ling et al., 2021), the design and implementation of field learning experiences or site visits at different organizations (e.g., Ferratt et al., 2016; Gallaugher & Wyner, 2016; Mitchell, 2022), spring break trips to visit technology companies (e.g., Benamati et al., 2010; Mitchell, 2013), or video collaboration and discussions with industry professionals (e.g., Chilton, 2012; Olsen, 2021). These types of programs give students the opportunity to explore IS concepts in a format that emphasizes learning through practice. Additionally, the formal and informal mentoring that takes place as a part of these partnerships can help students identify a suitable career and gain a realistic view of the workplace (Chauncey & Cukier, 2004). IS coursework and opportunities that highlight the concepts and skills for industry success and also attract them to the major can benefit students, university programs, and industry employers seeking qualified talent (Gallaugher & Wyner, 2016; Mitchell, 2022).

It is worth noting that there are a couple of different theories that may be useful to consider when designing such academia-industry partnerships. One such theory is Kolb's Learning Cycle (1984) which presents a learning model for students to learn about a concept prior to seeing it in practice and then reflecting on what took place. The phases of this approach include: 1) learning about an experience (abstraction conceptualization), 2) planning the experience (active experimentation), 3) actually having the experience (concrete experience), and 4) consciously reflecting on the experience (observational reflection) (Kolb, 1984). A phased approach like this may be helpful when designing an academia-industry partnership where students are seeking to develop relevant IS skills as summarized in the previous section. Social learning theory offers another relevant theory which values observation and behavior modeling and suggests mentoring can play an important role in the knowledge transfer and behavioral skills development of students (McLeod & Rao, 2004). This theory can be particularly relevant when designing academia-industry partnerships where students have the opportunity to learn from a formal mentor.

3. DIGITAL-READY MENTORSHIP PROGRAM DESIGN AND TEACHING APPROACH

3.1 Program Design

To address the goal of developing digitally proficient students and talent, we developed a digital-ready mentorship program to connect students with industry as a part of their undergraduate education. The program was designed to allow academic and

organizational leaders to collaborate in the preparation of IT graduates to be workforce-ready upon graduation. The key objectives of the program are to:

- Allow for students to master domain knowledge in IT as well as develop their communication, collaboration, and critical-thinking skills.
- Encourage collaboration between students, faculty, and employers from the beginning of a student's academic career.
- Expose students to challenges and opportunities in an organization while creating a professional pathway for students.

The program was designed to begin in the fall of the student's freshman year. Shortly after the fall term begins, interested freshman, majoring in technology-related programs (information systems, business analytics, computer science, etc.) are encouraged to apply for program consideration. As a part of the application, students submit their resume as well as a brief document outlining: 1) what makes them stand out among their peers, 2) areas of interest, and 3) how the program will be helpful for the future. Applications are reviewed by a small team of professors and organizational leaders. The number of students accepted is determined by the industry partner. Selected students are notified before the end of the fall semester.

The admitted students are invited into a 1-credit-hour course during the next three consecutive semesters (freshman spring, sophomore fall and spring) for a total of three credits. In the first year of the program, the industry partner assigns a mentor to each student that is loosely tied to the student's major and interests. In the second year, students work on a small technology project in the fall and a larger independent study project in the spring. Each semester, the collaboration is evaluated for continuation based on the interest of both students and the organization. A successful student and industry engagement might result in paid internship opportunities and ultimately a full-time position upon graduation. The full timeline of the program is summarized in Figure 1.

From the student perspective, this opportunity gives students a chance to learn from the real world and stand out among their peers. From the university perspective, this program provides an immersive experience for students with an industry leader, as early as the freshman year, allowing students to receive mentoring from a professional in the IT industry early in their careers to help shape, inform, and contextualize their education. From the industry perspective, this program provides a path for organizational leaders to lead in the cultivation of local talent and the next generation of technology leaders. Additionally, the organizational partner benefits by providing a leadership development opportunity to employees who serve as mentors. In fact, research has suggested that mentoring can lead to bi-directional growth benefiting both mentees and mentors (Neely et al., 2017).

3.2 Industry Partner Identification and Commitment

The idea for this program originated when a local organization approached faculty about the desire to recruit, and help develop, technology-oriented students at an earlier stage of their academic career. Because competition to recruit top talent is fierce, many students already have internships lined up by their junior year. By recruiting students into a mentorship program during their freshman year, the hope for this organization was to build a pipeline of talented students with an established relationship and interest in a paid internship position within the organization. In order to launch such a program, some planning and collaboration were needed. Initial planning meetings were held with a couple of faculty members representing different university technology programs and three employees from the industry partner, including the Chief Information Officer, and Human Resources Coordinator, and an administrative assistant. During the early planning stages, this group discussed how students would apply, the goals and structures of the program, timeline, faculty involvement, mentor responsibilities, and how many students would be accepted each year. It was also decided to start a new cohort of students each year to create a continuous pipeline. Ultimately, the industry partner was hoping this collaboration would result in one or two permanent hires from each graduating class. While there are not any financial costs associated with the establishment of this partnership, the industry partner did invest a fair amount of time into the initial establishment of the mentorship program.

Throughout the duration of the program, students meet regularly with their mentor to discuss technology projects, experience workplace culture and facility tours, engage in professional networking, and attend workshops. Thus, the student learning experience involves a necessary commitment from the industry partner. While the organization does not specifically give time to the university, the organization does allocate some time to manage the partnership and oversee/manage the mentor's experience. Thus, it is worth noting that the time spent to establish and maintain the program as well as the mentoring time spent was viewed by the employer as part of their mission to give back and to support their community.

A secondary goal of this industry partner was the outreach opportunity for their employees and the leadership skills development that mentoring could provide. Research has suggested that executives and organizational leaders want to encourage their employees to connect outside of the office and within the community as a way to develop their organizational diversity and ability to work in complex teams (Mitchell, 2020). Research also suggests that career development is an important tool that can help with retention of employees (Pflügler et al., 2018). This academic-industry partnership was designed to create outreach and leadership development opportunities for the employees involved. Ultimately, the organization values this program as a talent-development and recruiting tool as well as a skills-development exercise for their current employees seeking to grow their leadership skills. Other universities looking to identify possible industry partners for this type of project can emphasize such benefits as additional reasons to work together.

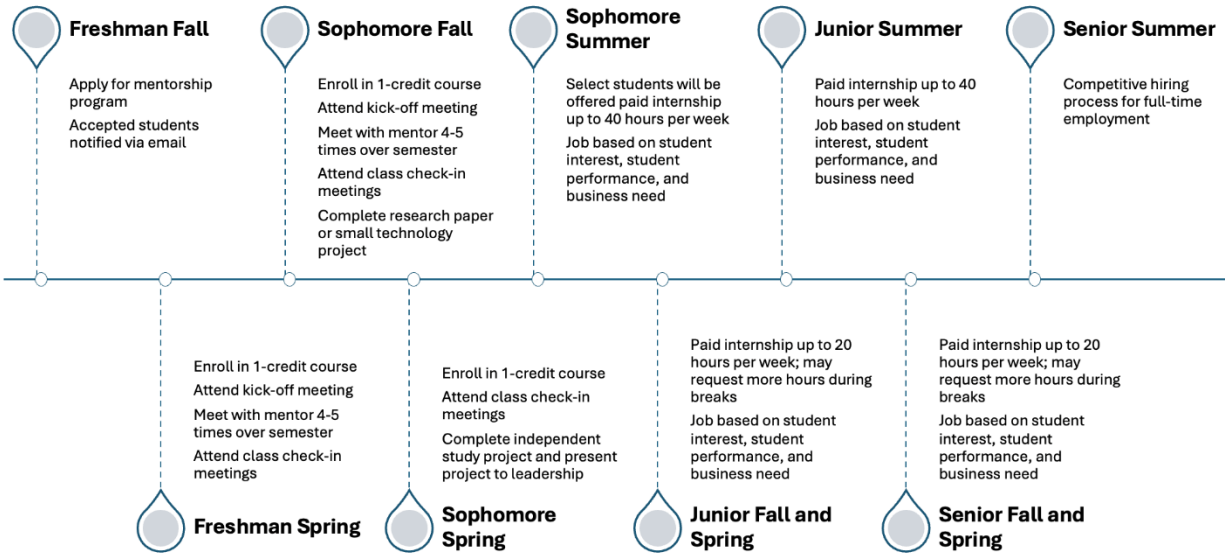

Figure 1. Digital-Ready Mentorship Program Timeline

3.3 Course Management

Students accepted into this program are enrolled in a one-credit course during the spring semester of their freshman year and during the fall and spring semesters of their sophomore year for a total of three credits. Each semester, the course is structured as a pass/fail course. Students can choose to take the course for no credit if it were to have a negative financial impact (e.g., if the one credit hour will put the student over the maximum allowed credit hours in a semester). The course requirements include a kickoff meeting at the start of the semester, monthly class meetings with the instructor, one-on-one meetings with assigned mentors, a research paper, and an individual study project. Table 1 includes an outline of the course requirements and the related timing. Students who meet all stated requirements for the semester receive credit for the course. Students who fail to meet all stated requirements will not receive credit for the course, and program continuation will be evaluated by the faculty and industry partner.

Each semester begins with a kick-off meeting including participating faculty, industry and academic leaders, students, and mentors. The kick-off meeting is attended by university and industry partner leadership to acknowledge the value of this partnership, and it gives the students the opportunity to meet with their mentors. This meeting has been held in person giving the full group the opportunity to socialize and take pictures. In other semesters, this meeting has been held as a virtual meeting with the full group in the main room and then breakout rooms used for one-on-one mentor and mentee discussions. Both formats have been successful.

Along with the kick-off meeting, regular class meetings are a part of this course. Students meet with their instructor during the first week of each semester. During this meeting, the instructor discusses the course requirements and notifies the students of all required meeting dates and assignments. Time is allowed for general questions. Subsequent class meetings are held for one hour each month during the semester. The primary purpose of these meetings is to check-in with students to ensure everything is going okay and to ensure students are on track to meet their course requirements. For each meeting, class time is used to touch-base regarding mentorship progress successes and challenges, and students are able to share their experiences with one another, brainstorm discussion questions, answer questions, or discuss upcoming events. Students are encouraged to reach out to the instructor if any scheduling issues or conflicts arise, but the class-time discussions can also help bring any issues or challenges to light so the faculty and industry partner can proactively address them. A more detailed description of the class, learning objectives, and grading criteria are included in Appendix A

Because a new cohort of students is recruited each fall, there are typically two cohorts of students enrolled in the 1-credit course during the spring semester (i.e., the new first year students and the returning sophomore students). When there are multiple cohorts of students, all cohorts meet together for the monthly class meetings. This allows the first-year students to hear what the second-year students are working on and allows the two groups to collaborate and learn from one another. From the faculty perspective, this means faculty are recruiting a new cohort (first-year students) and teaching a cohort (second-year students) in the fall semester and faculty are teaching two cohorts (first-year and second-year students) in the spring. A learning management system (LMS) is used to help organize and facilitate the courses and all of the students from the program are put into the same course utilizing the groups feature within the LMS to manage the course content for each respective cohort. Figure 2 shows the LMS materials by group.

Along with the regular class meetings, students are required to meet with their assigned mentors. As a part of the course requirements, students must meet with their mentor a minimum of five times for an hour each time. The initial kick-off meeting does count as one meeting. Students are responsible for scheduling their mentor meetings and submitting a meeting summary in the class LMS. Students can meet with their mentors on campus, at the mentor's office, an offsite location (e.g., coffee shop), or hold a virtual meeting. Appendix B

includes a list of possible discussion topics to help organize the meeting time.

Requirements	Description	Timing
Kickoff meetings	• Kickoff meeting includes participating faculty, industry and academic leaders, students, and mentors • Meeting is held in spring for newly accepted freshmen to meet their mentor; another kickoff meeting is held in fall to reconvene the sophomores and their mentors • Some semesters meetings have been held in person; other semesters virtual meetings have worked with the full group and then breakout rooms for one-on-one discussions	Freshman spring Sophomore fall
Class meetings	• Students meet as a group, with the instructor, to discuss course requirements and expectations • Sessions are used to touch-base regarding mentorship progress successes and challenges, share experiences with one another, brainstorm discussion questions, answer questions, discuss upcoming events, etc. • Class is worth 1 credit hour; objectives and grading criteria are included in Appendix A	Freshman spring Sophomore fall Sophomore spring
Mentor meetings	• Students meet with their mentor a minimum of five times (1 hour each); kickoff meetings count as one meeting • Students are responsible for scheduling these meetings • Students submit a meeting summary in class LMS • Possible discussion topics are included in Appendix B	Freshman spring Sophomore fall Sophomore spring is optional
Research paper or small project	• Students select a technology topic of their choice and complete a 3-5-page research paper or work on a small project • Students are encouraged to select a topic related to their field or something they learned about during their mentorship (new technologies, methodologies, software, data analysis, website, etc.)	Sophomore fall
Independent study project	• Students select and conduct an independent study project (see Appendix C for possibilities) • At the end of the semester, students present a 5-10-minute summary to industry leadership • Project and presentation are considered part of the paid internship interview process	Sophomore spring

Table 1. Required Coursework Description and Timing

In the second year of the program, students continue to meet with their mentor in the fall, but they also get to work on a research paper or small project that is shared with both the faculty member and the student's mentor. Students get to individually select a research paper topic (specific hardware or software, systems development methodologies, cybersecurity, current trends, ethical considerations, etc.) or a technology-focused project (coding project, website, database project, online portfolio, etc.) to work on. At the midpoint of the semester, students submit a short mid-semester update (i.e., project idea and progress) in the class LMS; at the end of the semester, students submit their completed project. While the course is graded pass/fail, projects are evaluated by both the faculty and the mentor and can play a factor in determining whether the student will continue in the program for the next semester.

In the spring of the sophomore year, students no longer have formal meetings with their mentor, but instead they expand on the work from the prior semester and complete an independent, technology-focused project (research project, white paper, website, app design, data dashboard, etc.) from a list of provided project topics. Possible ideas for this project are included in Appendix C. At the midpoint of the semester, students will submit a short mid-semester update (e.g., project idea, progress, and update with mentor meetings) in the class LMS. At the end of the semester, students will submit their final project in the class LMS, in a format that is appropriate for the task undertaken (website, paper, etc.). Additionally, at the end of this semester, students present their independent study work in a 5-10-minute presentation to industry leadership. Student presentations provide an opportunity for students to showcase their skills and practice presenting to a large audience in a professional setting. The presentation serves as the class requirement for the mentorship program and an element of the selection process for the paid internship positions, should they choose to apply. In addition to their technical skills, the project also gives students the opportunity to improve their skills in decisiveness, conceptual thinking, and innovation. The presentation audience includes program faculty, students, mentors, mentees, and industry leadership. Each student is allowed 5-7 minutes to present their project and another 3-4 minutes for audience questions. The question-and-answer portion is a useful opportunity for students to practice their soft skills in the areas of verbal communication, business acumen, accountability, and adaptability. The project and presentation are considered part of the paid internship interview process. While the digital-ready mentorship program timeline does continue past this point (see Figure 1), this project concludes the graded course portion of the experience.

4. EVIDENCE, LESSONS LEARNED, AND RECOMMENDATIONS FOR IS CURRICULA

4.1 Project Implementation

The digital-ready mentorship program outlined above has been in place since fall 2019 and has successfully facilitated a total of 50 students across five cohorts. Table 2 presents the participant information over the past five years.

To recruit the initial cohort of students, university faculty worked with the industry partner to create a video with testimonials from faculty, industry leaders, and employees at the organization who were university alums. The video and a program summary flyer were shared with all freshmen in a business introduction course as well as the introduction to programming course to recruit interested students. This information was also promoted in university emails and newsletters. As the program progressed, testimonials from student participants of the program were included in the recruitment materials. Each semester interested students are referred to university career services to help with their resume and application letters.

Along with the formal mentor-mentee relationships that have come from this program, students have completed paper and project work. For example, students have produced research papers on the impact of generative AI on industry, the conception and implementation of an electronics engineering lab, and other topics. Student project work has resulted in the development of a dashboard to analyze the impact of COVID-19 on an industry, the development of program code to integrate an AI chatbot on a website to answer general inquiry questions, a regression analysis of a dataset, and more. Each spring, second-year students have presented this work to approximately 65 technology leaders in the organization as a part of the program showcase. The feedback from this showcase has been positive overall.

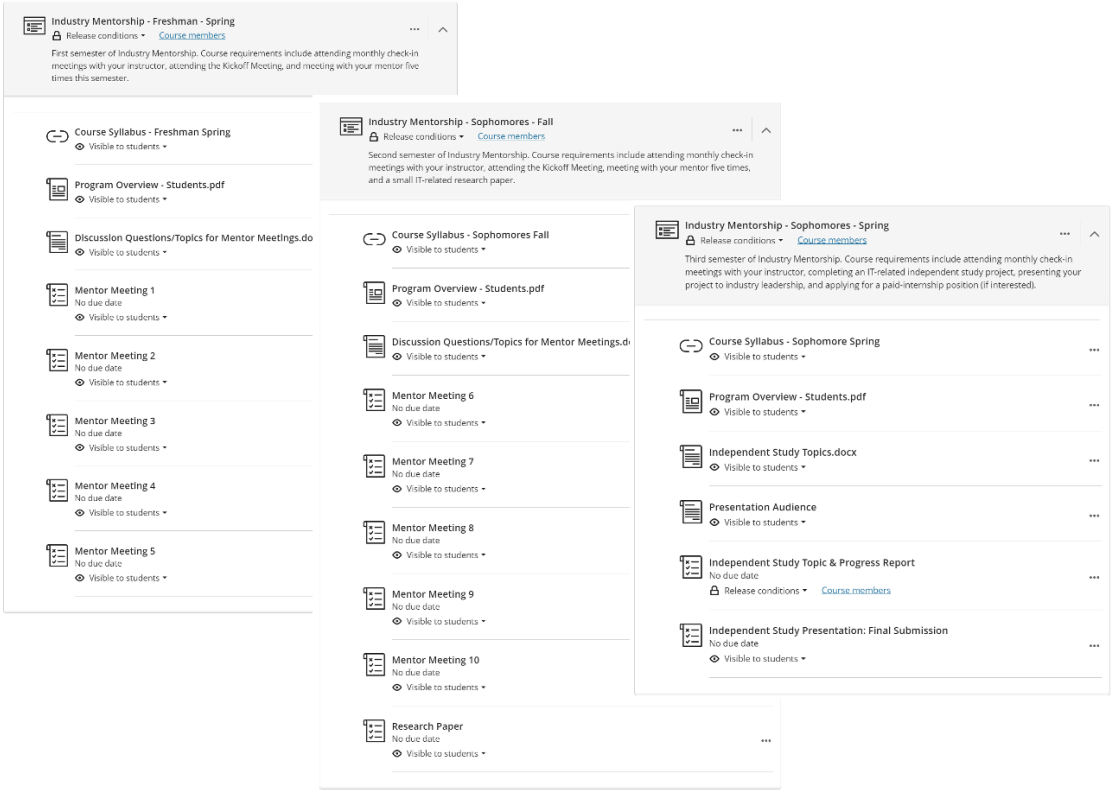

Figure 2. Screenshot of Learning Management System Course Materials by Semester

Variable	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024
# of First-Year Students	11	13	8	10	8
Gender	M (73%) F (27%)	M (69%) F (31%)	M (100%) F (0%)	M (80%) F (20%)	M (75%) F (25%)
Major categories	Business (9%) Computer Science (91%)	Business (31%) Computer Science (69%)	Business (13%) Computer Science (87%)	Business (20%) Computer Science (80%)	Business (25%) Computer Science (75%)
# of Mentors	11	13	8	10	8

Table 2. Digital-Ready Mentorship Participants

Table 2 includes the number of mentors that have participated in this partnership. In general, the mentors are professionals from the IT department who represent a variety of roles and levels including, but not limited to, Associate and Lead IT Solutions Developers, Platform Engineers, Security Architects and Engineers, Project and Program Managers, Quality Engineers, Business Analysts, and User Experience Designers. The organizational partner does offer this opportunity to junior- and senior-level employees and there are some regular mentors year after year, suggesting that the mentors find their program participation valuable.

While there have been multiple faculty involved in the establishment and coordination of this partnership, the course instruction has been handled by one faculty member each semester. While the course instructor is the primary contact, other faculty members do participate in an annual meeting with the industry partner to discuss program plans and requirements, student recruitment, and any other issues that need to be discussed. Typically, the primary faculty member takes the lead managing this relationship unless there is a change in teaching faculty (which there was after the first couple of years). It is important that the faculty member is attentive to the industry partner in order to maintain a positive working relationship. Teaching the digital-ready course counts as a regular course from the faculty perspective, however managing this program does cost a fair amount of time from the instructor perspective and does count as an outreach activity for the faculty member responsible for managing the relationship with the industry partner.

At this point, each cohort of students has resulted in an average of six-to-eight students selected for paid internships. Additionally, with two cohorts completing the full four-year program, there have been two students given full-time job offers post-graduation. This is an important outcome of the partnership as the industry partner was hoping this collaboration would result in one or two permanent hires from each graduating class.

4.2 Mentor Feedback and Lessons Learned

Along with the participant information summarized above, data has been collected from both the mentors and the students in the program. Feedback from mentors has been captured through employee surveys regarding student engagement, interaction, follow-through, and readiness for future employment. In fact, the industry partner in this project created a dashboard for each mentor/mentee pairing to track student and mentee meetings, discussion topic categories, rankings for each student regarding their readiness for an internship or job and interaction level as well as qualitative comments in each area. The majority of qualitative comments from the mentors have been positive, summarizing the professionalism and the development of the mentor-mentee relationship. For example, one mentor summarized their first meeting with the comment: "*[We] used this meeting as more of an ice breaker and get-to-know-you session. [Student] has opened up and we have started to have a great dialog. He is unsure what exactly he wants to get out of the program, however, he understood he wanted to get in as it is a once-in-a-lifetime sort of experience. He is super ambitions, however, still figuring everything out. That is to be expected in the freshman year of college.*" Students are in charge of setting up the meetings with their mentors and submitting summaries of each meeting. An important lesson learned is that mentor feedback also needs to be collected from the employee perspective. The mentor feedback not only helps to highlight student successes and challenges, but it is also important for the leadership development of the employee which is a key benefit of this partnership.

As already noted, the majority of qualitative feedback from the mentors suggests that the mentor-mentee relationships were successful. In fact, one mentor noted that they were quite happy with the mentee they were assigned, commenting: "*[Student] asked a number of great questions and expressed much interest in my role and the initiatives in which I am involved. We share a similar background … feels like a great match, thus far.*" Other mentors documented similar meeting summaries commenting one mentee was: "*always curious about new technology and how to make things better - continues to lean in*" and other was: "*great at asking for feedback, and seems always interested in learning!*" While most of the mentor-mentee matches have been successful, there was one case when the fit was not ideal, and a student wanted to be partnered with a new mentor as they moved through the program. In this situation, the student opted to switch mentors between the freshman spring semester and the sophomore fall semester. The lesson learned from this situation is to give both mentors and students an option to try out a new partner if they are interested in doing so.

Due to the multi-term design of this program, such a program does require a moderate amount of communication between the industry partner and the facilitating faculty. In our experience, we do bring key leaders together annually to assess how things are going and to determine if any changes need to be made. Along with this annual review, there is also a moderate time commitment needed from the industry partner for planning, mentor recruitment, the gathering of mentor feedback, and connecting with the primary faculty member. In this case, the industry partner has designated one individual as the primary contact and this person works with the faculty member to maintain regular communication and updates.

Not only is communication a key lesson learned, but flexibility is also important for this program to be successful. As Table 2 shows, the first semester of this initiative coincided with COVID-19 and required everyone to adapt. Fortunately, the program kick-off was in January 2020 and mentors and students were able to have a few meetings before the pandemic really impacted this program. Ultimately, the program was able to shift to virtual meetings and the program ended up being okay as relationships were already on their way before the pandemic required virtual meetings. Of course, there is research on online mentoring, in addition to traditional mentoring, suggesting there can be value from both formats (Neely et al., 2017). As the program has progressed, the class, students, and mentors have all benefited from hybrid collaboration opportunities and the flexibility of holding meetings both in person and virtual as needed.

A final lesson learned from the employer and mentor side is the importance of promoting this opportunity. Research suggests mentoring can lead to bi-directional growth that benefits the mentees as well as the mentors (Neely et al., 2017). Therefore, it is important to recruit, recognize, and reward the mentors who participate in this program too. As a part of this program, the industry partner did use press releases to recognize the mentors who participated. Of course, recognizing mentors for their community engagement and giving them props or

acknowledgement for doing this work is a good way to encourage more interest and participation.

4.3 Student Feedback and Lessons Learned

Along with the mentor feedback, qualitative comments have been gathered from student surveys. The feedback from students suggests this program offers an educational benefit for students. In fact, multiple students appreciate the connection to industry and the network development opportunity suggesting that students really do benefit from this experience. Comments from students have noted: "*Through the [digital-ready mentorship] program, I have been able to grow my network in [city] and make meaningful connections with industry professionals who want me to succeed.*" "*The [digital-ready mentorship] has allowed me to establish a connection with a person that is well respected in their field. I would not have had this opportunity without the [digital-ready mentorship]. The ability to meet with a person who has been in a similar position as yourself and can offer advice on what they wish they had done is immensely helpful. The program presents a unique opportunity to discuss what life is like after graduation and offers another means of developing as a student and professionally.*"

While students do learn from their mentors, they also learn from one another as a part of this experience. The class meetings allow students to share their mentor-mentee experiences, ultimately revealing another important lesson and the value of having the classes come together in person to learn from one another and share. In fact, the previous section highlighted a case where the mentee-mentor fit was not ideal. Part of the way this awareness came to light was from the students sharing their experiences in class. Ultimately, when the student was given the opportunity to switch to a new mentor, they knew who they wanted to be partnered with because they had heard of good experiences from a friend in class who had a specific mentor they wanted to learn from and connect with.

Students in this program are not only benefiting from the mentor and classroom connections, but they are able to recognize the value the program can add for learning more about career preparation and readiness, ultimately helping them to be more prepared for their career. Student comments include: "*Through the [digital-ready mentorship], I've gained both an insight into [organization] as a company and a mentor who has helped me work through the challenges of navigating a career path.*" "*From my time in the [digital-ready mentorship], I have had the benefit of guidance from professionals working in my field. The advice and expertise have proven invaluable so far, and I look forward to utilizing them more in the future. Participating in this program has given me an edge over my peers as I go into the work force.*"

Of course, this benefit only emerges for students who are active participants engaged in the program. Student engagement and good communication with the class instructor and mentor is an important lesson for this project to be a good experience. Unfortunately, over the last five years there have been a couple of students who did not prioritize clear communication and who became non-responsive to messages from the instructor and the partner organization. In one example, a student was asked to schedule an interview for the paid internship via phone calls and emails, but he never replied. In this case, the student communicated that the phone calls and emails were treated as spam, but this communication was after the interview deadline, and in the end, he was disappointed that he did not receive a paid internship offer. The lesson in this case is to make sure that students know when employer communication is expected and communicate appropriately.

Not only are students gaining value from the networking and relationships that are formed through this program, but they are also getting independent research and project experience that they are able to learn from and showcase. As noted earlier, students are producing research papers and dashboard, coding, and other projects as a part of this program experience. They are also given the opportunity to showcase this work to a large group of technology workers. The presentation portion of this program is a valuable opportunity for students to develop their digital workforce competencies required to be successful in the IT workforce (Petter et al., 2018). This program offers the chance to take their studies and classroom work and share it with a practical audience.

Students overwhelmingly recommend this program to continue in the future and encourage others to take advantage of this opportunity. Specific comments include: "*The [digital-ready mentorship] has helped me grow professionally through the interactions and experiences I've had so far. To anyone thinking about applying to the [digital-ready mentorship], I would say go for it! You've nothing to lose, but a lot to gain.*" "*Just do it. There is nothing to lose and a lot to gain. This is a great learning opportunity if you have little or no experience. Through your mentor, you can ask all sorts of questions, like what it's like to work in the real world or what you should do to get internships. Overall, it will be very beneficial for your professional and personal growth.*"

A final lesson learned suggests it may be worth considering a shorter, structured program in the future. For example, faculty could consider developing a program in which students are recruited in the fall semester of their sophomore year, rather than their freshman year, and participate in a mentorship program during the following spring semester. A one-on-one mentorship requirement would still be beneficial, but instead of papers and projects, another idea would be to use the monthly class sessions for industry workshops (overview of industry, overview of digital teams and initiatives, corporate culture, tech-related projects and methodologies, skills preparation, etc.). A program that starts slightly later might offer a more flexible way to accommodate transfer students or students who want to graduate early.

5. DISCUSSION AND CONCLUSION

The objective of this work is to present a digital-ready mentorship program designed to connect students with industry for technology mentorship to develop the future technology workforce and to determine what program outcomes and value can be achieved from such a program. In this teaching tip, we presented the digital-ready mentorship program developed at our university, teaching approach, lessons learned, and evidence from the project outcomes and learning experience. This program has been in place for five years and successfully admitted 50 students. Ultimately, this work addresses the call for more attention to the evaluation of professional mentoring in IS and technology programs and can contribute to our understanding of student knowledge and skills in relation to the IT profession (Bagley & Shaffer, 2015; Chauncey & Cukier,

2004; Joers et al., 2024; McLeod & Rao, 2004; Saltz et al., 2013).

This program we have shared has proven to be a very valuable experience for students – both those who participate in the mentorship only as well as those who go on to participate in the paid internship experience. Students are given a rare experience, from the early stages of their academic career, to gain first-hand experience and networking in their chosen field. Additionally, the industry partner has found value in this program for both the employees who participate in the program and the students who find placement in the organization upon graduation. From a research perspective, future studies should consider a longitudinal analysis on the impact of this type of mentorship program and intervention. In particular, it would be interesting to learn how such a program can influence student major choices, internship experiences, and ultimately job placement following such an experience.

In conclusion, the program presented in this teaching tip provides an example for IS educators to consider as they seek to engage their academic programs with industry for the preparation of students and the future technology workforce. We hope sharing this program will inspire other universities to develop similar programs with industry partners and ultimately address the IT labor shortage.

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APPENDICES

Appendix A. Syllabus Items

Catalog Description:
This course is for students admitted to a digital proficiency project. Students will meet regularly with the faculty member as well as their project cohort to determine appropriate assignments. Course I graded on a credit/no credit basis. Prerequisites: Program acceptance. Credit hours: 0-1.

Course Description:
Students enrolled in this course are participants in a university and industry internship partnership. Students (mentees) will be paired with an industry employee (mentor). Each mentee will be required to meet one-on-one with their professional mentor approximately twice each month during their freshman spring and sophomore fall semesters (for a total of approximately 10 meetings). In the sophomore year, students will complete two technology projects.

Course Learning Objectives:
At the end of this course, students that have taken an active part should:

- develop the ability to connect and maintain professional relationships.
- develop the ability to work with others effectively, both individually with a mentor and with others in class.
- develop professional communication skills to/from mentors, the professor, and peers.
- develop a plan for post-graduation employment.
- complete two projects that demonstrate technology proficiency.
- demonstrate ability to document course objectives per course requirements.

Course Requirements/Deliverables:
Accepted students can potentially enroll in this 1 credit hour course at three points: spring semester of their freshman year, fall semester of their sophomore year, and spring semester of their sophomore year. The requirements and deliverables for each semester vary and are summarized below:

Freshman Spring Semester:

- Students will attend a kickoff meeting in the first week of the semester. This counts as one mentor meeting.
- Students will meet with their mentor a minimum of five times during the semester.
- For each mentor meeting, students will post a summary in class LMS including meeting date and discussion summary.

Sophomores Fall Semester:

- Students will attend a kickoff meeting the first week of the semester. This counts as one mentor meeting.
- Students will meet with their mentor a minimum of five times during the semester.
- For each mentor meeting, students will post a summary in class LMS including meeting date and discussion summary.
- Students will select a technology related topic of their interest and complete a research paper or small project. Ideas include a 3-5-page research paper on a technology-related topic (specific hardware or software, systems development methodologies, cybersecurity, current trends, ethical considerations, etc.) or a technology-focused project (coding project, website, database project, online portfolio, etc.). At the midpoint of the semester, students will submit a short mid-semester update (project idea and progress) in class LMS and at the end of the semester, students will submit their completed project.

Sophomores Spring Semester:

- Students will select an independent, technology-focused project (research project, white paper, website, app design, data dashboard, etc.) from a list of provided project topics.
- At the midpoint of the semester, students will submit a short mid-semester update (project idea, progress, and update with mentor meetings) in class LMS.
- At the end of the semester, students will submit their final project in class LMS, in a format that is appropriate for the task undertaken (website, paper, etc.).
- Students interested in pursuing a paid internship must formally apply with the organization. Details will be provided with specific deadlines.
- Students interested in pursuing a paid internship must also present a summary of their project to organization leaders at the end of the semester. Presentations should be 5-10 minutes in length. This presentation is part of the interview process for the paid internship.

Grading Policy
The course is credit/no-credit. Students are required to attend each class meeting and submit all required assignments. Failure to submit required work will result in a no-credit grade.

Appendix B. Possible Questions for Mentors

Below is a list of questions and topics you can use when preparing for a meeting with your mentor. This is just intended to help you generate some ideas. You are welcome to ask other questions.

Mentor Specific:

How long have you worked with your employer and what roles have you been involved in?
What are the expectations or duties you have in your current role?
Where are you from? Where do you live currently?
What kind of education do you have and what were your favorite topics/subjects to study?
How did you get started working? Did you have an internship?
What made you choose this employer?
What are your hobbies or things you like to do when not at work?
What does a typical day/week look like for you?
What is an interesting or fun project that you have worked on?
Have there been challenges you faced at work or anything that you struggled with?
How do you handle the importance of salary vs. "other things"?
Ask mentor to introduce you to someone in your field.

Technology Related:

What programs, languages, platforms, or websites do you use?
How does the systems development lifecycle work at your employer?
How are projects managed and what is the normal project timeline or process like?
What testing is done on new projects?
Have you faced any cybersecurity challenges at work?
How does the technology department integrate with other departments?

Organizational Culture:

What does your company do? What is the competitive advantage?
What is the history of your company?
What is your work arrangement? In-office? Remote? Hybrid?
Do you feel comfortable in your workspace?
How do you handle work-life balance?
Request a tour of organization.
How do all the departments/teams work together to accomplish business goals?
What is the culture like at your organization? How is it maintained?
How would someone find and apply for a job at your organization?

Education and Job Preparation:

What skills are important?
Is experience outside of school and work valued (e.g., internships, study abroad, certifications)?
How do you stay current on best practices? Does your organization provide additional training?
What type of continuing education is required for your role? What do you participate in?
What advice would you give yourself when you were starting college?
Request a review of cover letter and resume.
What are some job search and interview tips?

Appendix C. Title of the Appendix Independent Study Topic Options

1. **A research/whitepaper/light thesis, 10 pages double-spaced, on a relevant technology topic**
    a. E.g., review of technology solutions in the market specific to industry
    b. E.g., pros/cons of companies adopting public cloud infrastructure to build solutions
    c. E.g., potential benefits/impacts of blockchain technology in the industry
    d. E.g., how would generative AI impact the industry, positively and/or negatively
    e. E.g., a review of major information security breaches in the industry in the past five years
2. **A data-oriented exercise, analysis, visualization, dashboard; leveraging public data source(s)**
    a. E.g., analysis of venture capital spending across industry
    b. E.g., industry trends in the United States
    c. E.g., training of large language models for industry-specific needs
3. **A prototype/demo/pilot software project, with working code that can convey a concept or idea of an app/website or software**
    a. E.g., chatbot to work with customers or employees, answer questions…etc.
    b. E.g., website to search for and industry resources
4. **Write a point/counterpoint paper, comparing and contrasting a technology advancement in the industry that has moral/ethical/societal concerns**
    a. E.g., AI, generative AI, technology-enabled or enhanced social media advertising
    b. E.g., government laws and regulations related to the industry
5. **Combine options from above**
    a. E.g., build a solution using visualization software (Tableau, PowerBI, etc.) for a data-analysis oriented problem leveraging public data
    b. E.g., create or use software that generates data (survey, tracking, etc.) and leverage data to do a data-oriented exercise and visualization of the result for analysis purposes

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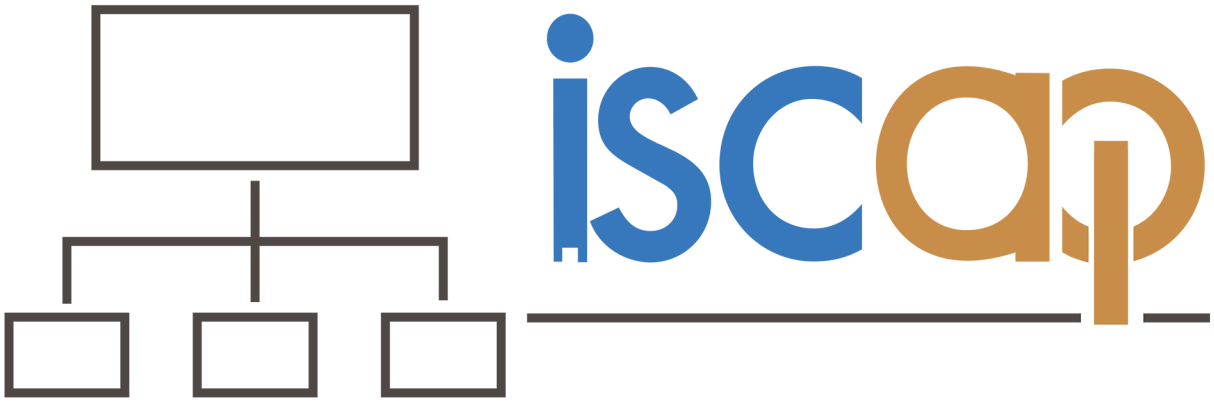

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