

Employer Engagement

NSF ATE IT Work Study Flexible Apprenticeship Model (ITFA)

Principal Investigator: Lawrence McWherter

Contents

Employer Recruitment

Employer Roundtable



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Office of Talent Strategy: Partnerships & Programs

IT Flexible Apprenticeship

Overview & Outcomes

IST Program Overview: AAS Degrees

- **Cybersecurity***
- **Software Developer***
- **Information Technology Support Technician***
- **Management Information Systems***
- Mobile App Development
- **Network Administrator***
- **Web Developer***
- Game Developer

**ITFA-eligible program*

IST Program Overview: Certificates

- CCNA Routing and Switching Certificate
- Computer Literacy Certificate
- **Data Analytics Certificate***
- Database Specialist Certificate
- IT Security Stackable Certificate
- IT Support Stackable Certificate
- IT Technician Stackable Certificate
- Linux Stackable Certificate
- **Software Developer Certificate***
- **Data Center Technician Certificate***
- Management Information Systems (MIS) Certificate
- Mobile Game Apps Certificate
- Network Administrator Certificate

**ITFA-eligible program*

Select Program Enrollment

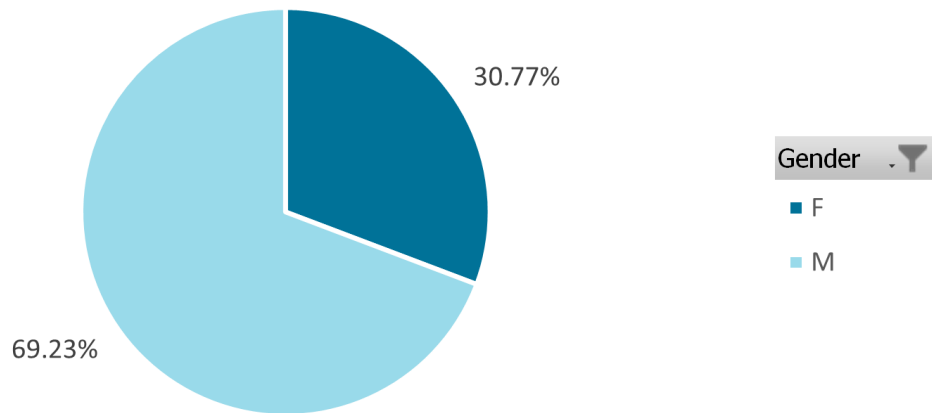
Program	Autumn 2021	Autumn 2022	Autumn 2023
Cybersecurity AAS	348	386	481
IT Support Technician AAS	109	122	121
Management Information Systems AAS	40	51	48
Network Administrator AAS	56	49	40
Software Developer AAS	301	361	360
Web Developer AAS	69	64	61
Data Analytics Certificate*	0	2	10
Data Center Technician Certificate	13	8	3

**New program beginning Autumn 2022*

Diverse Talent

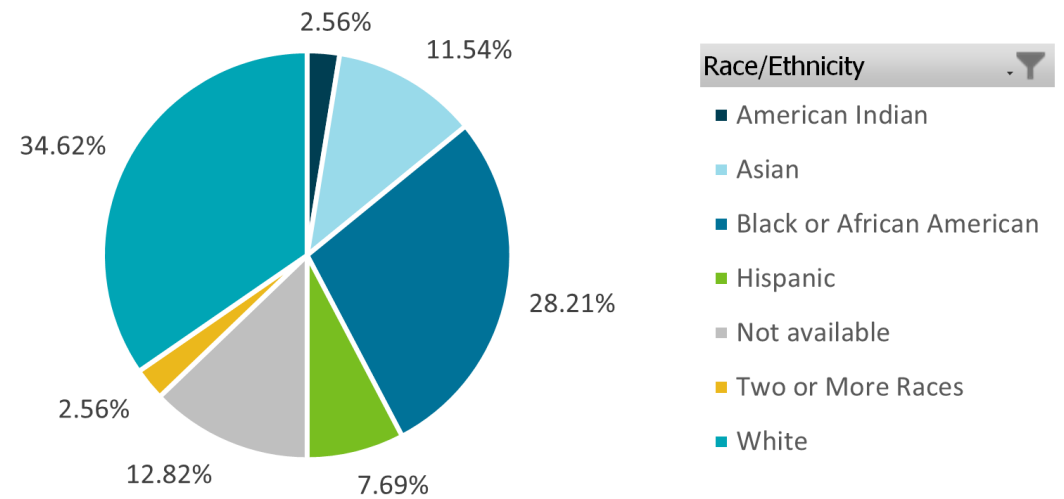
Percentage

Gender Identity



Percentage

Race and Ethnicity



CAREER
PREP

CAREER
PREP

INTERVIEWS

APPRENTICESHIP WITH
INDUSTRY PARTNER

GRADUATION

FULL-TIME
CLASSES

FULL-TIME
CLASSES

CONTINUED
CLASSES

CONTINUED
CLASSES

CONTINUED
CLASSES

Semester
1

Semester
2

Semester
3

Semester
4

Semester
5

NACE Career Competencies

CAREER & SELF DEVELOPMENT

Proactively develop oneself and one's career through continual personal and professional learning, awareness of one's strengths and weaknesses, navigation of career opportunities, and networking to build relationships within and without one's organization.

COMMUNICATION

Clearly and effectively exchange information, ideas, facts, and perspectives with persons inside and outside of an organization.

CRITICAL THINKING

Identify and respond to needs based upon an understanding of situational context and logical analysis of relevant information.

LEADERSHIP

Recognize and capitalize on personal and team strengths to achieve organizational goals.

EQUITY & INCLUSION

Demonstrate the awareness, attitude, knowledge, and skills required to equitably engage and include people from different local and global cultures. Engage in anti-racist practices that actively challenge the systems, structures, and policies of racism.

PROFESSIONALISM

Knowing work environments differ greatly, understand and demonstrate effective work habits, and act in the interest of the larger community and workplace.

TEAMWORK

Build and maintain collaborative relationships to work effectively toward common goals, while appreciating diverse viewpoints and shared responsibilities.

TECHNOLOGY

Understand and leverage technologies ethically to enhance efficiencies, complete tasks, and accomplish goals.

Career READY Process

The Career READY Process is comprised of a series of workshops to help students build necessary skill sets to be successful in the workplace.

The program consists of:

Continuous Improvement Efforts

Six Career READY workshops

All students *must* attain Career READY Status prior to interviews with employers.

Approved Resume Review

Approved Practice Interview

Approved Elevator Speech

Software Dev Year-1 Technical Courses

Autumn Semester

CSCI 1101: Computer Concepts and Apps

CSCI 1103: Intro to Programming Logic

ITST 1101: IT Fundamentals+

CSCI 1152: Networking Concepts

Spring Semester

CSCI 1145: HTML

CSCI 1275: Business Analysis w/ Agile Development Frameworks

CSCI 1320: Database Fundamentals

CSCI 1630: C# Programming I or 2467: Java Programming I

ITST 1130: Cloud Foundations for AWS Cloud Practitioner

Cybersecurity Year-1 Technical Courses

Autumn Semester

CSCI 1103: Intro to Programming Logic

CSCI 1320: Database Fundamentals

ITST 1101: Industrial Applications & Software

ITST 1102: Industrial Network Communications

Spring Semester

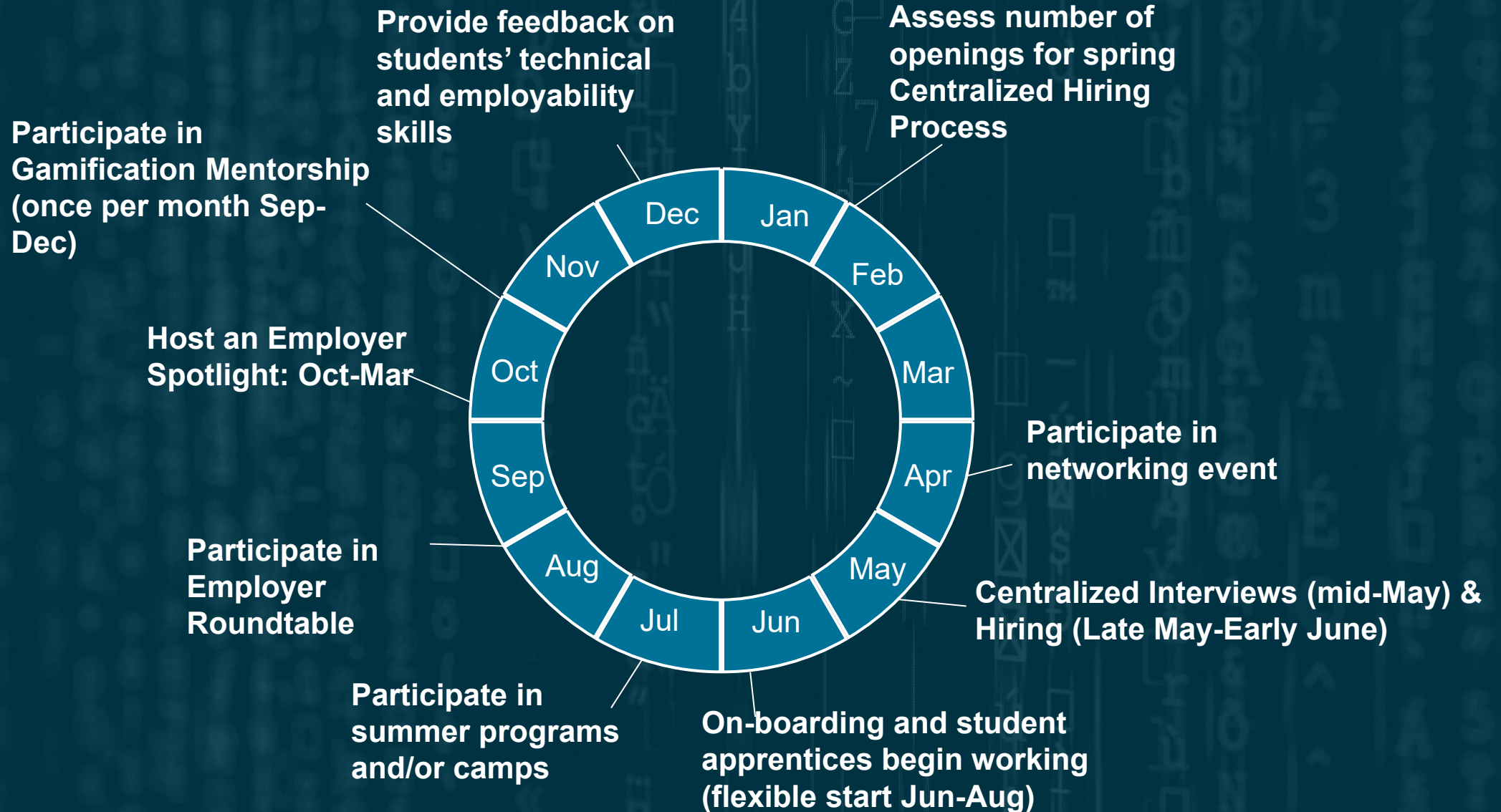
CSCI 1152: Networking Concepts

CSCI 2781: Computer Security Ethical & Legal Foundations

ITST 1136: Linux Essentials

ITST 2238: Information Security Fundamentals

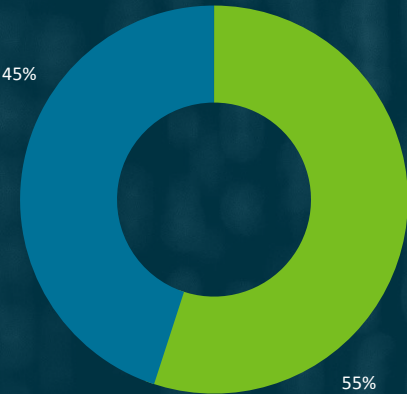
Employer Participation



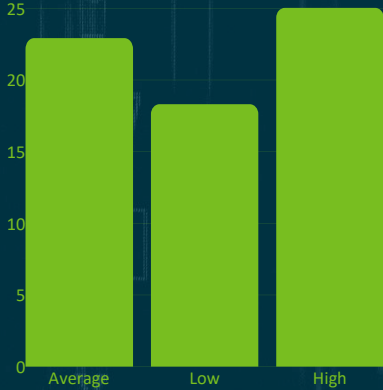
ITFA Outcomes



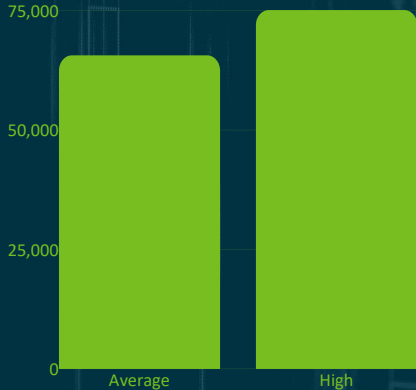
80%
Conversion to Full-Time Employment



55%
Students from Under-Represented Groups



\$23
Apprentice Average Hourly Wage



\$65k
Average Full-Time Salary

The Columbus State “Ask”

Commitment to the principles in the Employer Agreement

- Participation in 2 program events each year
- Adherence to the centralized hiring timeline
- ~12-month employment
- Competitive wage
- Potential for full-time conversion
- On-the-job mentorship
- Open communication
- Limited data sharing

2022 ITFA Employer Roundtable

Agenda

2021 Cohort in Historical Context

- *Apprenticeships, Wages, Demographics*

2021 Cohort Hiring Outcomes

- *Candidate Demographics vs. Apprentice Demographics*
- *Assessment of Candidate Quality*

2021 Process and Communication Assessment

- *What Worked and What Didn't*

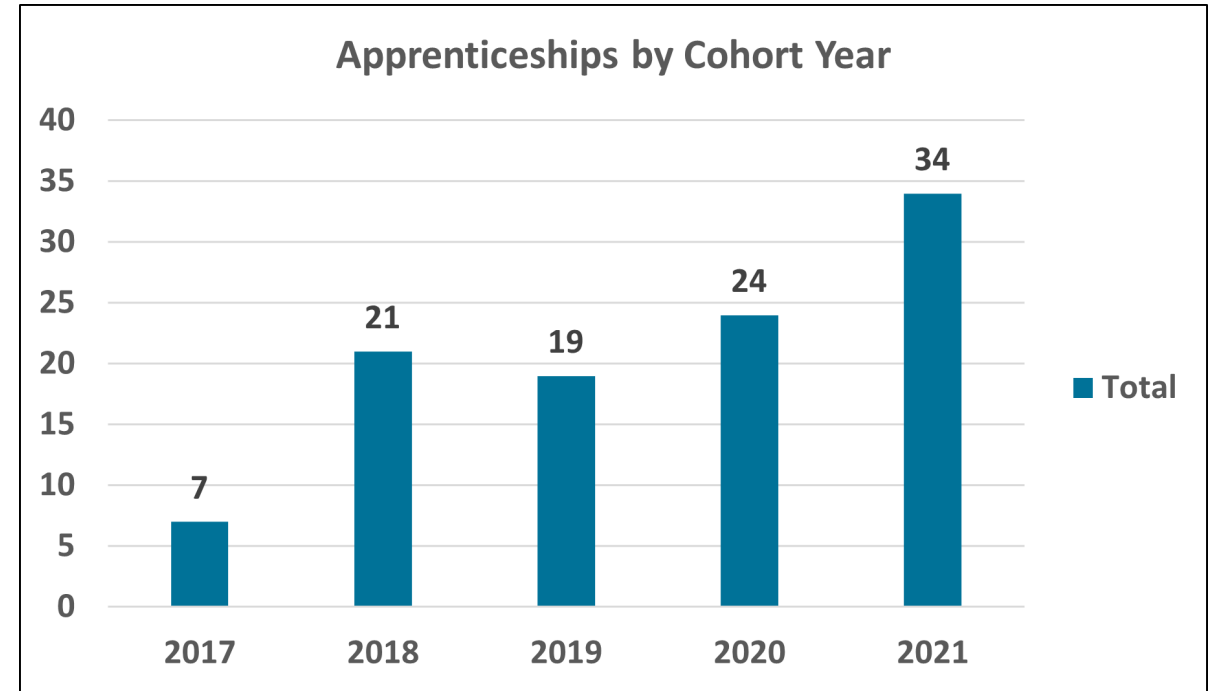
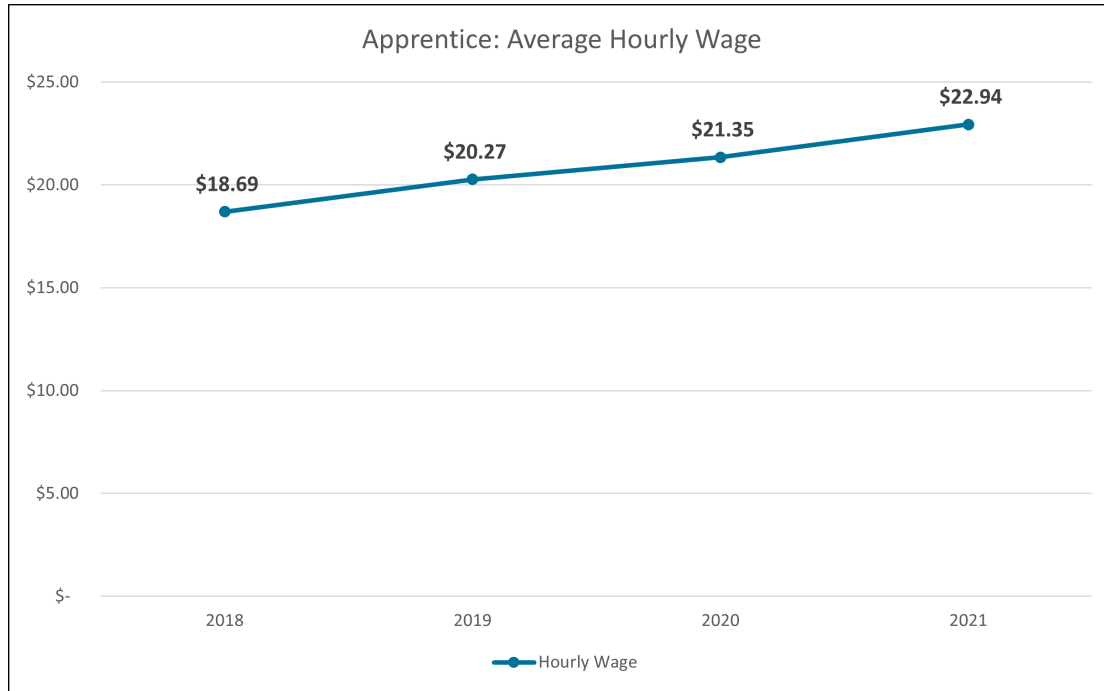
2022 Cohort

- *Demographics and Majors*
- *Gamification Mentorship*

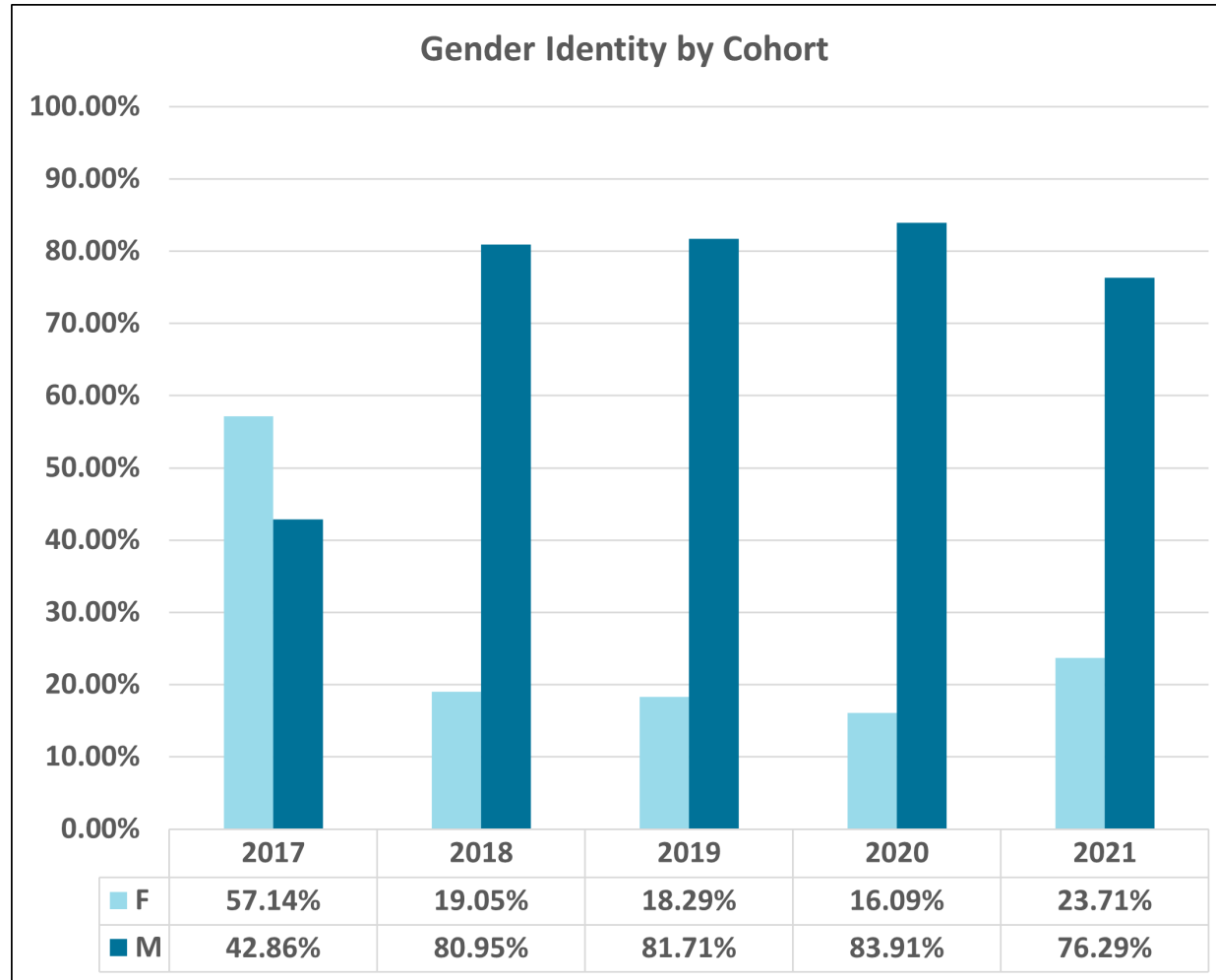
Additional Partnership Opportunities

- *Cybersecurity Business & Industry Leadership Team*
- *Workforce Certificates*

Program Growth: Apprenticeships & Wages

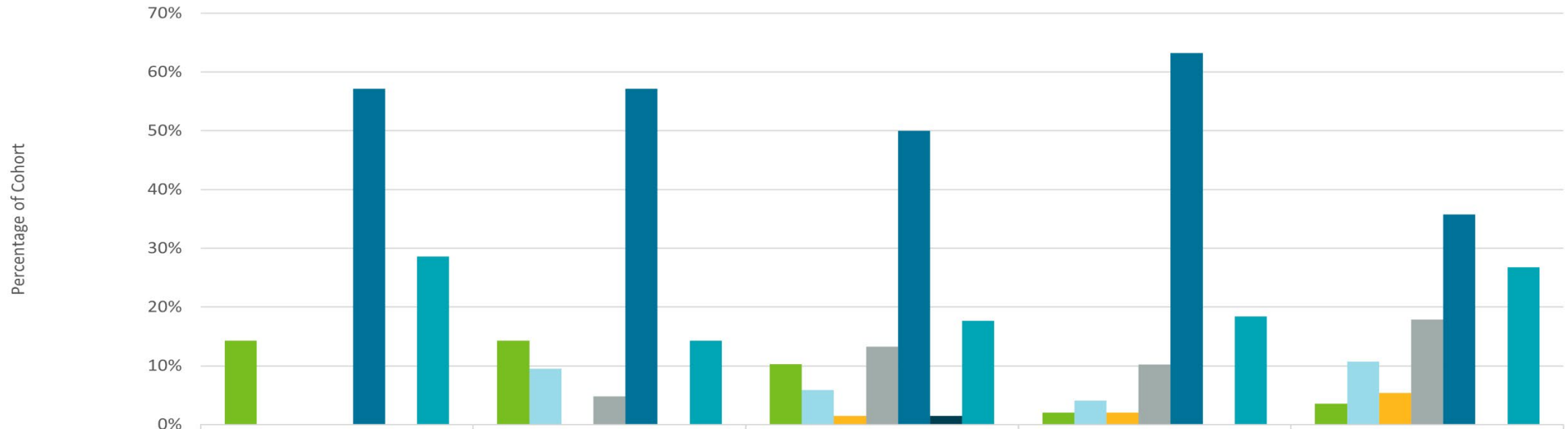


Diverse Talent: Gender Identity



Diverse Talent: Race & Ethnicity

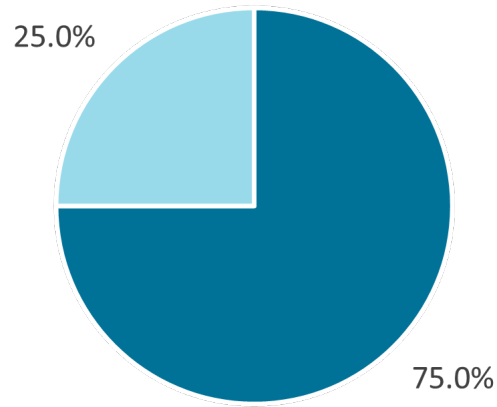
RACE AND ETHNICITY BY COHORT YEAR



	2017	2018	2019	2020	2021
Asian	14%	14%	10%	2%	4%
Hispanic	0%	10%	6%	4%	11%
Two or More Races	0%	0%	1%	2%	5%
Unknown	0%	5%	13%	10%	18%
White	57%	57%	50%	63%	36%
Amer. Ind.	0%	0%	1%	0%	0%
Black / AA	29%	14%	18%	18%	27%

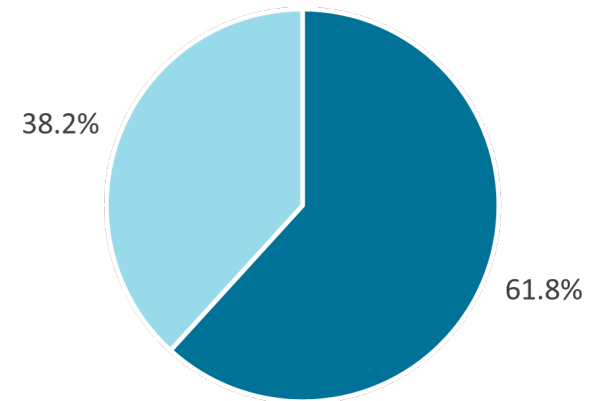
Hiring Outcomes: Gender Identity

2021 Cohort – Candidate Gender



■ Male ■ Female

2021 Cohort - Apprentice Gender



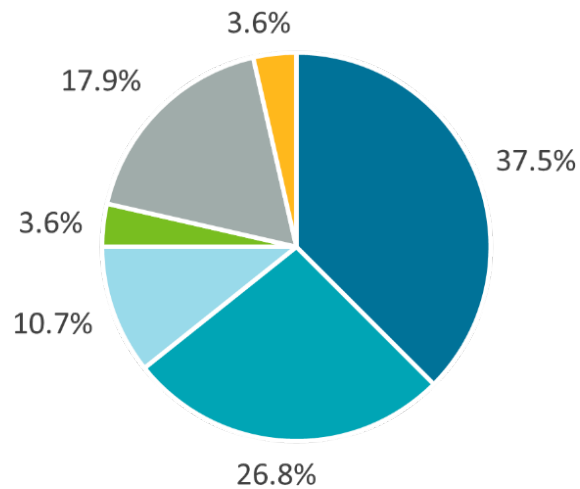
■ Male ■ Female

Data definitions:

- **Candidate:** ITFA student who completed the Career READY process and is eligible to interview with employers for an apprenticeship
- **Apprentice:** ITFA student who was offered, and accepted, an apprenticeship

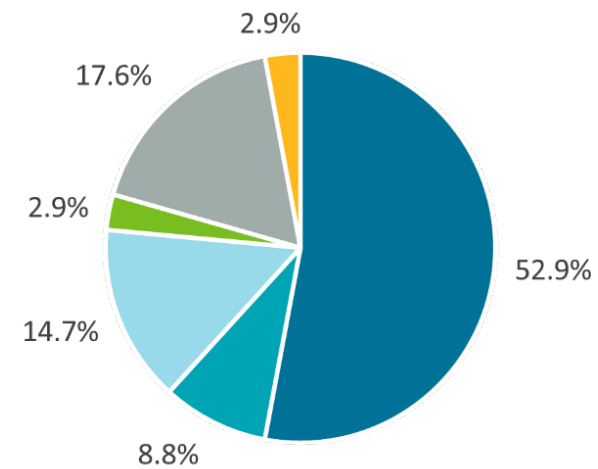
Hiring Outcomes: Race & Ethnicity

2021 Cohort – Candidate R&E



■ White ■ Black/AA ■ Hispanic ■ Asian ■ Unknown ■ Two or more

2021 Cohort – Apprentice R&E



■ White ■ Black/AA ■ Hispanic ■ Asian ■ Unknown ■ Two or More

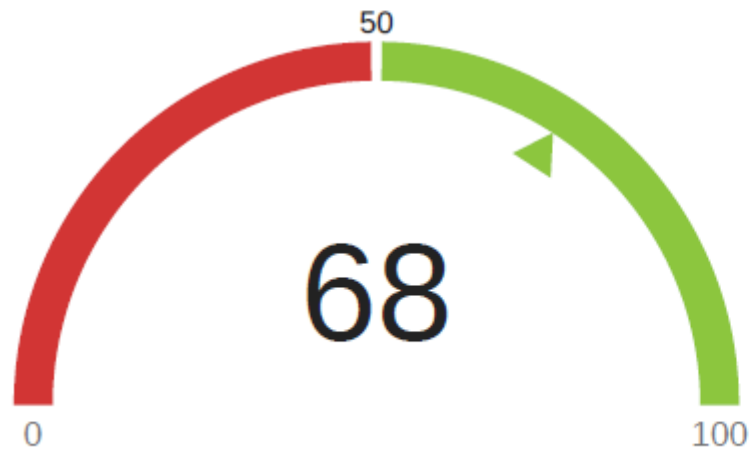
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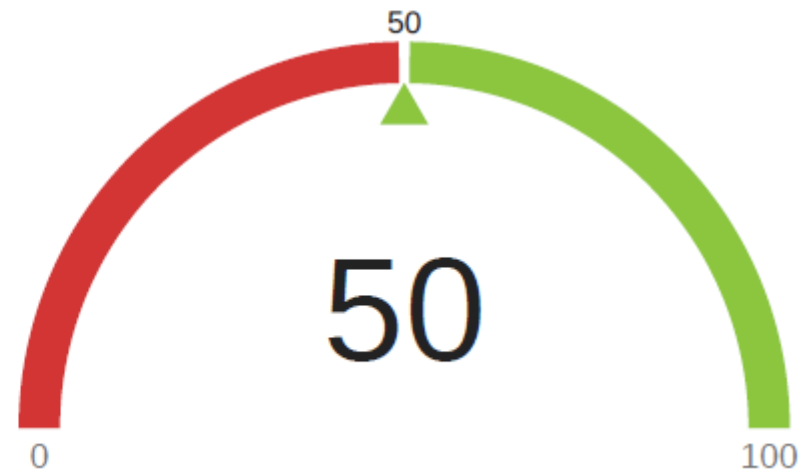
Candidate Assessment: Technical

Students' Technical Knowledge and Skills

Percentage of students who possessed the technical knowledge needed for the position



Percentage of students who possessed the technical skills needed for the position



Candidate Assessment: Technical

What technical knowledge or skills are most lacking among the students you interviewed?

Could use more depth in object-oriented design/development concepts, as well as JavaScript frameworks like React.

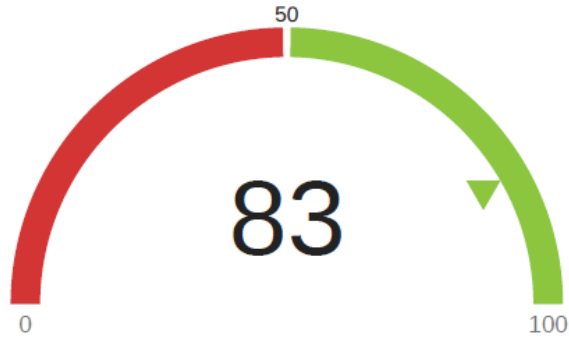
Many cyber jobs in cyber are compliance jobs but most students had not basis to discuss that area. This included top candidates. Beyond that I don't know how to answer. A standard technical profile relating technical skills would help discern skills candidate to candidate.

Neither had much real world IT experience but this is entry level so we'll train them up.

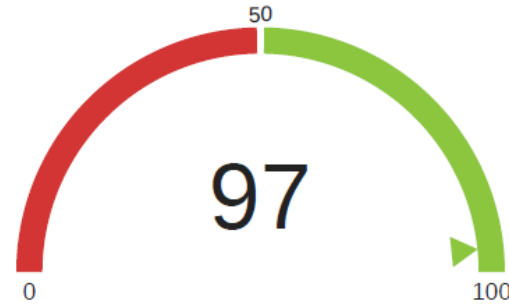
Version control in git is very important, and very few used git regularly. Only one student had notable experience in software development, even as a volunteer or freelancer.

Candidate Assessment: Soft

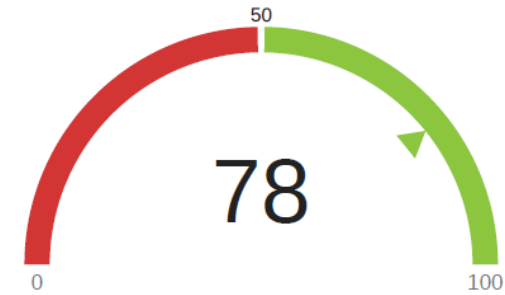
Percentage of students wearing appropriate professional attire



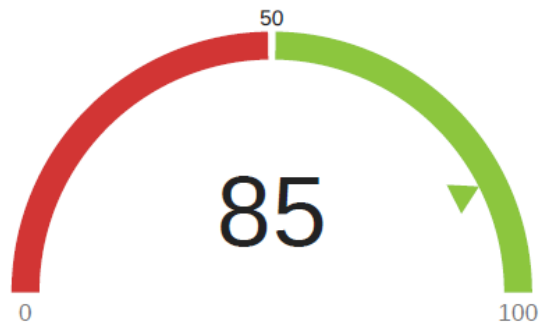
Percentage of students exhibiting appropriate use of technology



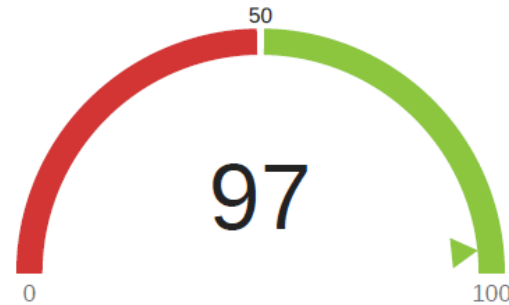
Percentage of students exhibiting appropriate levels of preparation



Percentage of students who seemed confident during their interactions



Percentage of students in an environment conducive to virtual discussion



Candidate Assessment: Soft

What 1 or 2 improvements are most needed regarding attire or interpersonal professionalism?

For those with English as a second language clarifying the question (some did) is a better strategy than just diving into answer.

In one or two cases, a spending a little more time on researching our company, service offerings, types of projects we do (all on our website) would have been optimal

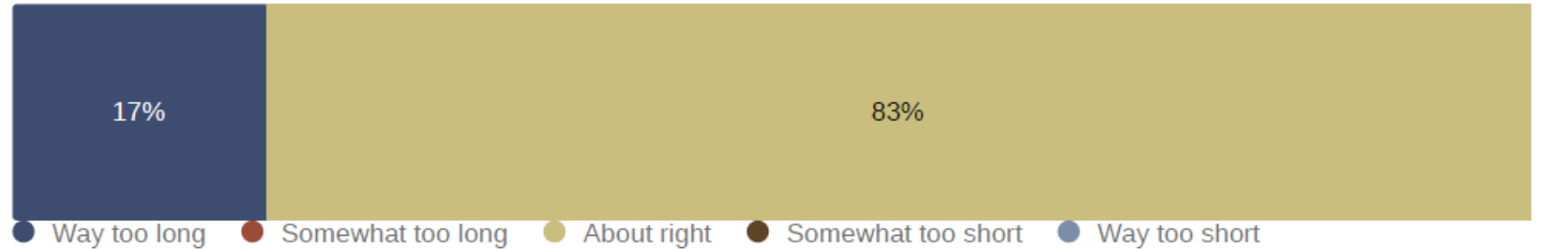
The thank you emails I received after the interview were great, but getting those from every candidate would be better; Having good questions about the company and our work from every candidate would have also been better. Some didn't have company-specific questions.

Process Review

How would you rate the quality of communication from Columbus State regarding dates/deadlines leading up to the interviews?



How would you rate the length of time designated for each interview?

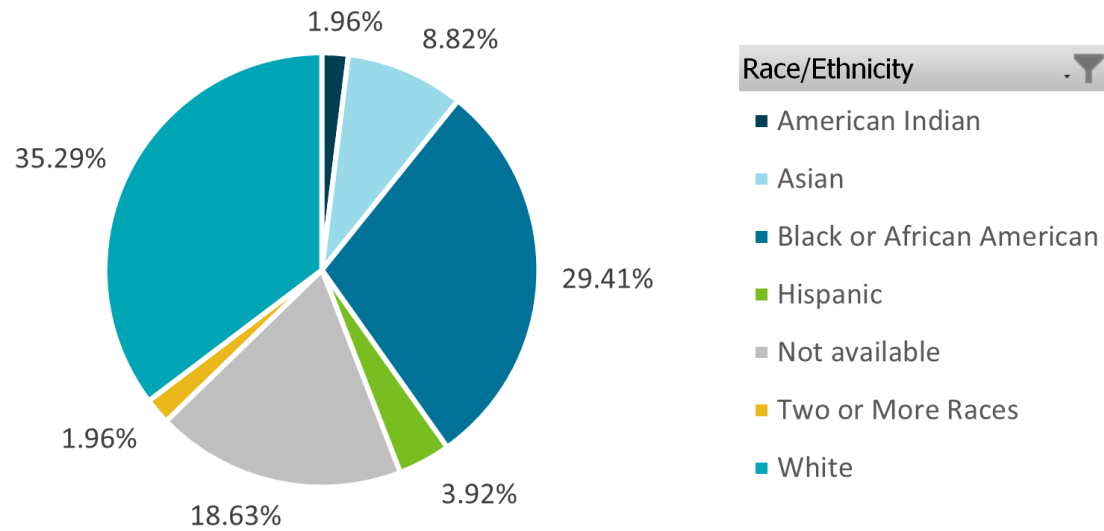


Pre-Apprentice Engagement
Participation Timeline
Communications
Handshake

2022 Cohort: Demographics

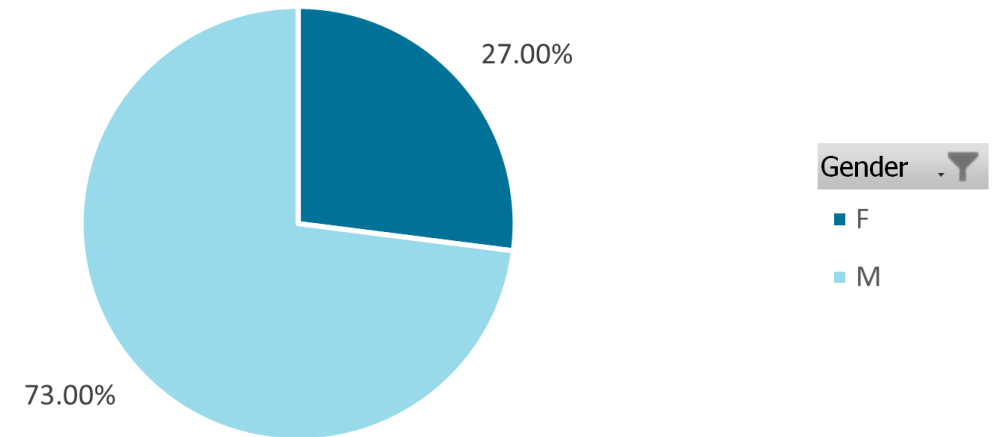
Percentage

Race and Ethnicity

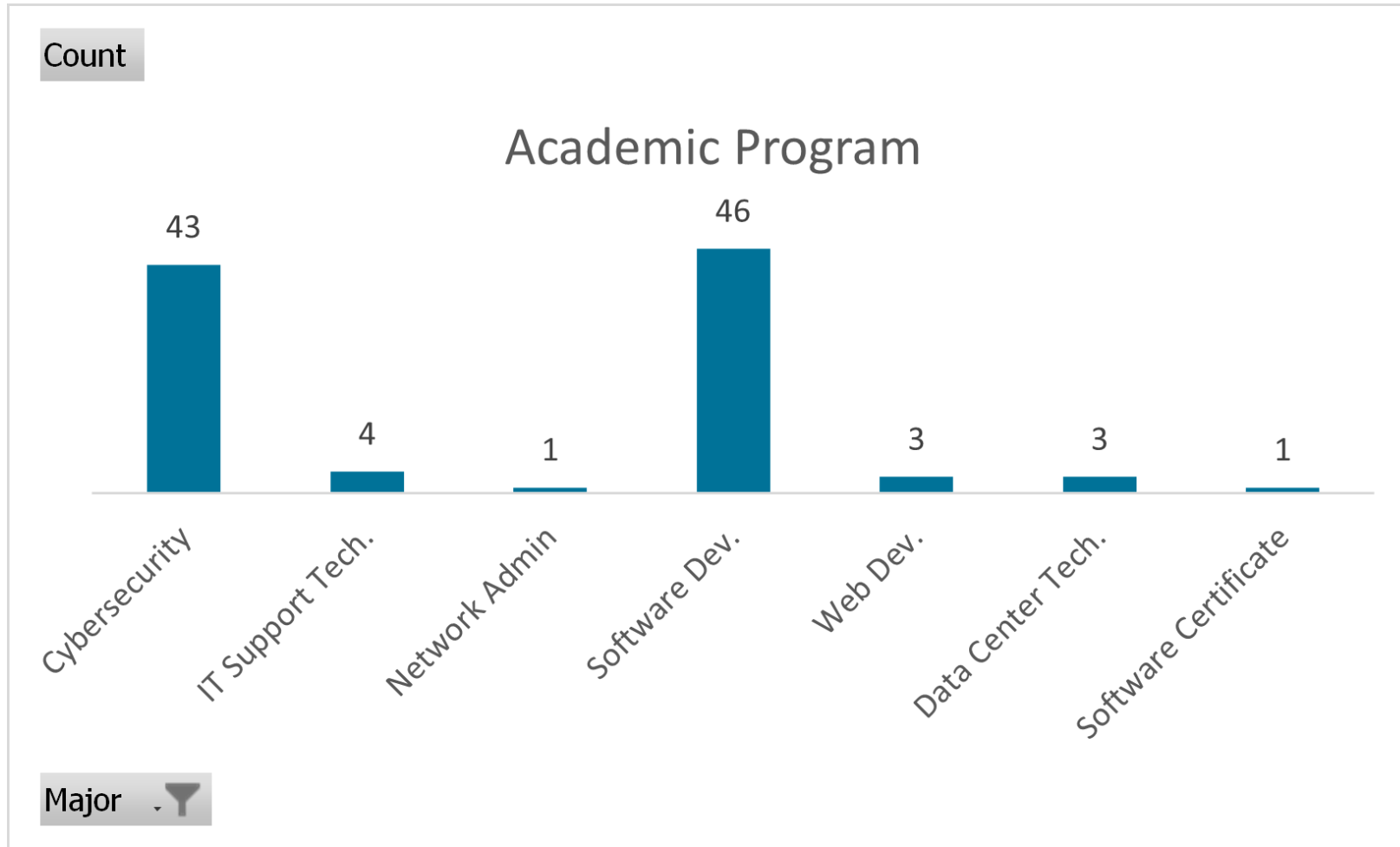


Percentage

Gender Identity



2022 Cohort: Majors



Gameful Mentorship

USING AN ESCAPE ROOM AS GAMEFUL TRAINING WITH STUDENTS

February 01, 2019 | By Dillon R. Waggoner, Samantha J. Martin, Jeff L. Eads, and R. Dean Branson



Gamification: The use of game-design elements in non-game concepts

- Ball State University developed escape room workshops to increase student participation and skill development
 - Workplace problem solving
 - Outcomes overwhelmingly positive
- 94.4% indicated that they thought the activity and discussion were good practices for real workplace problem solving

IT Gamification Activities



Microsoft Teams 2-hour event

- **Escape Room:** Friday, October 14th 11:00 am – 1:00 pm
- **Shark Tank:** Friday, November 18th 11:00 am – 1:00 pm
- **Technical Jeopardy:** Friday, December 2nd from 11:00 am – 1:00 pm

Mentor trainings are 30-minutes and occur 1 week prior to the event. Additional materials are sent to support the mentor.

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TECHNOLOGY

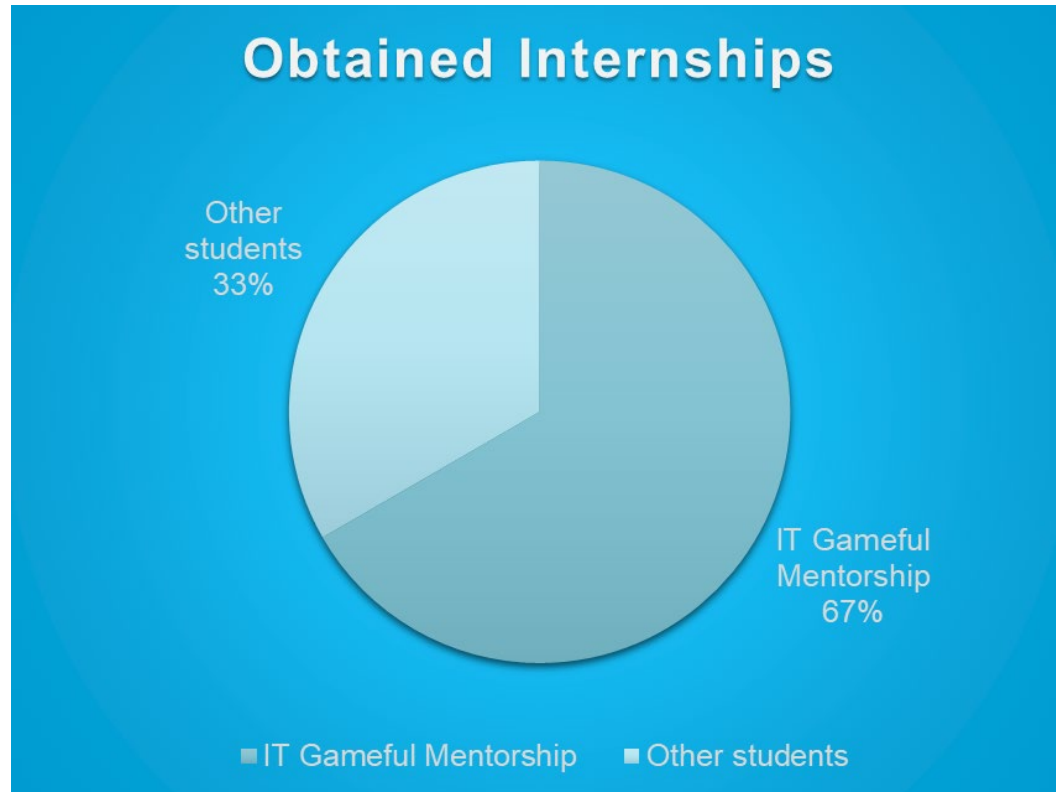
Understand and leverage technologies ethically to enhance efficiencies, complete tasks, and accomplish goals.

Employer Benefits



Engage	Engage with students earlier in the process prior to the Meet & Greet and apprenticeship interviews.
Learn	Learn and get to know our students, their skills, abilities, and projects.
2021 Results	Last years pilot program positively impacted the number of diverse candidate hires from 6 to 13 students!

Student Feedback/Results



- ❑ 43 Unique students participated
- ❑ **5 students received FT salaried positions**, 4 of which participated in the events.
- ❑ **67%** Accepted offers with employers with **1 student obtaining a position prior to ITFA interviews!**

Employer Feedback/Link



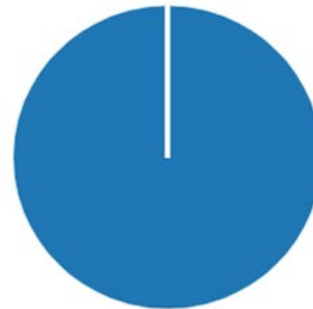
- All 5 mentors indicated that they were ***satisfied with the Gamification events!***

<https://tinyurl.com/yrs8mrfa>

18. Were your needs satisfied after the completion of the series of events?

[More Details](#)

● Yes	5
● No	0
● Other	0



Join our Cybersecurity BILT

- The Business & Industry Leadership Team (BILT) model puts industry in a co-leadership role for college technical programs so they have direct input into KSAs that program graduates should possess
- Members must be cybersecurity SMEs (e.g., high-level technical executives, first-line hiring managers, technicians currently holding a cybersecurity position)
- Members meet 3-4 times per year - one longer meeting for KSA evaluation (2-3 hours) and the remaining to discuss feedback and industry trends (1 hour)
- The goal is to produce candidates your business is more likely to hire
- Please contact: Stephanie Schuler sschuler1@csc.edu or Geoff Bauer

