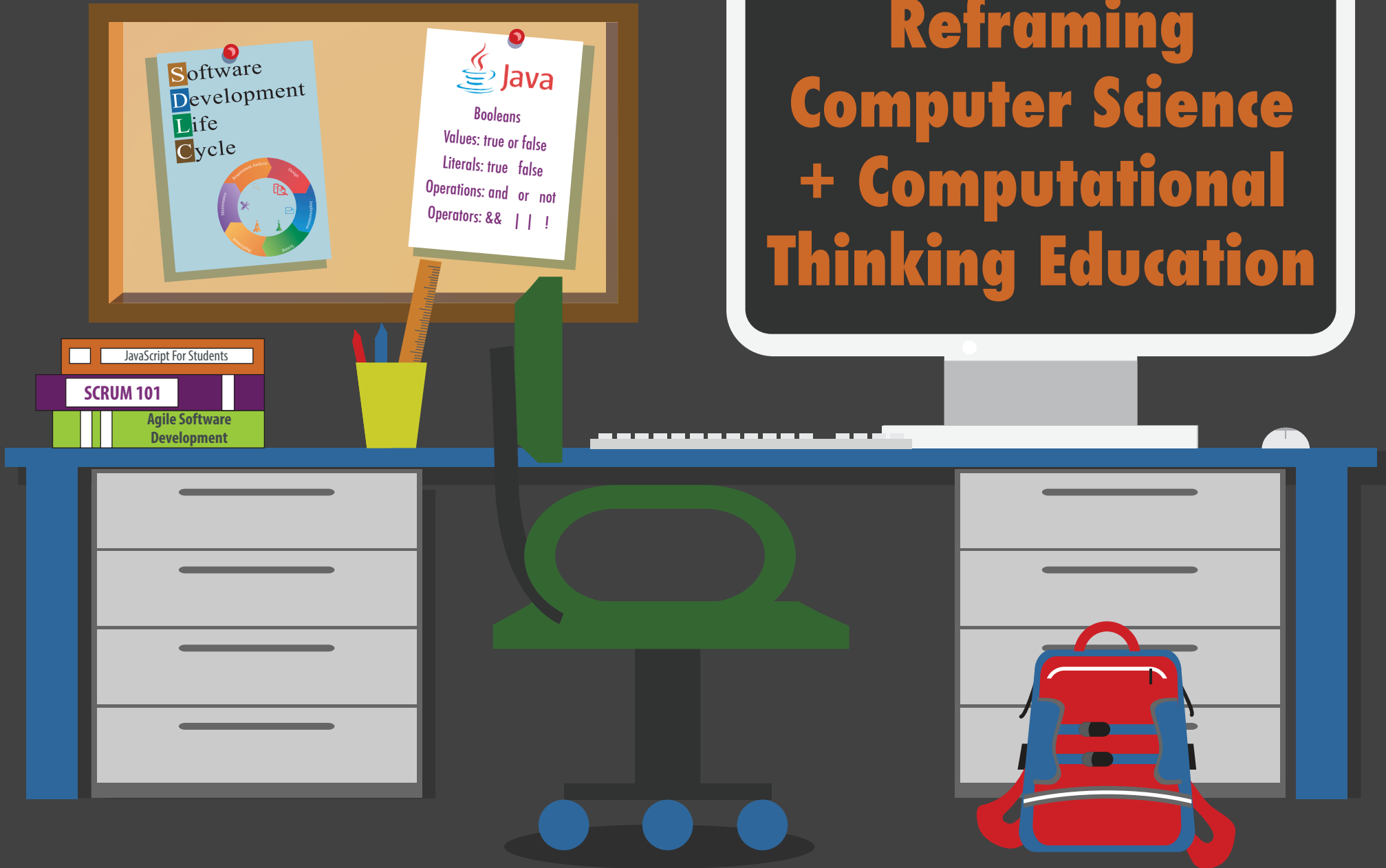


# Reframing Computer Science + Computational Thinking Education

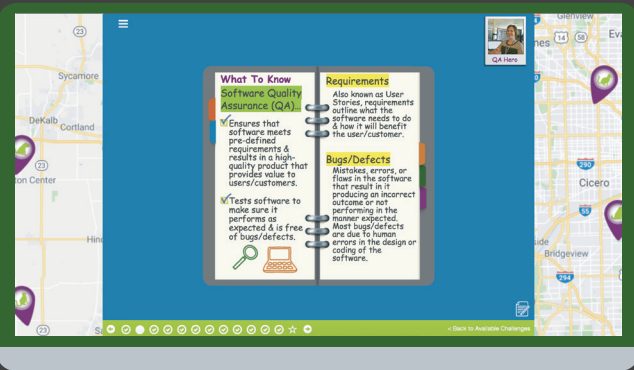


In education today, we need to teach computer science and computational thinking (CS/CT) in a more expansive manner beyond the context of coding and robotics. Couragion provides supplemental computer science curriculum and educator professional experiences that upskill students in crucial occupational and essential competencies that are relevant and required for the workforce of the future. Couragion's unique experience focuses on equity and broadening participation in STEM fields.

## Immersive, Student-Led Challenges

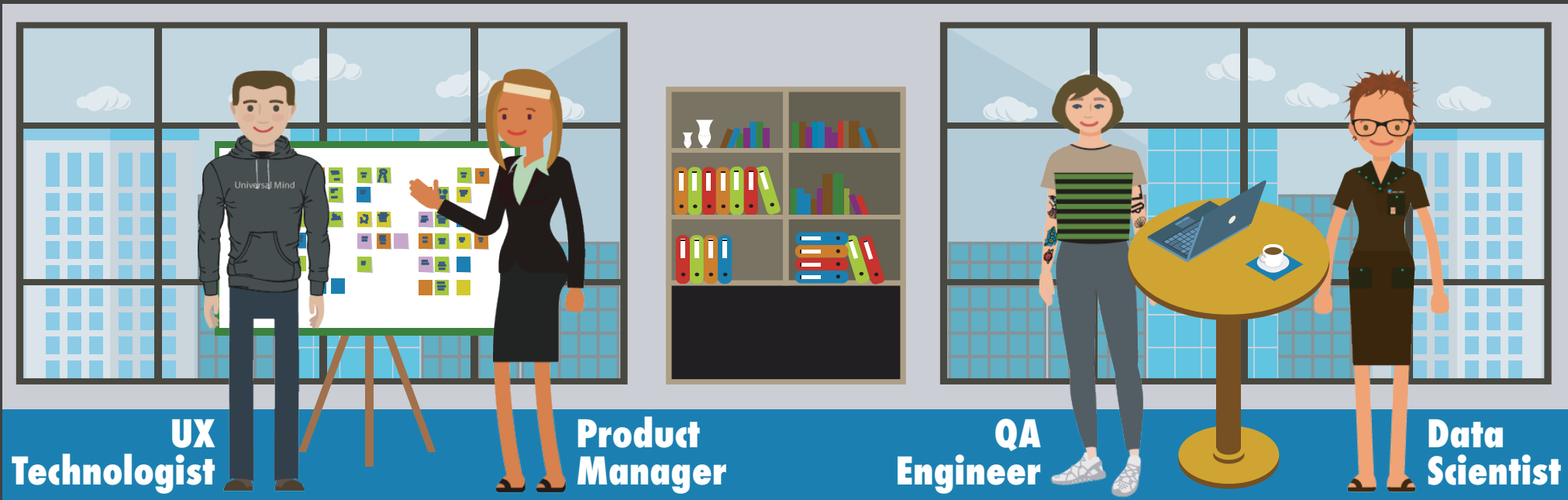
## Contextual, Work-Based Learning Experiences

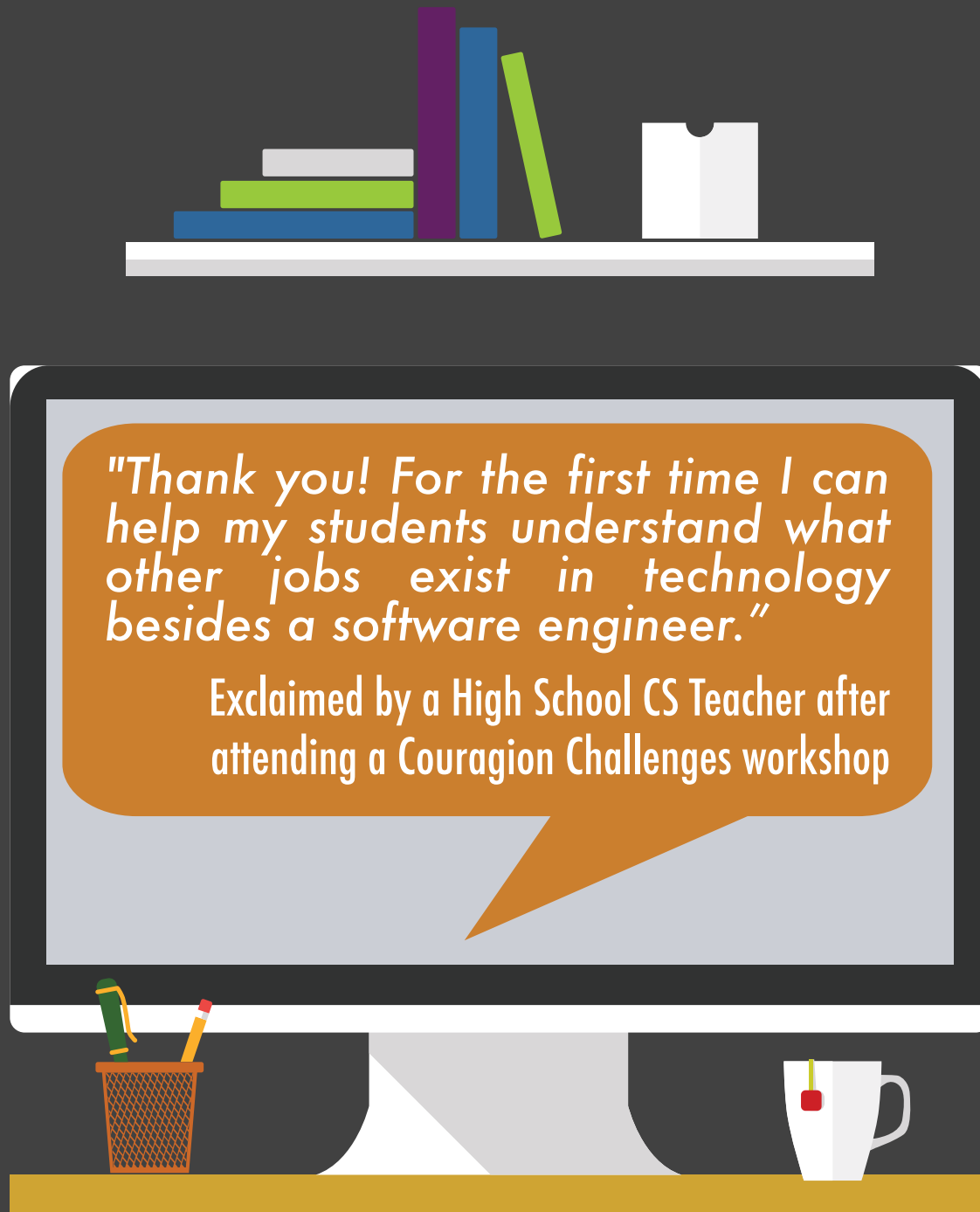
## Essential & Occupational Skills Mastery



The tech sector accounts for more than \$1.3 trillion and an estimated 8% of total activity in the U.S. economy per CompTIA's Cyberstates™ report. More than ever, CS-related jobs are required to innovate across every industry from healthcare to security to education and beyond. Computing jobs constitute the backbone of the U.S. economy both in the tech sector and in tech occupations across all other industries.

While software engineers and computer programmers are in high demand, they only represent one role and skill set needed in a typical software development team. There are critical roles and skills in the world of tech - especially those outside of engineers and programmers - that are not largely understood by students, educators, families or other career influencers. Technology teams often include Quality Assurance (QA) Engineers, User Experience (UX) Technologists, Product Managers, Data Scientists, and Cyber Security Experts. The fallacy that careers in tech are synonymous with coding is detrimental to our efforts to attract underrepresented populations.





*"Thank you! For the first time I can help my students understand what other jobs exist in technology besides a software engineer."*

Exclaimed by a High School CS Teacher after attending a Couragion Challenges workshop

We need to expand the disciplines taught in secondary and postsecondary computer science to encompass skills across computational thinking – such as data science, agile methods, and essential skills such as problem-solving, creativity, and critical thinking.

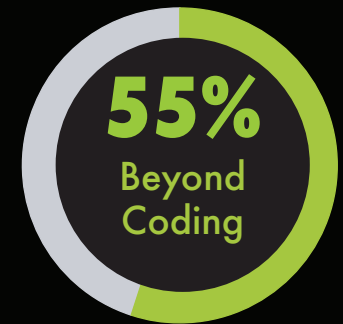
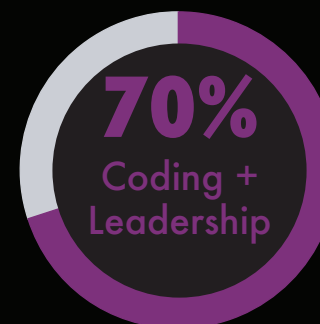
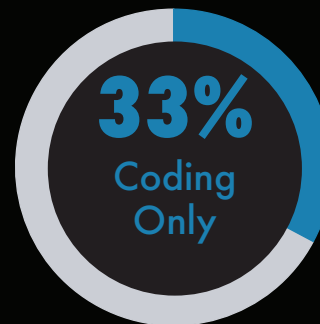
There is a complete spectrum of tech careers - that when understood appeal to and attract underrepresented populations who prefer to work more socially and collectively. These critical jobs represent the needs of customers, serve as the bridge between business and technology teams, operate in entrepreneurial and collaborative settings, and are on the hook for the commercial success of their endeavors.

While school districts have rushed to add coding curriculum to embrace CS/CT, few have incorporated other technology-oriented programs - with Couragion's research showing less than 15% of schools teaching UX, QA or product management concepts.

Couragion's research illuminates a path towards broadening participation in CS/CT pathways. We recently analyzed the results from one of our partner schools where 79% of students are people of color and 74% are eligible for free or reduced lunch. We learned that CS/CT careers which are broader than or complementary to software development jobs are better fits for underrepresented populations.

- When exploring pure coding jobs, 80% of white males find these careers to be a 'best fit' for their interests, values, and desired work characteristics – whereby only 33% of females and 44% of students of color find such jobs to be a 'best fit'.
- When the coding job involves management or leadership responsibilities, the percent of 'best fits' among underrepresented students increases substantially with 70% of females and 58% of students of color finding such careers a best fit.
- Similarly, for CS/CT careers that partner or team with software developers (such as Quality Assurance (QA) Engineers, User Experience (UX) Technologists, Product Managers, Data Scientists, or Cyber Security Experts), 66% more females and 23% more students of color receive a 'best fit' compared to pure coding jobs.

% Of Female Students With  
'Best Fit' Career Matches By Job Type



After School  
Coding Club!

Sign-up in student portal  
before Tuesday.



## CS/CT Curriculum

Couragion's CS/CT Challenges improve classroom relevance, better inform student choice, and increase retention in real-world technology pathways. Students learn key concepts in the Agile Software Development methodology, program development, computational artifacts, data analysis, testing, troubleshooting, the impacts of computing, and more! Couragion's curriculum is aligned to the CSTA K-12 Standards and sits alongside any existing computer science, technology or STEM curriculum.

By increasing the awareness of the types of technology careers available, improving the perception of who can succeed in computing-related careers, and boosting workforce readiness in computer science and computational thinking – together we'll inspire underrepresented populations to pursue technology pathways.

## CS/CT & Design Thinking Professional Learning

Couragion's professional learning experiences focus on building educators' knowledge of CS/CT and literacy of technology careers all delivered via an equity centered design thinking approach that, for teachers, leads to improved motivation and confidence, enhanced skills and abilities, and positive changes to classroom practice.

*"I did like the creativity of it and how interactive it is. It makes you feel like you're actually learning how to do this person's job."*

Male STEM Academy 10<sup>th</sup> Grader

*"Teaching CS is no more about creating more software developers than teaching English is about creating more novelists."*

Alfred Thompson, CS Teacher