

NICE Webinar Series

NATIONAL INITIATIVE FOR CYBERSECURITY EDUCATION



Encouraging Cybersecurity Career Discovery via Career Assessment Tools

December 19, 2018

K12 Career Development and Assessment

Chris Mackey,
General Manager

The Myers-Briggs Company

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VITA NAVIS™



CPP
innovation labs



The Myers-Briggs
Company

1. Introduction to the Innovation Labs Project
2. K12 World of Work Integration Framework
3. Interests and Career Exploration in K12

Innovation Labs at The Myers-Briggs Co

Vision, Beliefs, and Values

Make personality and interest assessment accessible to everyone.

Seek to make data actionable by making it personal and meaningful.

Create strategic value for schools by helping them understand their students deeply.

Place control of data and relationships in the hands of the student user.

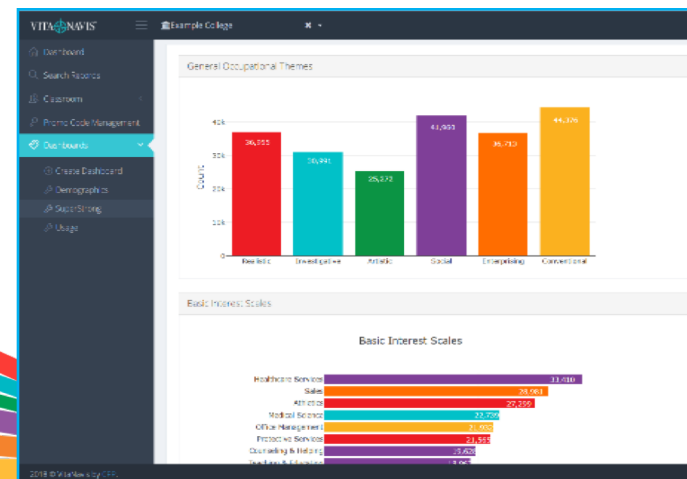


Our new model levels the playing field

Universal student access leads to organizational insight



Student Exploration



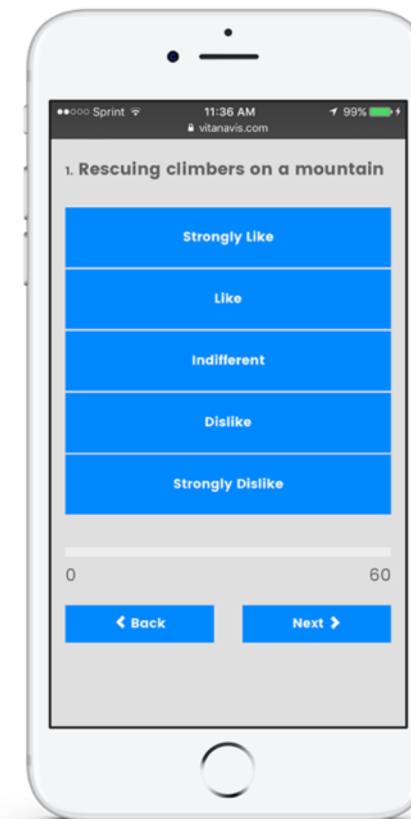
Interests Dashboard

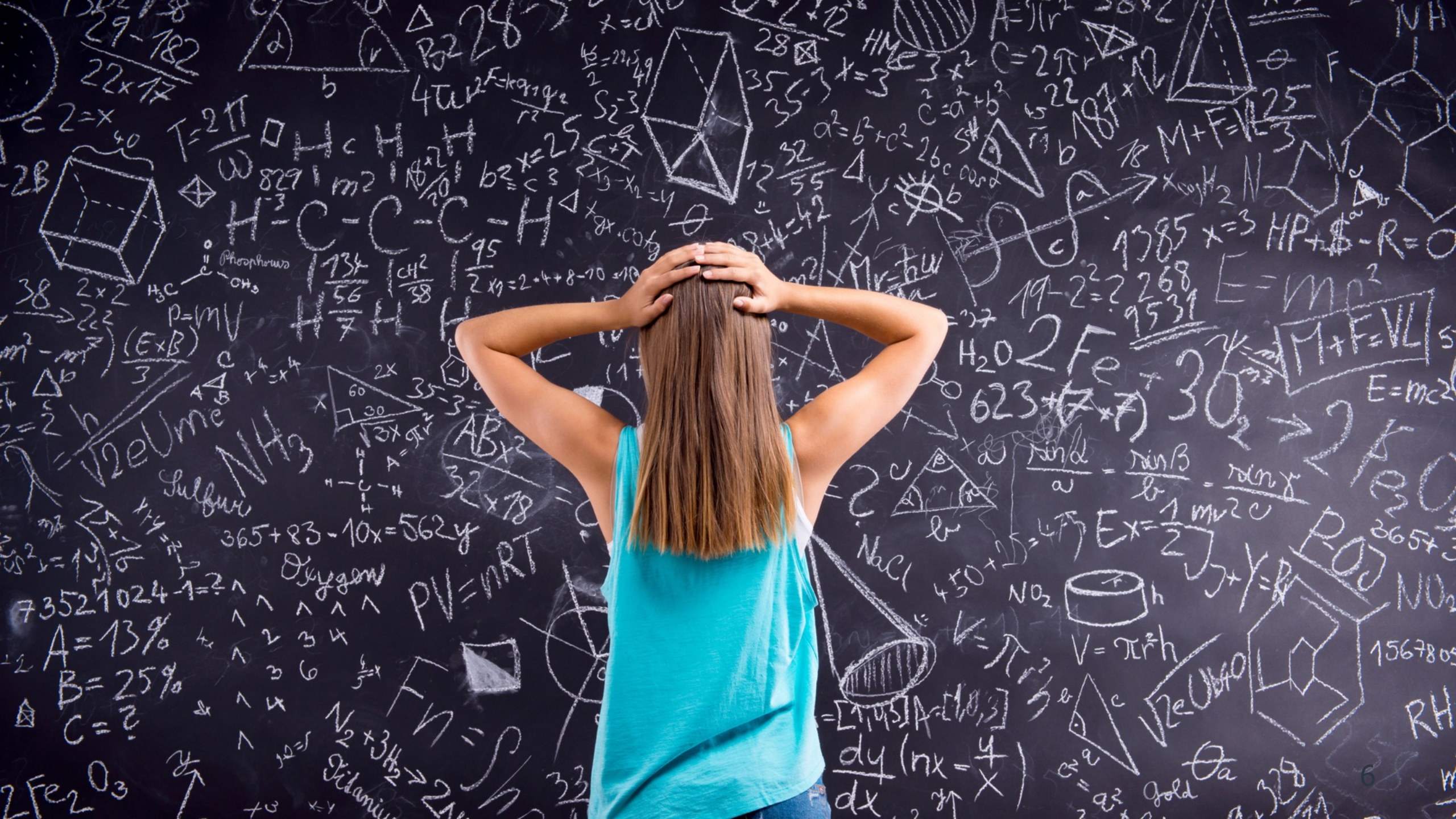
Shifting Paradigms: The SuperStrong

Making Assessments More Accessible to More Students

- Rapid, mobile, and immediate
- Students complete in less than 10 minutes
- Self-interpretable and user friendly
- Valid, reliable, accurate

EXPLORATORY!



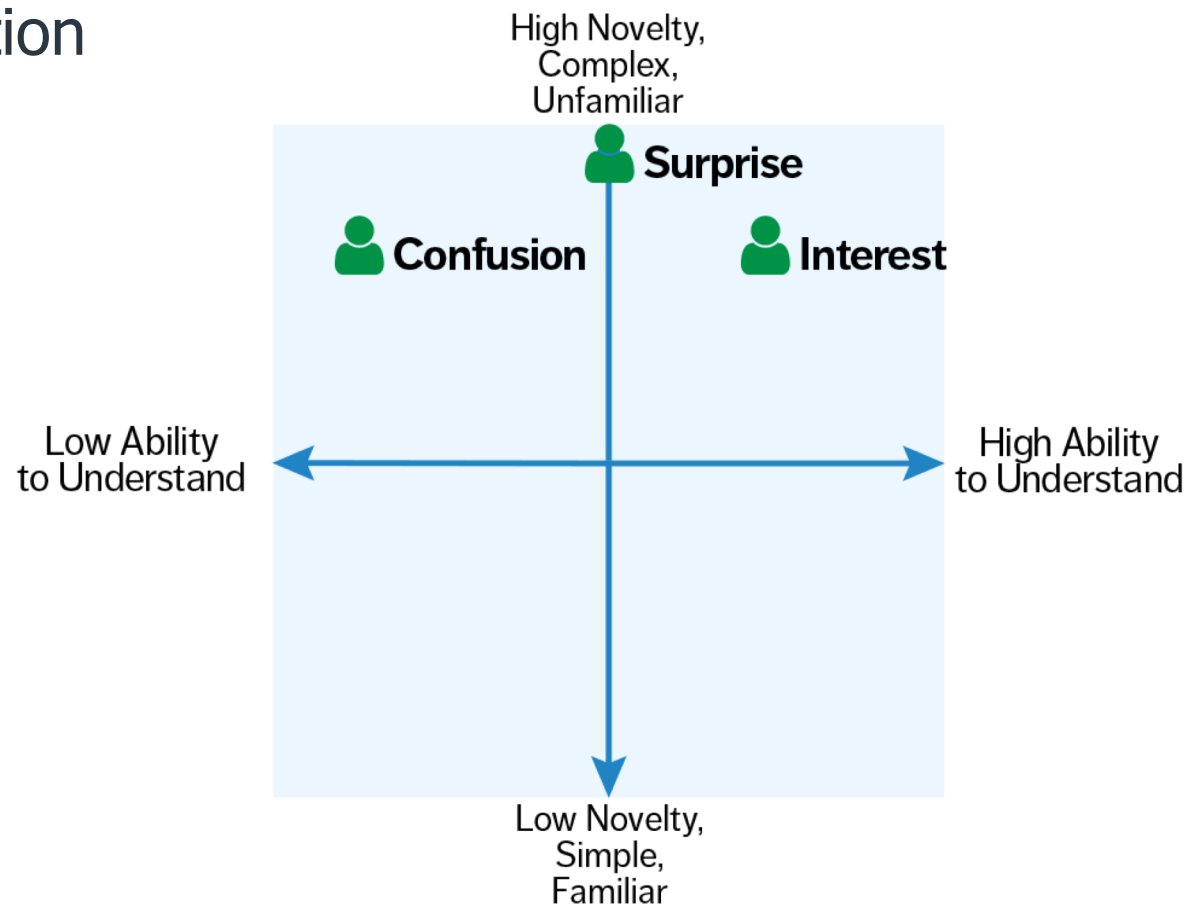


“ Despite their significance to both individuals and organizations, **interests** are often misunderstood, and their **predictive** power is often overlooked. ”

Rounds, James, & Su, Rong (2014). The Nature and Power of Interests. *Current Directions in Psychological Science*, Vol. 23(2) 98–103. Association for Psychological Science.

What's so interesting about interests?

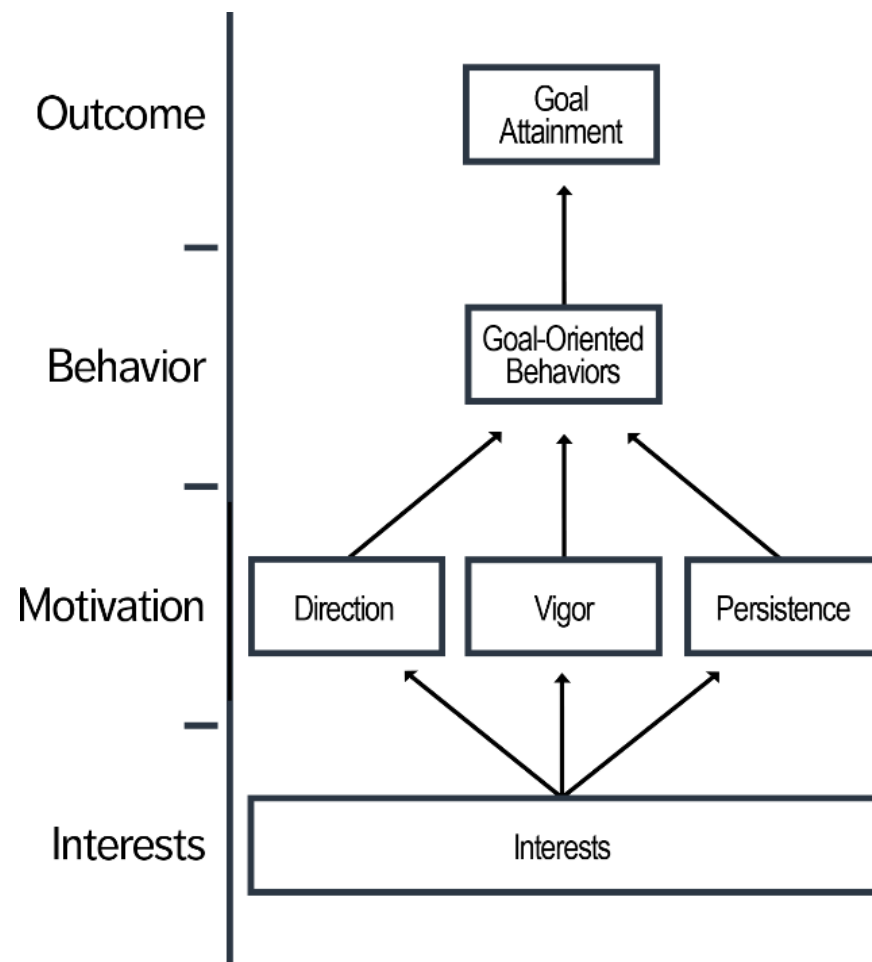
Interests spur action



Silvia, P. (2008). Interest - The Curious Emotion. *Current Directions in Psychological Science*, Vol. 17(1) 57–60.

What's so interesting about interests?

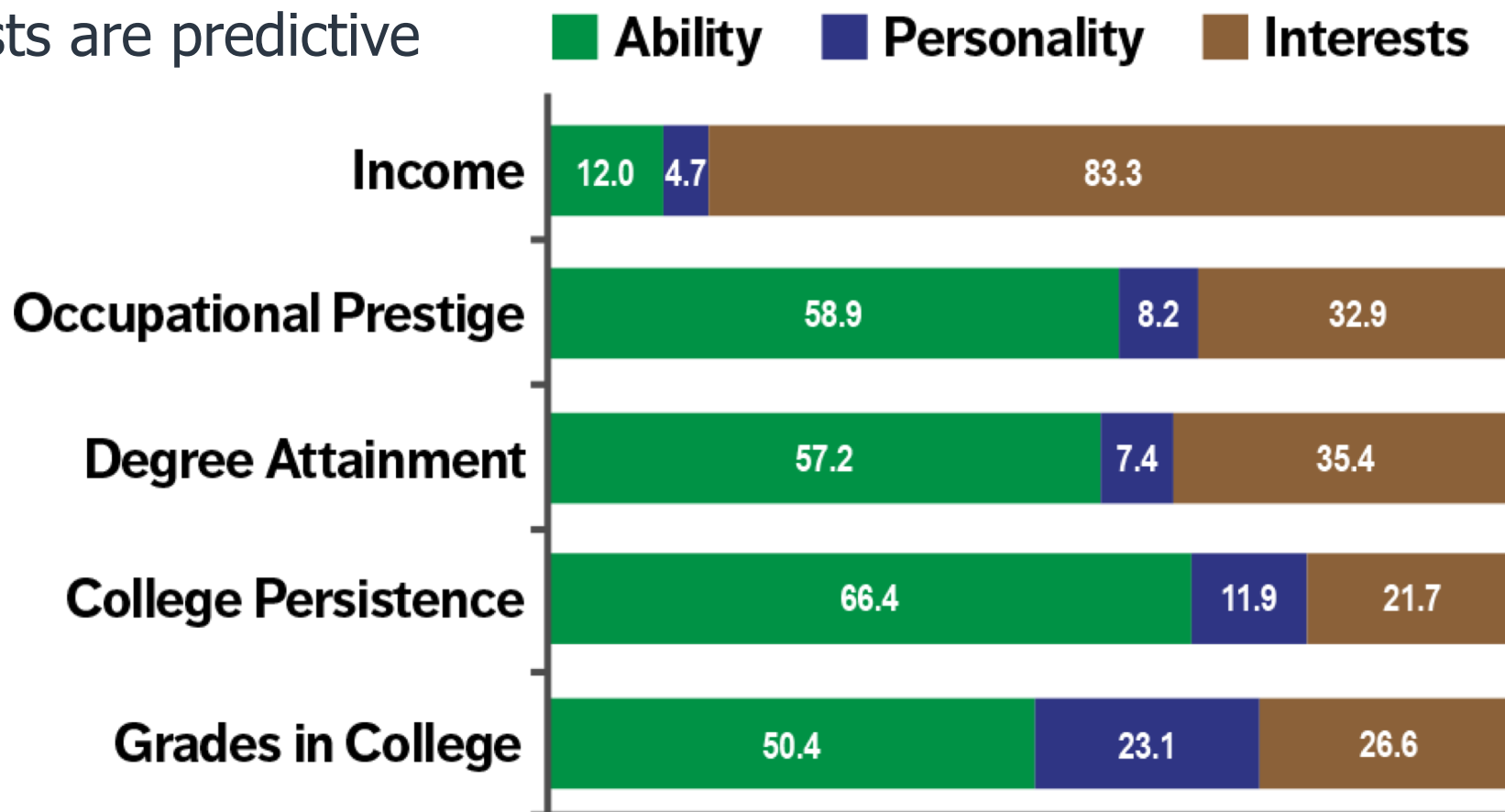
Interests are fundamental



Rounds, J., & Su, R. (2014). The Nature and Power of Interests. *Current Directions in Psychological Science*, Vol. 23(2) 98–103.

What's so interesting about interests?

Interests are predictive



Rounds, J., & Su, R. (2014). The Nature and Power of Interests. *Current Directions in Psychological Science*, Vol. 23(2) 98–103.

Student Impact

Students responded with Agree or Strongly Agree

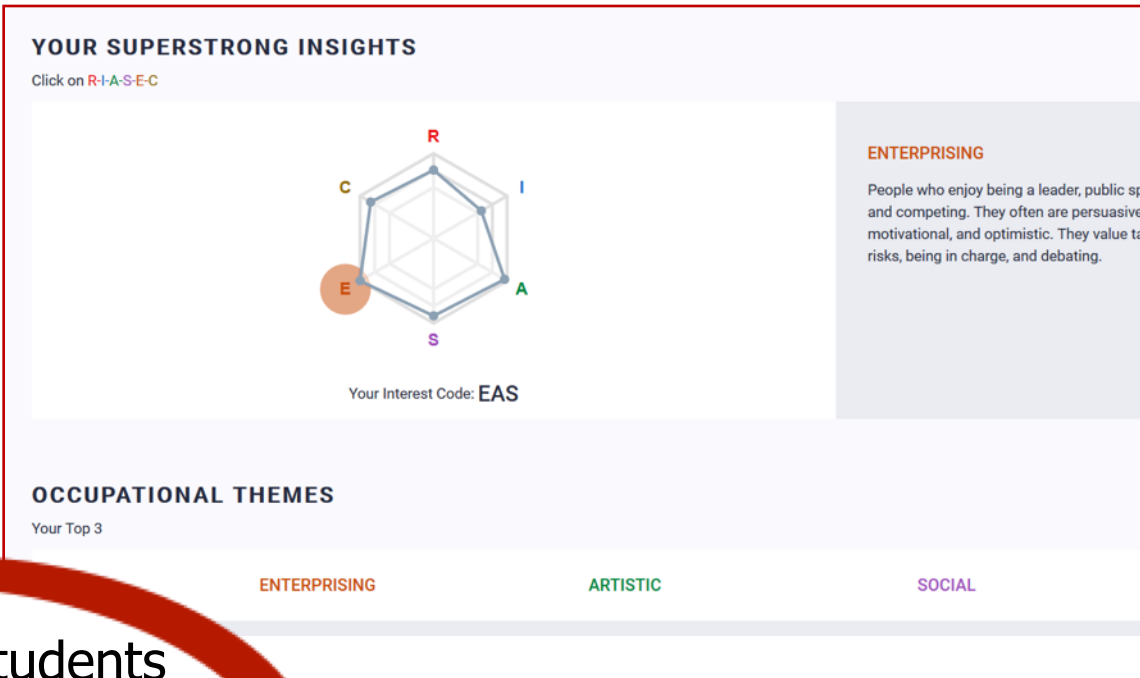
90% said "This was a valuable experience"

97% said "Clear understanding of my results"

85% said "Aware of more future options"

89% said "Better equipped to make decisions"

98% of students who began the SuperStrong assessment, completed it



Preparing All Students For



The World of Work Network

#CVWoW
#cvwowchat



www.cajonvalley.net

HOW IS THIS
CONNECTED
TO THE
WORLD
OF
WORK

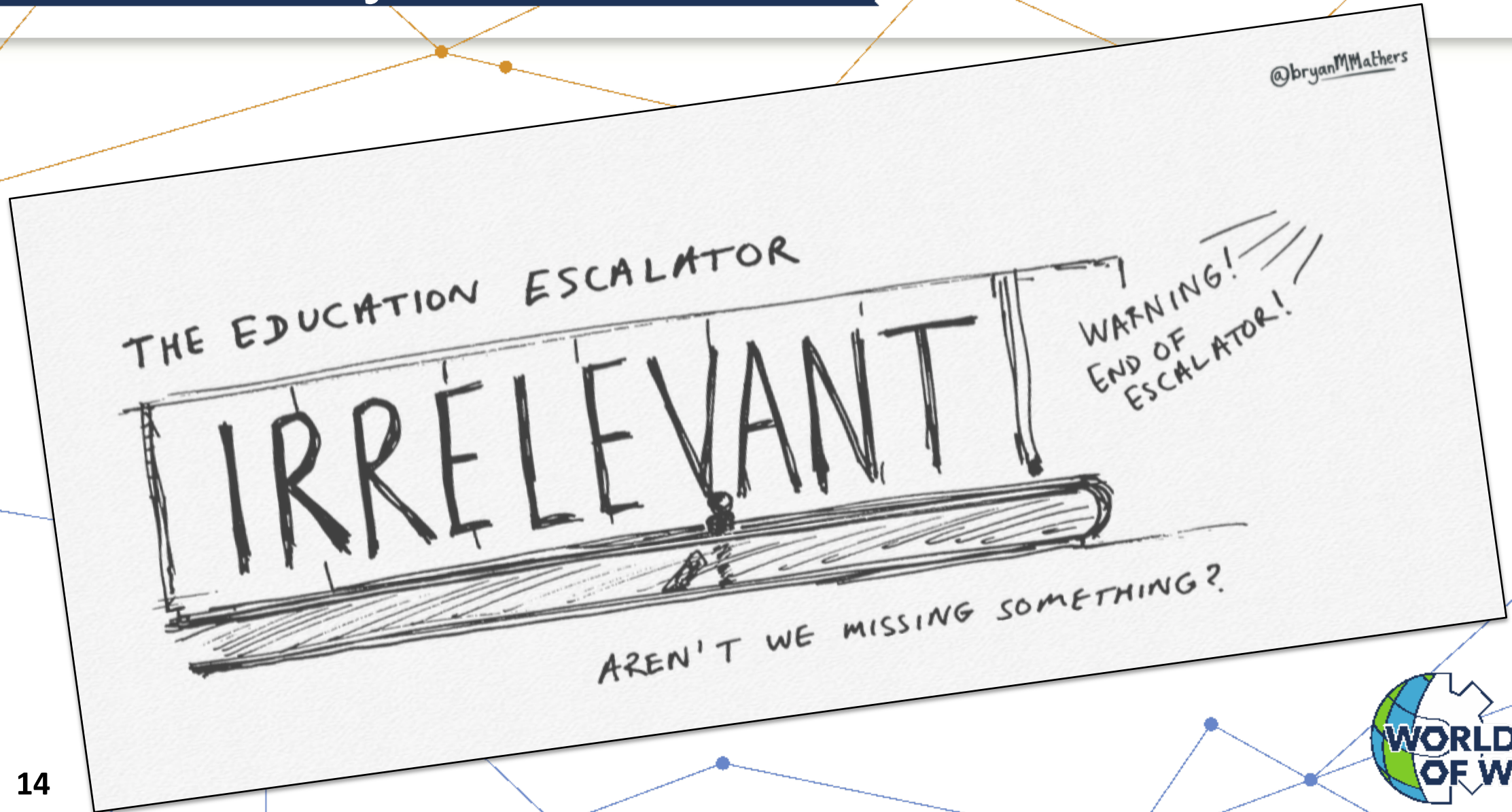


@bryanMMathers



For too many students...

r i a s e c



‘Why do I need to learn this?’



Too many graduates are mismatched to their jobs. What's going wrong?

Students often aren't aware of their own skills and experience, or what different jobs require. They need more meaningful careers advice



▲ 'Students need better careers advice to help them define their skills and attributes - and understand how these match different career options.' Photograph: Alamy

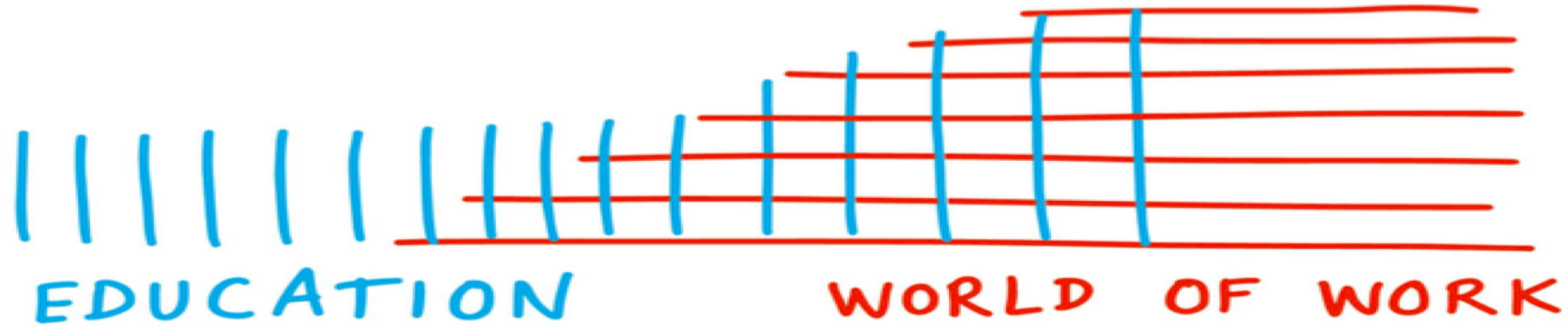
Let's Close the Gap

r i a s e c



THE VISION

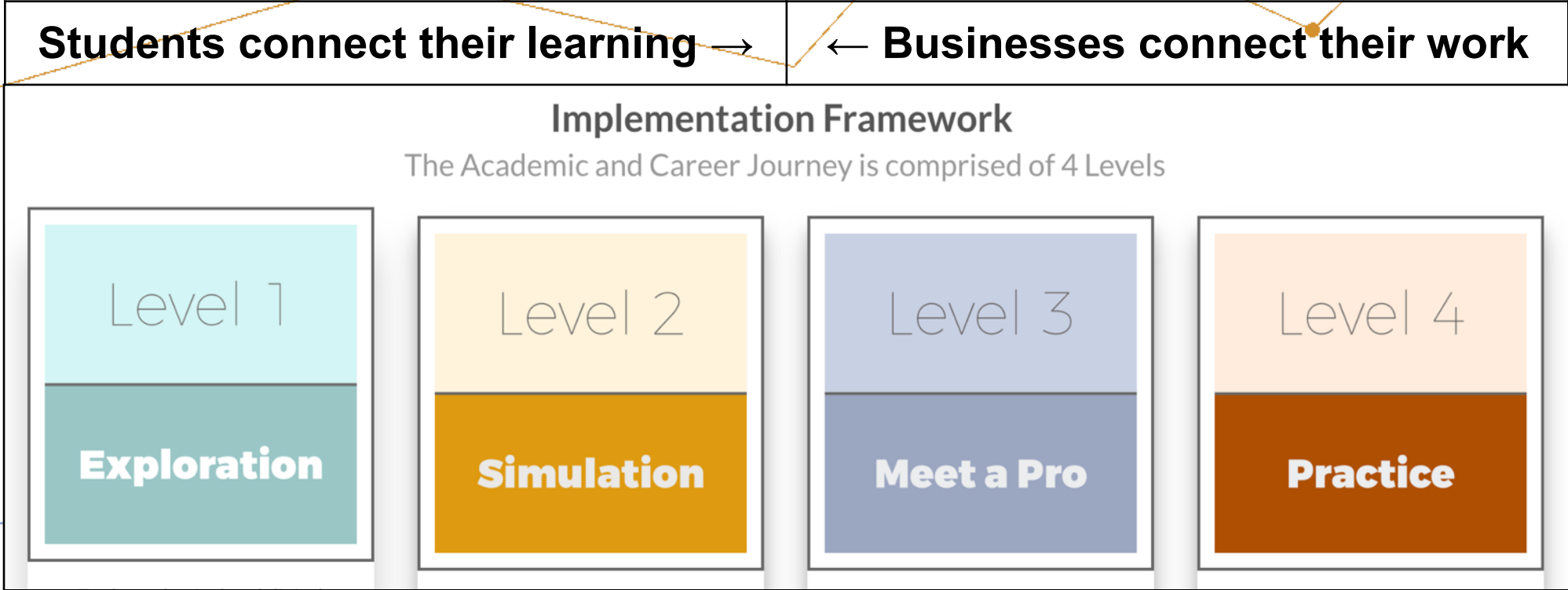
@bryanMMathers



Vocational Choice is the
implementation of the
Self-Concept.

(Hartung, 2013; Super, Savickas, & Super, 1996)

Integration Framework



K12 Integration Framework



The Framework Provides

r i a s e c



EXPOSURE



HEARD ABOUT IT



TINKERED WITH IT



MET SOMEONE WHO DOES IT



PRACTICED IT

@bryanMMathers

RIASEC



The vocational interest typology developed by Holland (1959, 1997) is the most widely adopted theoretical framework for interest measurement.

CAJON VALLEY
UNION SCHOOL DISTRICT

The diagram shows six hexagons arranged in a circle around a central white hexagon. Each hexagon contains a letter and icons representing a vocational interest type: 'r' (realistic) with a truck, gears, and a person; 'i' (investigative) with a magnifying glass, microscope, and glasses; 'a' (artistic) with a guitar, film camera, and masks; 's' (social) with a person at a podium, a person with arms raised, and two people; 'e' (enterprising) with a laptop, megaphone, and microphone; 'c' (conventional) with a calendar, airplane, and calculator.

realistic
conventional
investigative
enterprising
artistic
social

WORLD OF WORK

WORLD OF WORK

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Career Development is a Human Process

“Any assessment, no matter how good,
is only as good as the interpretation”

Dr. Ian Martin

Professor, Career Development



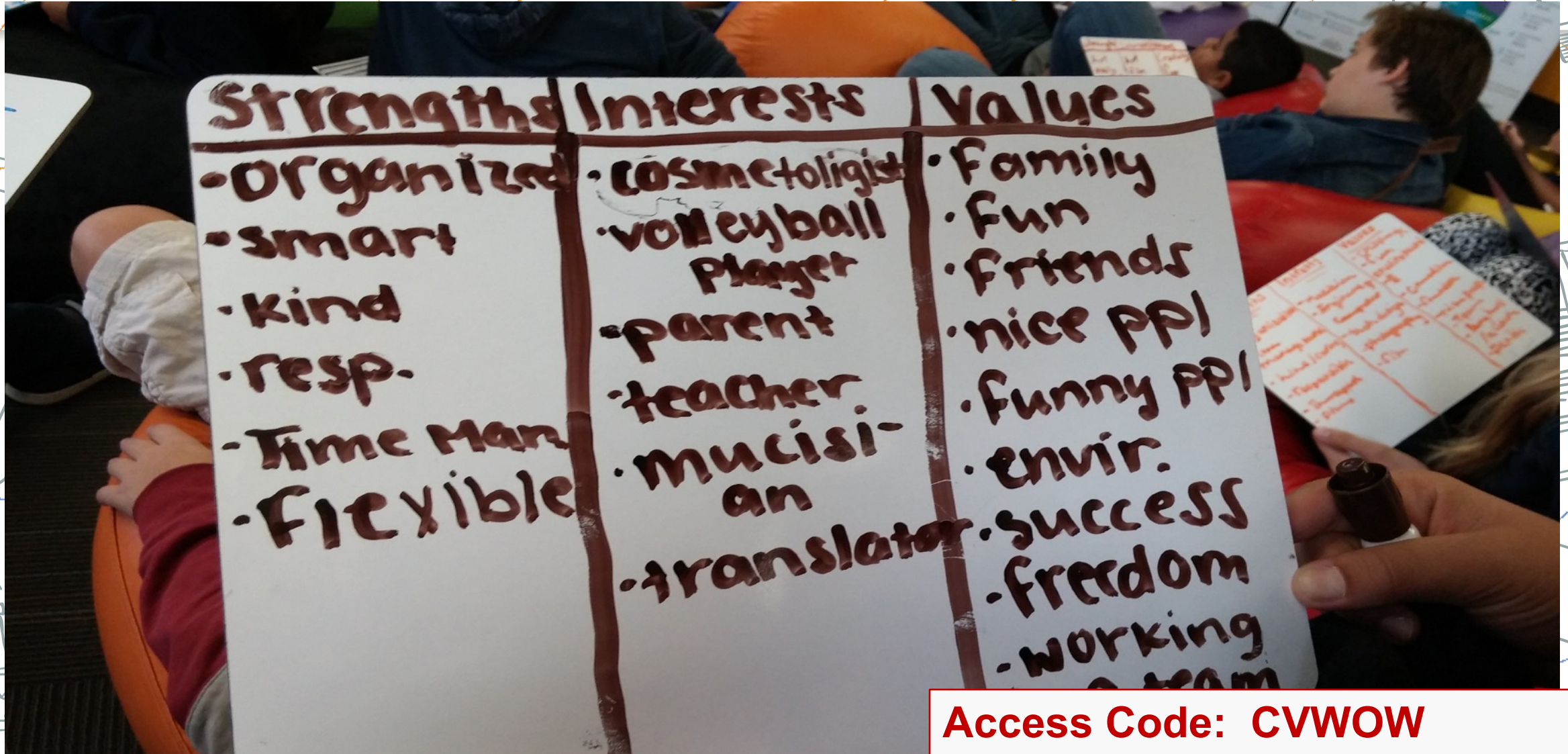
54 Career Experiences



Every student will have a minimum of 6 world of work experiences each year L1 – L4 on the grid.

						
	Realistic	Investigative	Artistic	Social	Enterprising	Conventional
Kinder	<u>Police Officer</u>	<u>Doctor</u>	<u>Artist</u>	<u>Elementary School Teacher</u>	<u>Baker</u>	<u>Farmer</u>
First	<u>Firefighter</u>	<u>Civil Engineer</u>	<u>Technical Writer</u>	<u>Registered Nurse</u>	<u>Florist</u>	<u>Mail Carrier</u>
Second	<u>Carpenter</u>	<u>Veterinarian</u>	<u>Musician</u>	<u>Fitness Trainer</u>	<u>Chef</u>	<u>Software Developer</u>
Third	<u>Forester</u>	<u>Zoologist</u>	<u>Comic Book Writer</u>	<u>Customer Service Representative</u>	<u>Real Estate Agent</u>	<u>Computer Programmer</u>
Fourth	<u>Yoga Instructor</u>	<u>Geographer</u>	<u>Marketing Manager</u>	<u>Park Naturalist</u>	<u>Entrepreneur</u>	<u>Paralegal</u>
Fifth	<u>Horticulturalist</u>	<u>Climate Change Analyst</u>	<u>Reporter</u>	<u>Dietitian</u>	<u>Cosmetologist</u>	<u>Theme Park Engineer</u>
Sixth	<u>Radiologist</u>	<u>Hydrologist</u>	<u>Librarian</u>	<u>University Faculty Member</u>	<u>Sales Manager</u>	<u>Team Assembler</u>
Seventh	<u>Automobile Mechanic</u>	<u>Sociologist</u>	<u>Graphic Designer</u>	<u>Career Counselor</u>	<u>Operations Manager</u>	<u>Accountant</u>
Eighth	<u>Environmental Engineering Technician</u>	<u>Wind Energy Project Manager</u>	<u>Urban & Regional Planner</u>	<u>Personal Financial Advisor</u>	<u>Optician</u>	<u>Financial Analyst</u>

Students Want to Explore

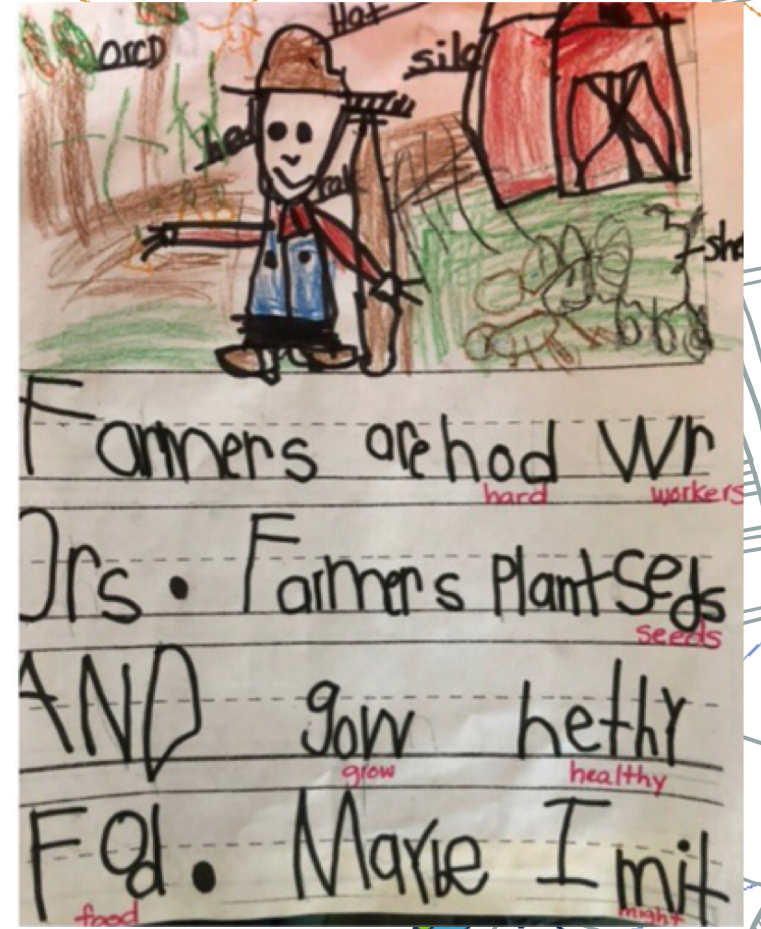


Strengths	Interests	Values
<ul style="list-style-type: none">- Organized- Smart- Kind- resp.- Time Man.- Flexible	<ul style="list-style-type: none">- Cosmetologist- volleyball player- parent- teacher- musician- translator	<ul style="list-style-type: none">- Family- Fun- Friends- nice ppl- funny ppl- envir.- success- freedom- working a team

Access Code: CVWOW
<https://www.vitanavis.com>

Students Want to Explore

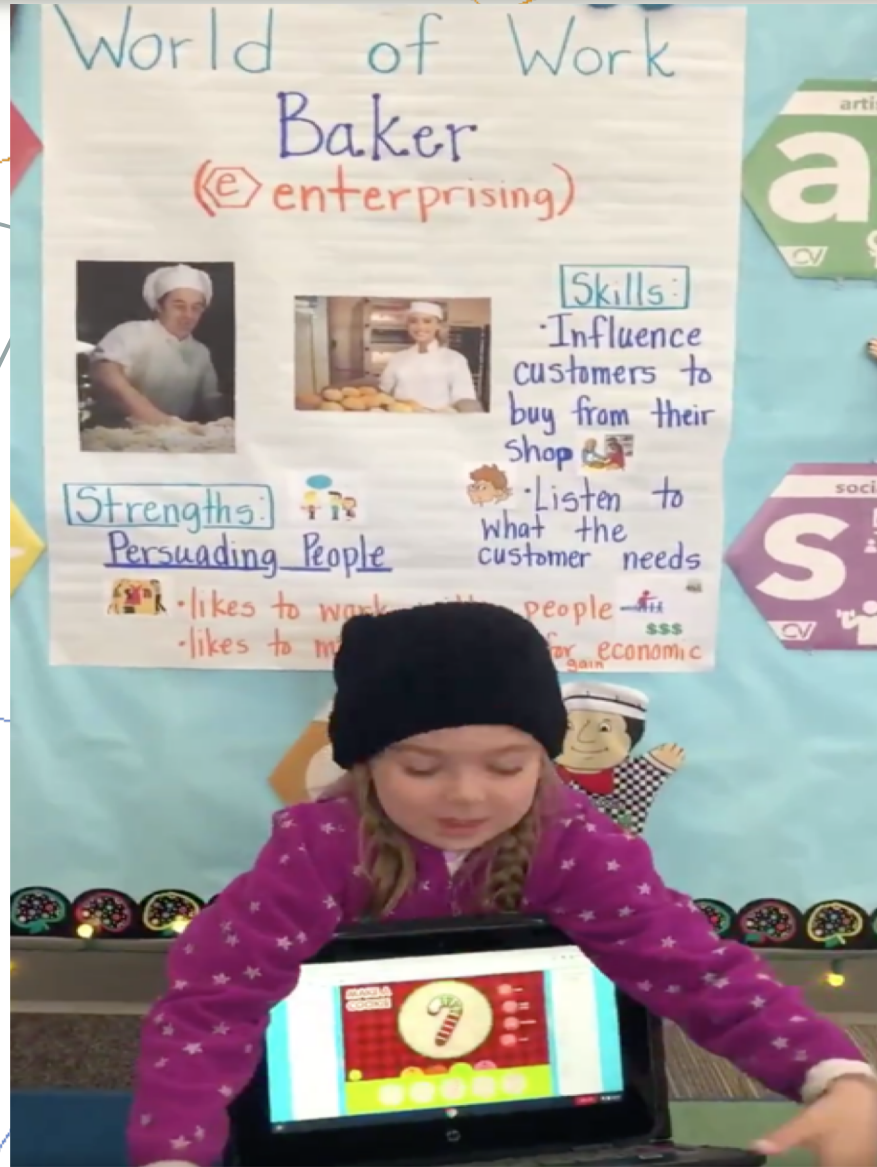
r i a s e e



Access Code: CVWOW
<https://www.vitanavis.com>

Students Want to Explore

r i a s e c



Access Code: CVWOW
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Students Want to Explore



Kid Business Interview Questions

1. Why do you want to work with a fifth grade team to be part of a business?
2. What kind of business are you interested in?
3. What special qualities or traits (RIASEC) could you bring to make the business run smoothly and be successful?



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Students Want to Explore

r i a s e e

VITANAVIS



CAREER INTERESTS

Your Top 6



Military

Interest in structured environment, defined chain of command, position of authority

CAREER ACTIVITIES

Drilling soldiers, leading others, giving orders

To continue and explore future Career Pathways, please rate your SuperStrong Interests.



Dislike



Unsure



Like



Mathematics

Working with numbers and performing statistical analysis

CAREER ACTIVITIES

Performing statistical analyses, teaching math, forecasting economic trends

To continue and explore future Career Pathways, please rate your SuperStrong Interests.



Dislike



Unsure



Like



Computer Hardware & Electronics

Installing and repairing computers, hardware, and



Religion & Spirituality

Interest in spiritual or religious concerns, especially

Access Code: CVWOW

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Students Want to Explore



VITANAVIS Home Administration Tools Insights English Chris

Mathematics

If you enjoy calculating numbers, you would assemble numbers.

Show less ^

Careers

- Actuaries
- Clinical Data Managers
- Computer Programmers ★
- Computer Systems Analysts
- Data Warehousing Specialists
- Database Architects
- Information Security Analysts ★
- Mathematical Science Teachers, Postsecondary
- Mathematicians
- Operations Research Analysts

Information Security Analysts

★ SAVED

Job Summary Job Details Education

JOB OUTLOOK

Growth

Current Employment	10 Year Projection	% Change
100,000	128,500	28.5%

DESCRIPTION

Plan, implement, upgrade, or monitor security measures for the protection of computer networks and information. May ensure appropriate security controls are in place that will safeguard digital files and vital electronic

Secondary
Scientists
Informatics Nurse Specialists
Mathematical Science Occupations, All Other
Mathematical Technicians ★
Network and Computer Systems
Software Developers, Applications

Access Code: CVWOW
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Q & A

Raising the BAR

Behaviorally-Anchored Rating
assessments of the readiness to learn

David H. Tobey, Ph.D.
Director of Research and Assessments
National CyberWatch Center

Purpose of assessment

Retrospective (Summative)

- Awareness
- Aptitude
- Achievement

Answers the question:
What are you ready for today?



Prospective (Formative)

- Diagnose
- Design
- Develop

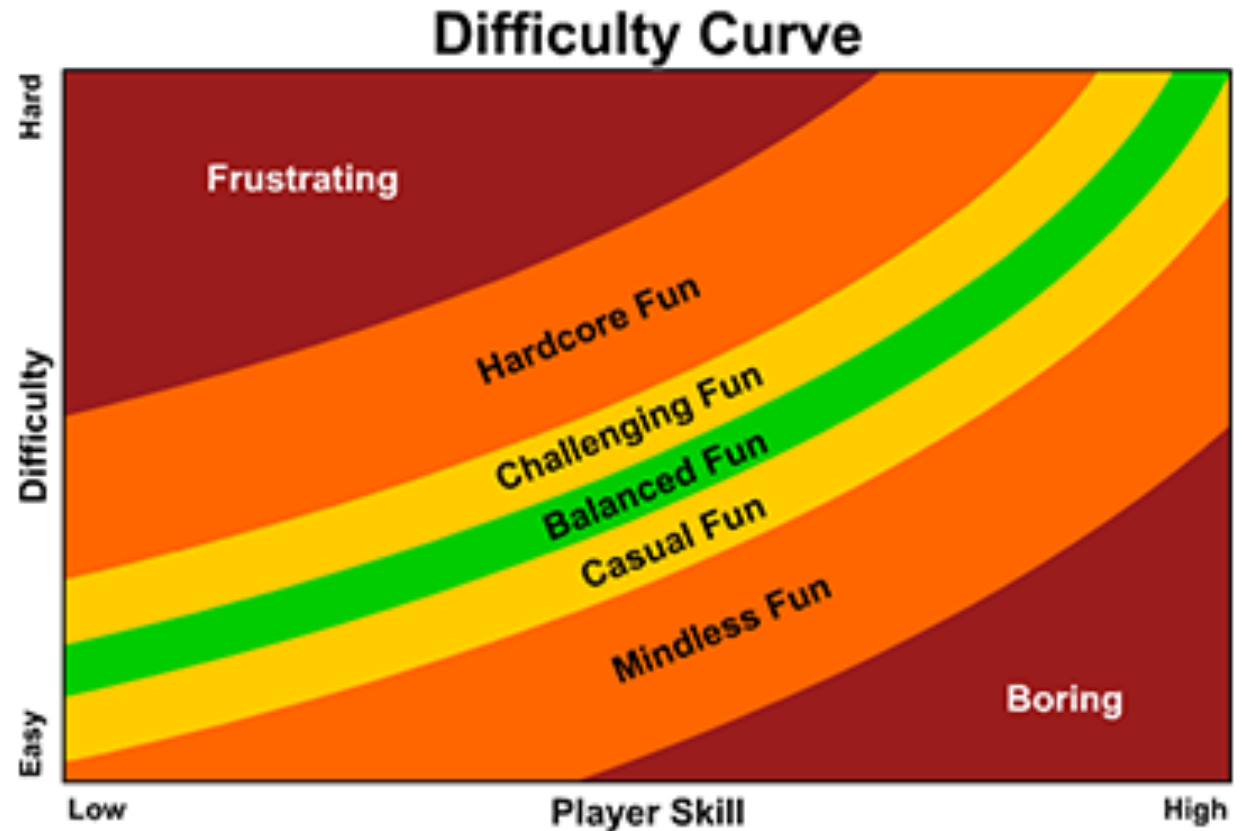
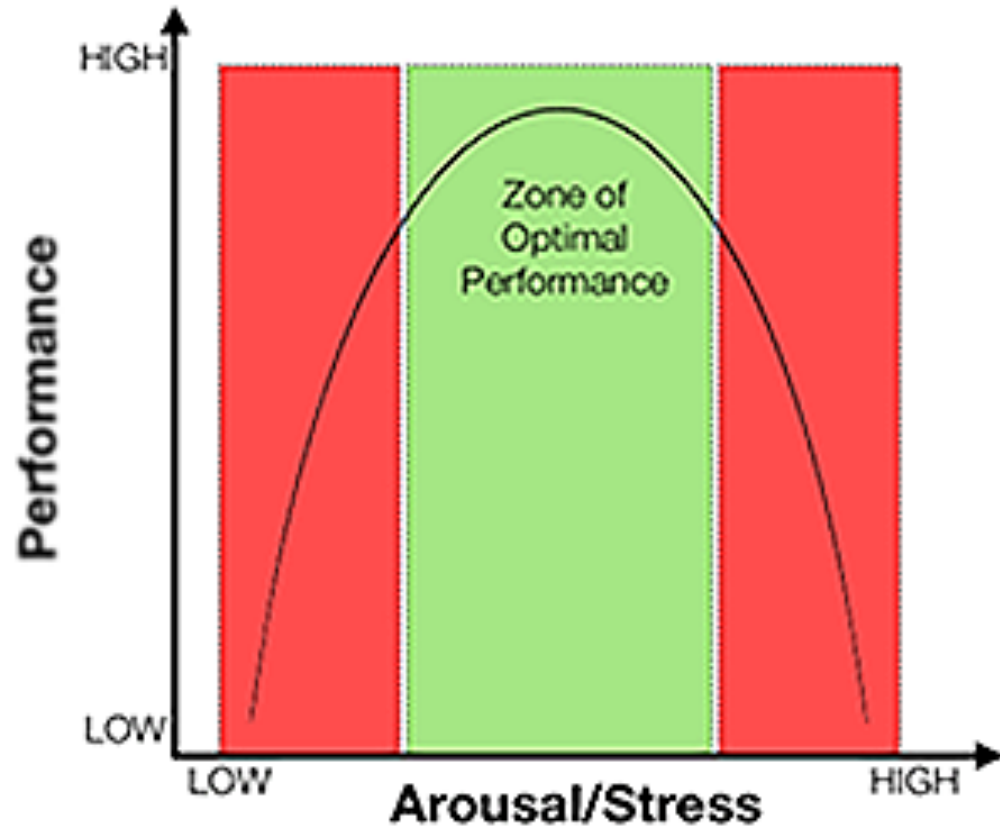
Answers the question:
What can you be ready for tomorrow?



Zone of Optimal Performance



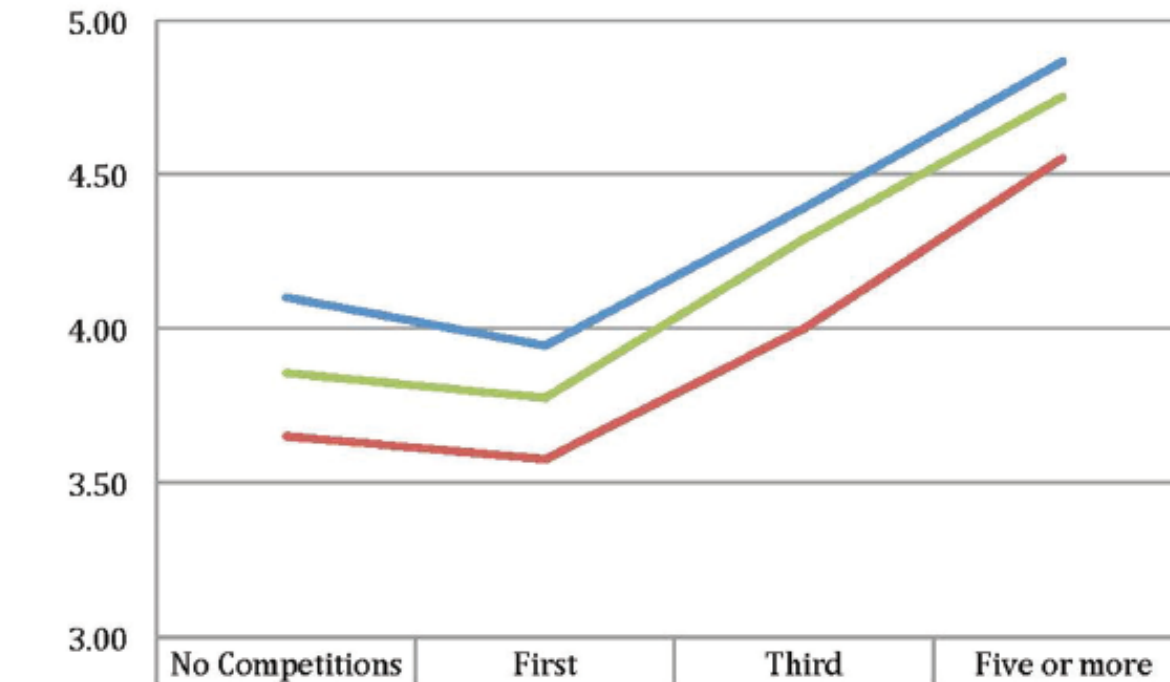
Zone of Optimal Performance



SOURCE: Pavlov Tech Blog by Robin van Emden
<https://pavlov.tech/2016/10/23/lif-in-the-zone/>

Zone of optimal performance

Engagement by Years of Experience

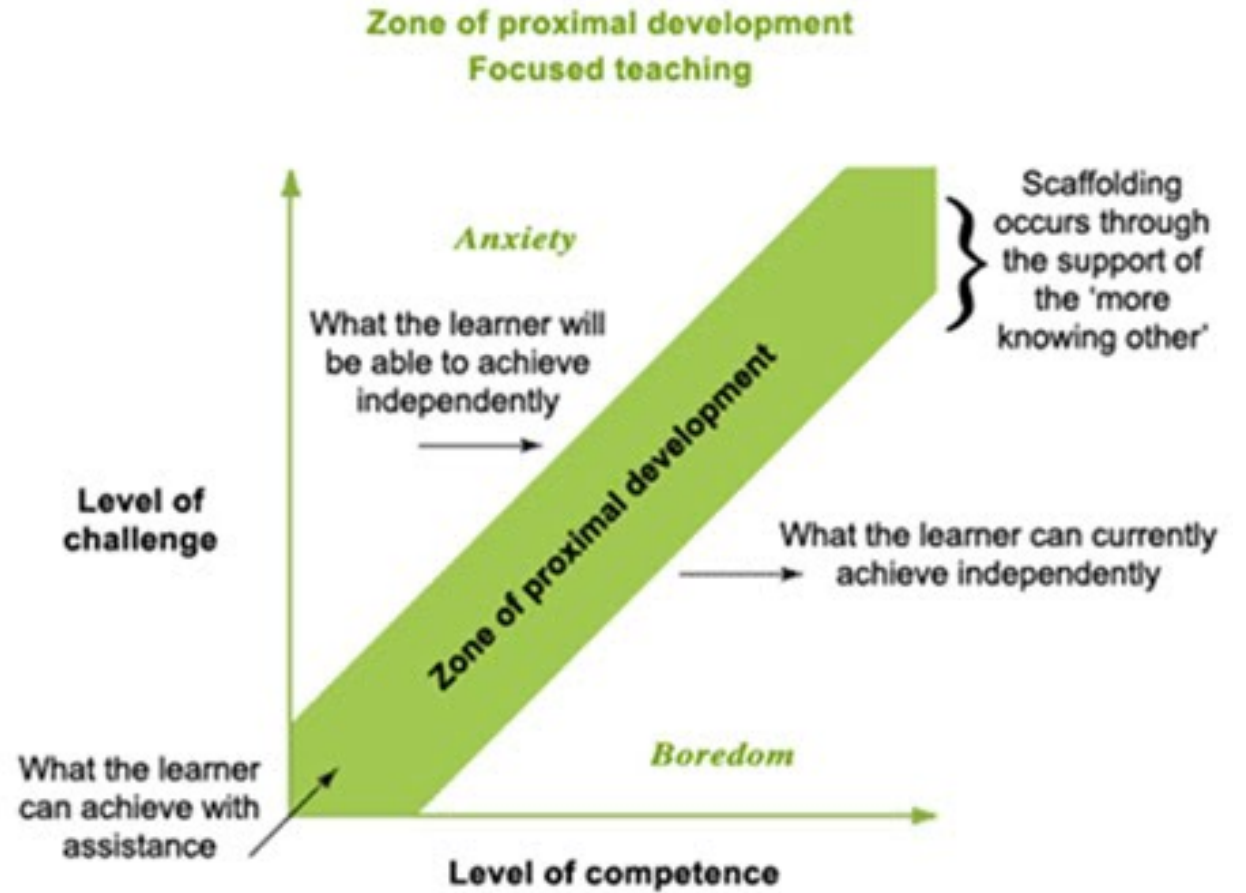
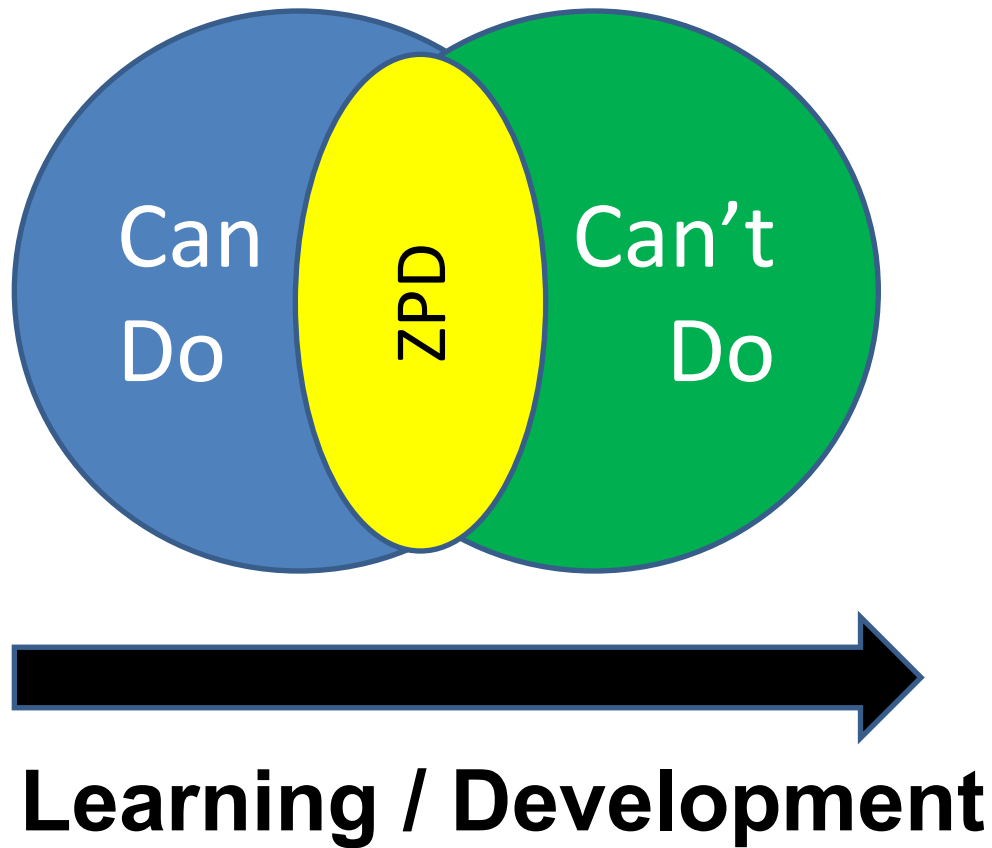


Attrition Rates

17.3% 2nd event
44.9% 3rd event

SOURCE: Tobey, D. H., Pusey, P., & Burley, D. (2014). Engaging learners in cybersecurity careers: Lessons from the launch of the National Cyber League. *ACM InRoads*, 5(1), 53–56.

The Zone of Proximal Development



Source: Hill & Crevota (unpublished)

The Zone of Proximal Development

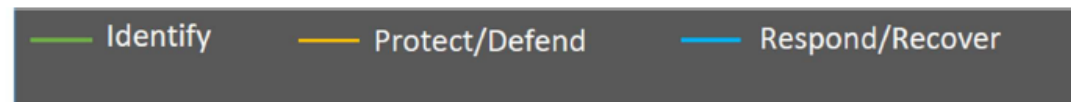
ISF Category	ISF Score	ISF Level
Network Ports	6	Novice
Network Protocols	16	Novice
Attack Types	12	Expert
Network Components	13	Competent
Basic Networking Commands	7	Competent
Network Addressing	15	Novice
Network Architectures	25	Beginner
AAA	12	Expert
Windows Security Features	7	Beginner
Server Configuration	2	Novice
ISF Total	115	Novice

Source: Information Security Fundamentals Readiness Assessment (2018) National CyberWatch Center. Largo, MD

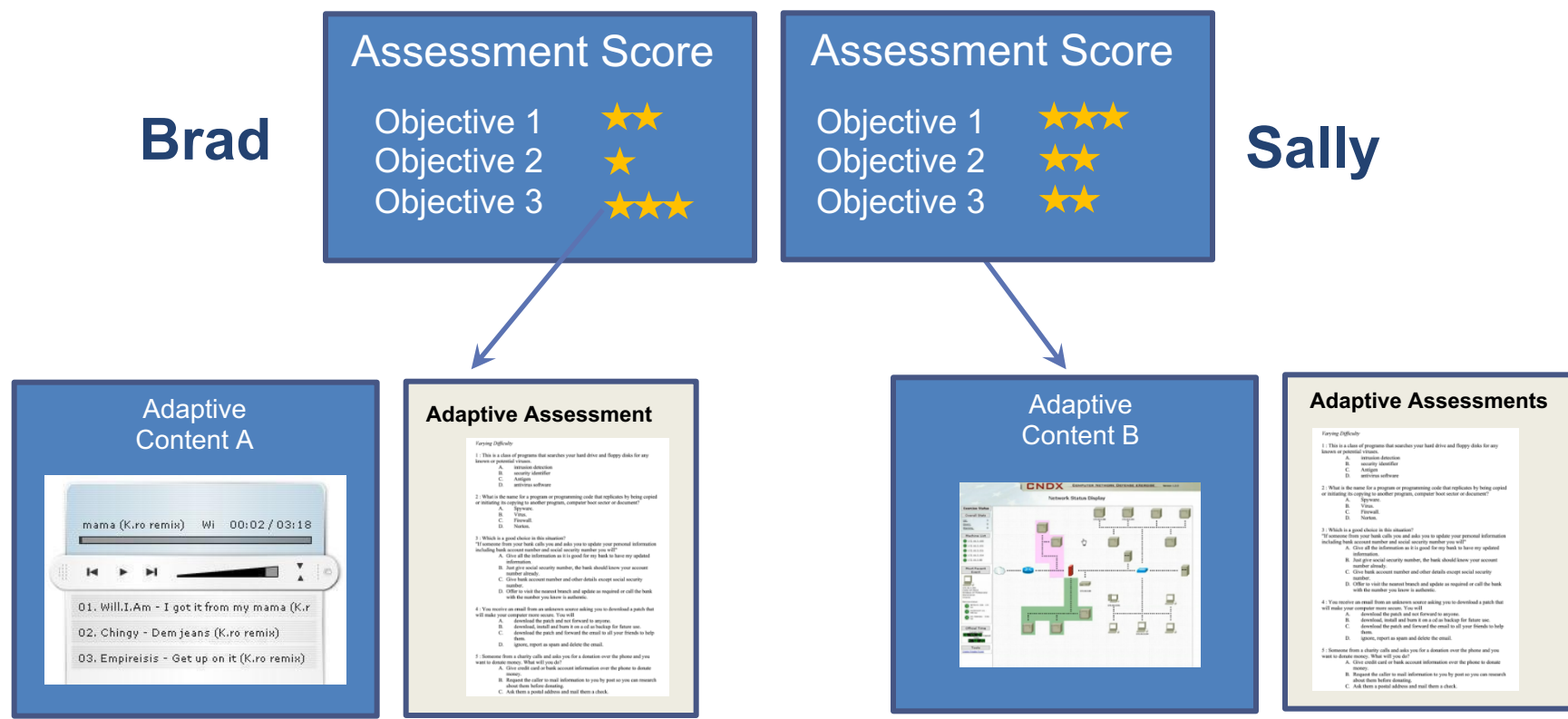
Available for non-commercial use under Creative Commons license the National Security Agency's National Cybersecurity Curriculum Program (NCCP).

<http://thecybercube.org/nccp/>

NIST Framework Mapping



Assessment-informed Delivery of Learning Content



Tailored instruction adapted to each learning profile

Resident Apprentice Job Duty Rotations

Behavioral Task Statements	
Assess and Analyze Risk	Frequency Rating
Decide the risk ratings of a vulnerability based on the technical information and how the technology is deployed/importance of the systems	Once a month or less
Escalate breaches of contract by vendor to management and legal team	Once a month or less
Verify assessment tool outputs contain all necessary data elements for vulnerability analysis and risk determination	A few times a month
Communicate risks to internal stakeholders (within your group or department)	Every day
Document risk and impact analysis of system components for management	Once a month or less
Alert end users of potential risks and vulnerabilities that they may be able to mitigate	Once a week
Communicate key risks to users of a system, application, device, or other components impacted by threats or vulnerabilities	Once a week
Scan all impacted systems to ensure the patch or mitigations are present and the risk associated with the vulnerability has been reduced as expected	A few times a month

Q & A



The path, the plan, your career in tech.

WTIA WORKFORCE INSTITUTE

APPRENTI NATIONAL DATA

December 13, 2018





Why Assess?

Companies struggle with qualifying “non traditional” hires and managing equity in any hiring system.

Prequalifying talent based on a standardized assessment focuses investment on candidates with the greatest potential for success.



Employer Directive

Strong Math, Grit, Problem Solving, Emotional Intelligence and Life Skills are just some of the many factors identified. When distilled, three themes arose:

- Math
- Logic & Critical Thinking
- EQ
- Work Ready



Quantitative Analysis

Topic	Section
Math	Quantitative Literacy (QL)
	Quantitative Reasoning (QR)
	Conceptual Math (CM)

Topic	Section
Critical Thinking	Selection of Relevant Information
	Summarizing Main Conclusions
	Drawing Conclusions
	Identifying Assumptions
	Assessing Impact of Additional Evidence
	Detecting Reasoning Errors
	Matching Arguments
	Applying Principles

Qualitative Analysis



Topic	Section
"Soft Skills"	Perseverance/GRIT
	Communication
	Teamwork
	Growth Mindset
	Adaptability
	Systems Thinking
	Planning and Organizing

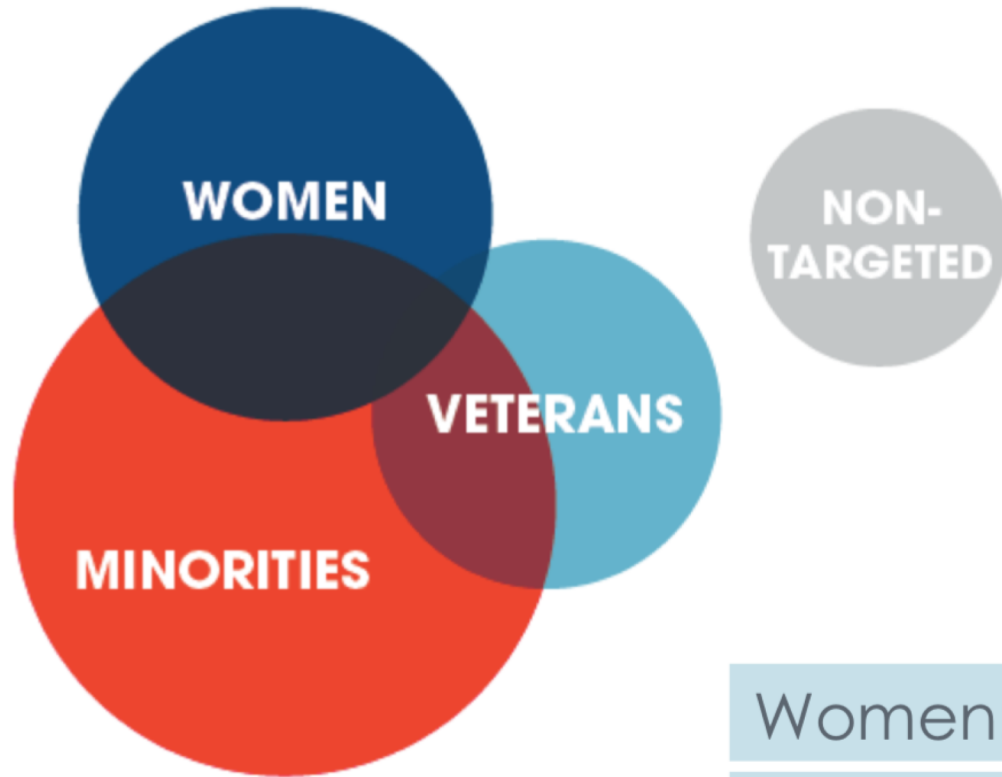
Steps:

- Standard rubric
- Screen
- 1:1 Skills transference
- Company Interview



Pilot Applicant Demographics (12/13/18)

Applicant Pool - 9327

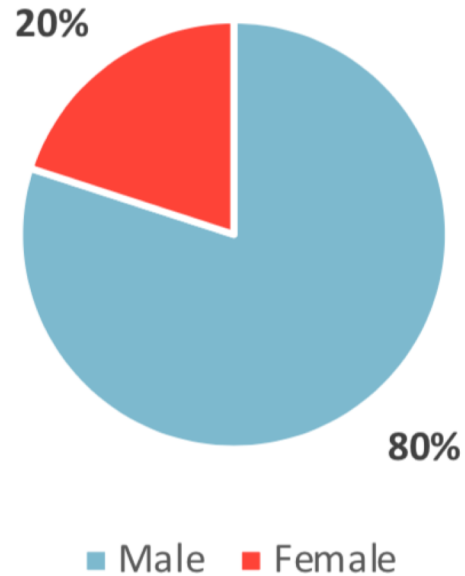


Women:	2872	Minorities:	5163
Veterans:	2898	Non-Targeted:	1791



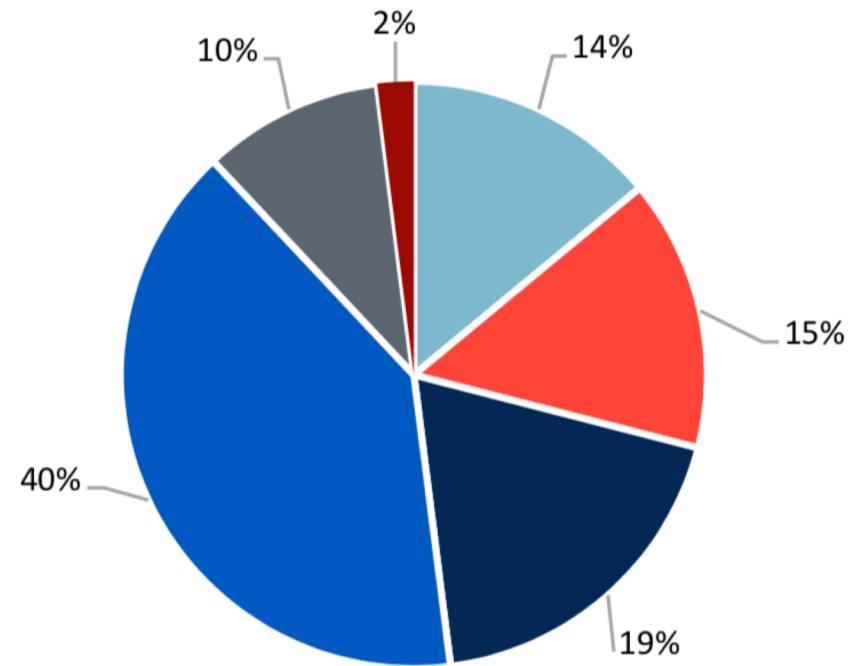
Current Apprentice Demographics

Gender



Male percentage is high due to veteran hiring.

Race

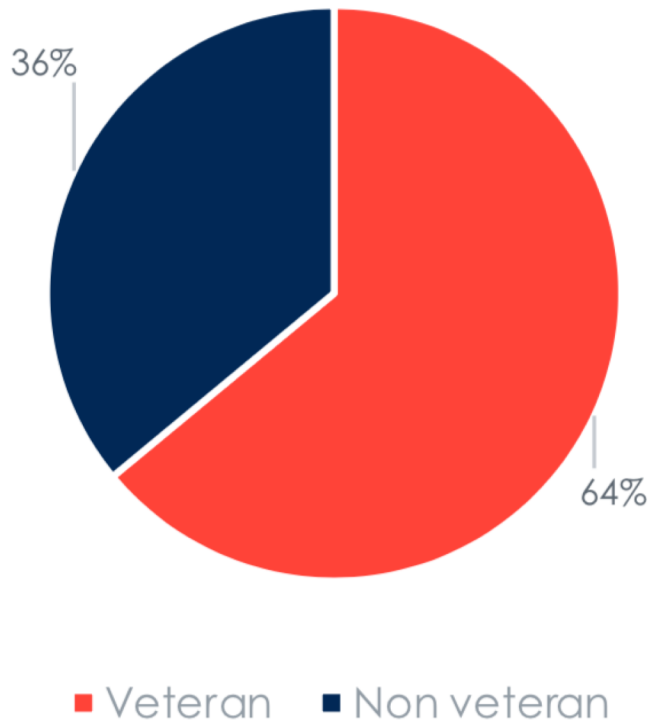


- Hispanic/Latino
- Black/African American
- More than one race
- Asian
- White
- Other

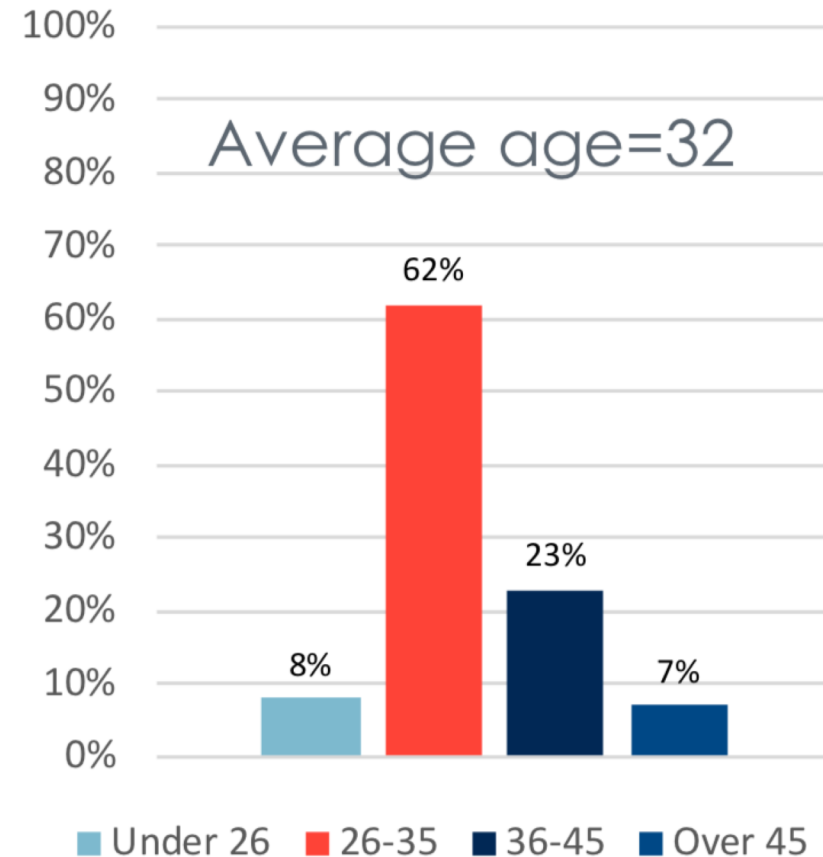


Current Apprentice Demographics

Veteran



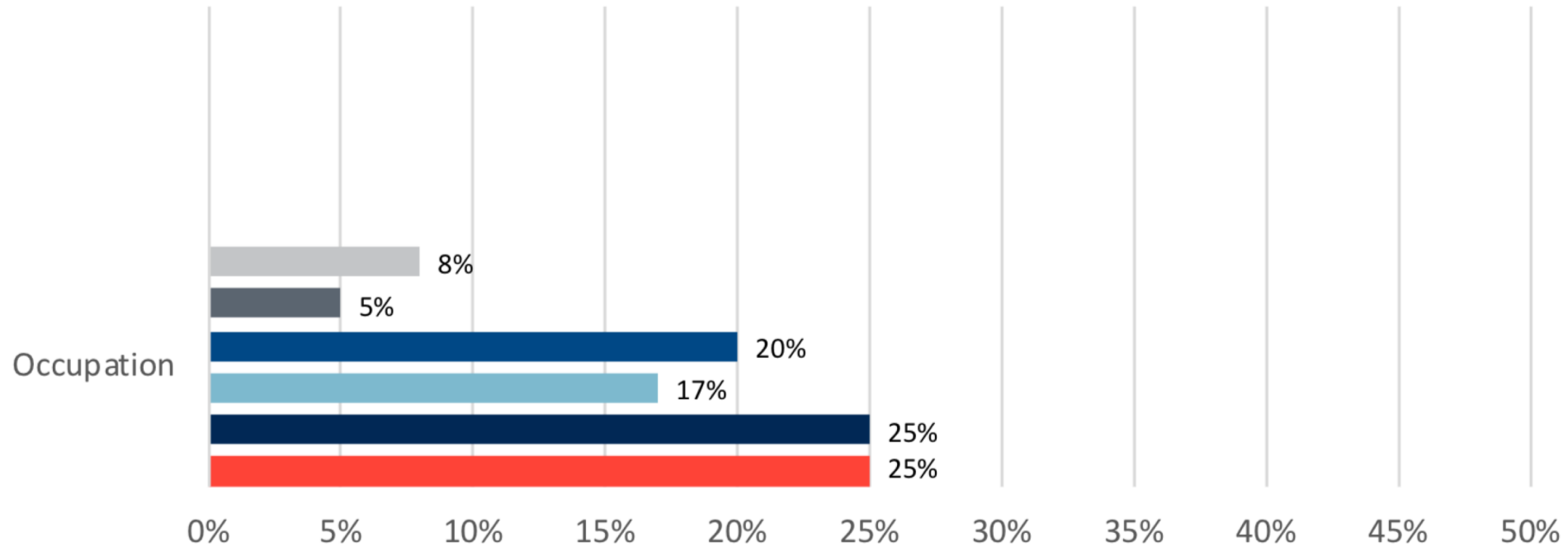
Age





Current Apprentice Demographics

Occupational Role %



- Other
- Network Operations Developer
- IT Support Professional
- Data Center Technician
- Cloud Operations Specialist (1&2)
- Software Developer (1&2)

Current Apprenticeship Data



- Median Salary of Previously Employed: \$37,000
- Unemployed Prior to Apprenti: 22%
- Median Salary of All Prior to Apprenti: \$29,000
- Median Salary in Apprenticeship: \$51,000
- Median Retained Salary: \$75,000
- Apprentices Retained: 77%
- 4-Year College Degrees: 54%
- Youngest Placed: 18
- Eldest Placed: 63

* Will finish at 85% once remainder of third cohort completes placement



The path, the plan, your career in tech.

For more information, please contact

jcarlson@washingtontechnology.org

Or visit

www.ApprentiCareers.org

Q & A

Thank You for Joining Us!

Upcoming Webinar: “Computational Thinking and Skills: A Foundation for STEM and Cybersecurity Education”

When: Wednesday, January 16, 2019 at 2-3pm EST

Register: <https://nist-nice.adobeconnect.com/webinar-jan2019/event/registration.html>

nist.gov/nice/webinars