

Defining the Future by Teaching the Youth: The Impact of Accessible Training

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The Big Question: Why are we here?

SECURING TOMORROW... TODAY!



It Can Be Done

Integrating Cybersecurity K-12

Why is it important in education?

- **Aware** vs. **Scared**
- Join the dots
- Pipeline of talent
- Age and grade
- New Slogan in schools **“STOP, THINK, CONNECT”**

Educator views:

“It is the need of the hour,”

“It’s a must”

Training the next generation



Engaging students in Cybersecurity



STEM students get lessons in using internet safely

Educator shares knowledge with children from kindergarten through fifth grade

BY KATHLEEN KENNEDY/STAFF WRITER

What if you could sit at the front of a kindergarten classroom at STEM School Highlands Ranch and ask a group of students that speaks a dozen of languages?

"What personal information should you not share on the internet?" she asked.

It didn't take long as kids shared answers.

"Your phone number," one said.

"Your name," said another.

"Your age," said a third.

Then, a 30-Minute teacher periodically attends to classrooms ranging from kindergarten through fifth grade to teach students about cyber security or computer systems safety that become lessons in a quick lesson on topics like network security, operating systems and future careers. There are a lot of activities, which differs for every class.

Kindergarten gets things and math in the arena. Fifth graders practice computer coding.

"Cyber security can be scary, said Bess, who teaches computer science and teaches the school's cyber security lessons. The week of Feb. 13 was of her five lessons was fun and several pieces of a student's imagination that created an hour of facing viruses, detecting and eliminating on the web and improving hardware systems.

"When they start seeing that English goes away," said Bess. "Their minds take to (use it) and really go nuts."

The topic is advanced for the young students — some who in don't start studying cyber security until at least of high school. But Bess, a former business operations manager at IBM, preparing internet safety skills at a young age is invaluable. Her goal is to create students aware of the range of career opportunities in the field.

As a result, Bess on Feb. 13, the class of first grade students seemed to be as excited as a first grade student.

"It is going to make sure everything is safe," said 7-year-old Sebastian Kucharski as he showed off his new certificate.

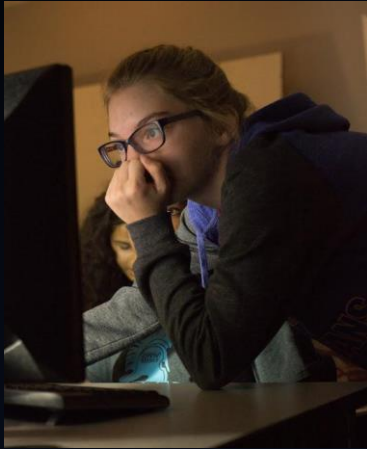


First graders at STEM School Highlands Ranch show off their cyber security certificates after a lesson from Bess Bess. The outside school teacher periodically visits classrooms of grades kindergarten through fifth to teach students about internet safety, computer

Ways to get Cybersecurity in the classroom

- Get **trained**
- **Teach** yourself
- **Partnership** and **innovation**
- Seek **mentors**
- Go on **tours**
- Join bootcamps, competitions
- Provide a platform - **Learn, share, apply**
- Expand **cybersecurity curriculum**

Women in Cybersecurity- Underrepresented & Untapped potential





THE STATE OF
Cybersecurity Education



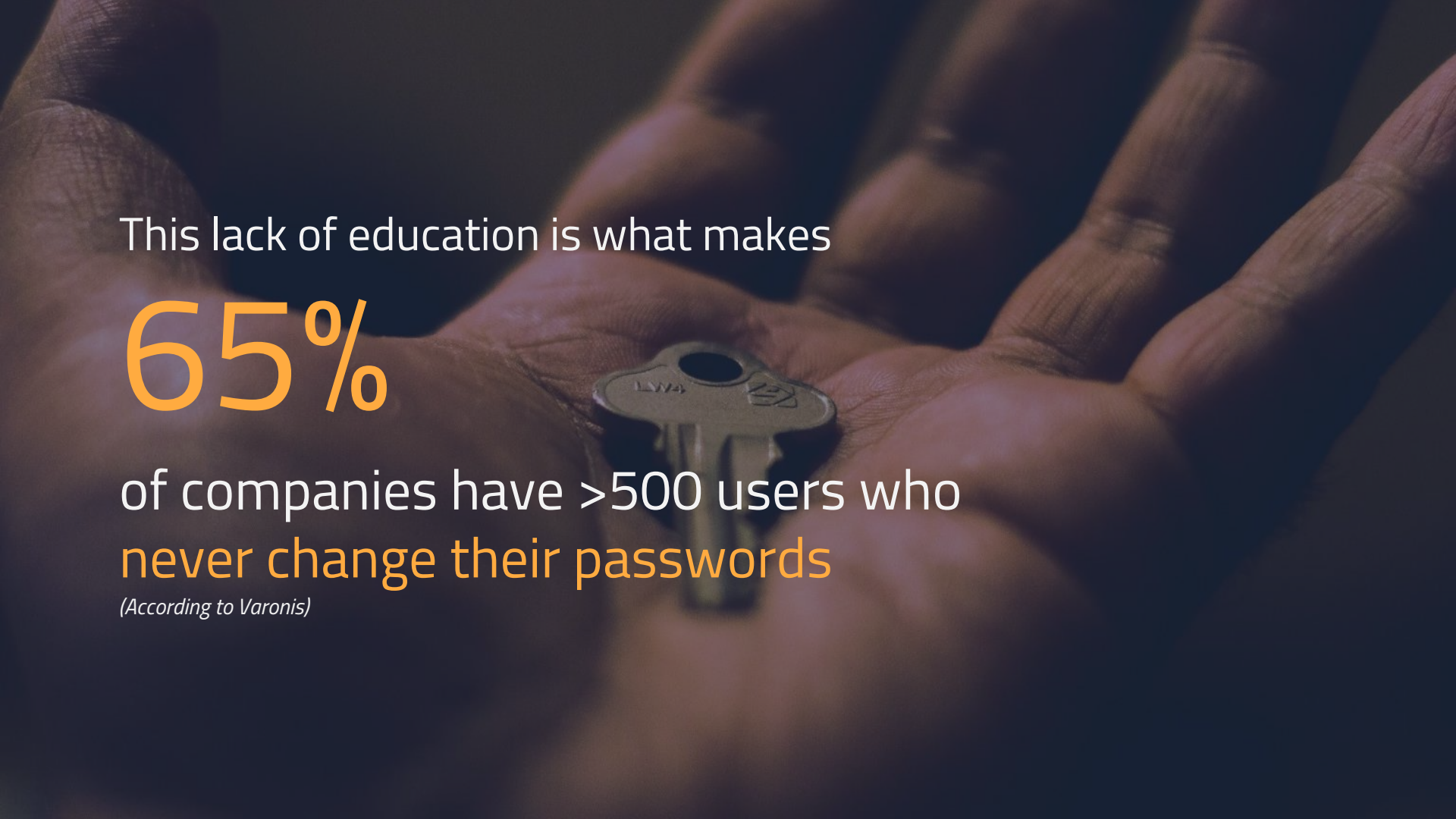
"Computer science education at school is less than adequate."

There are more than 400 high schools in Colorado.

Only a few

focus on cybersecurity as a full course.



A close-up photograph of a hand holding a key. The hand is positioned palm-up, and the key is resting in the center. The lighting is dramatic, with the hand and key highlighted against a dark, blurred background. The key has some markings on its head, including what appears to be 'LW4' and a logo.

This lack of education is what makes

65%

of companies have >500 users who
never change their passwords

(According to Varonis)



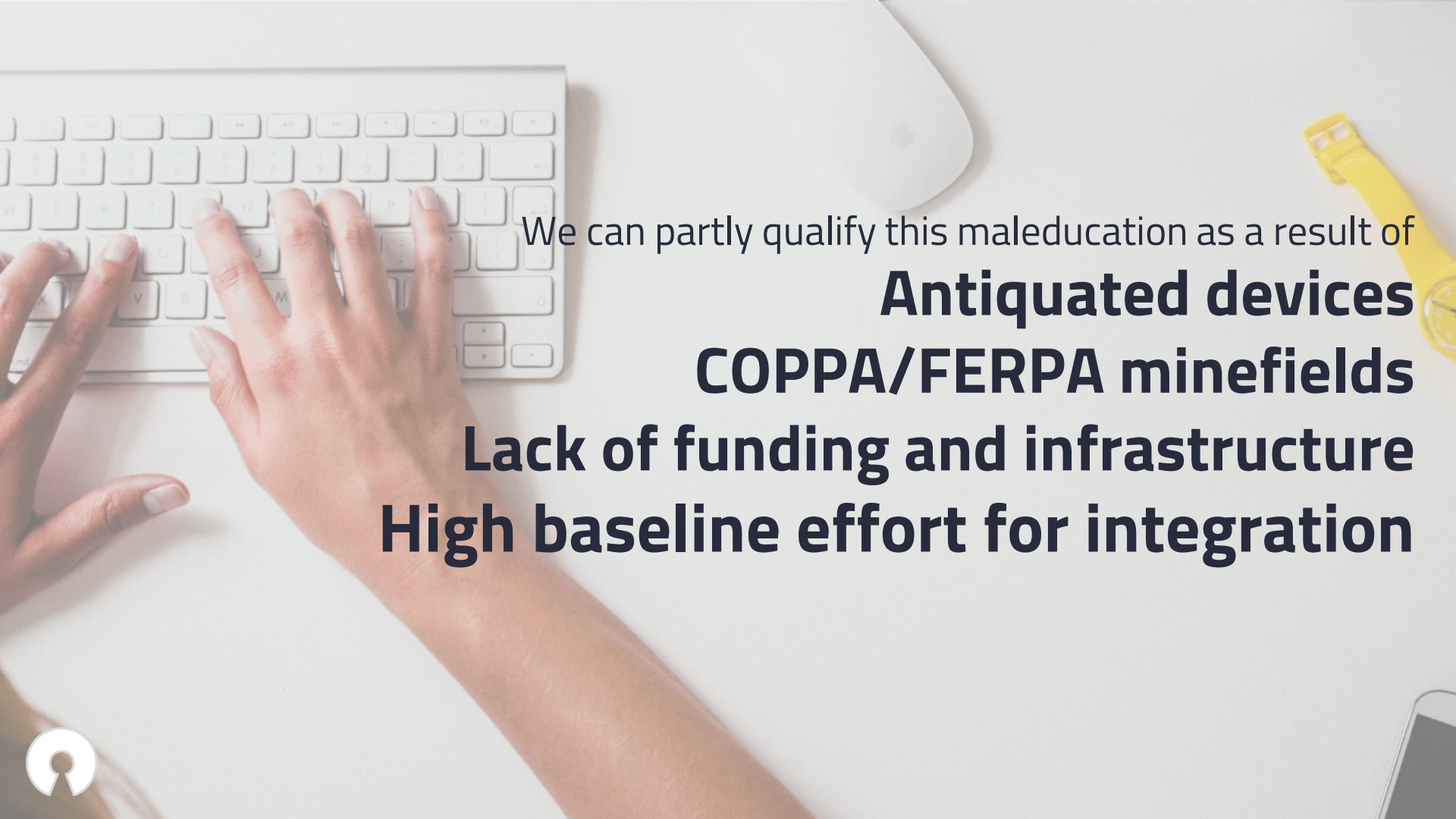
Open source



Individualized Progression



Real-World Applications



We can partly qualify this maleducation as a result of

Antiquated devices

COPPA/FERPA minefields

Lack of funding and infrastructure

High baseline effort for integration





Free

No charge for use



Public

*Anybody can view its contents
Non-discriminatory*



Antiquated devices

~~COPPA/FERPA minefields~~ 

~~Lack of funding and infrastructure~~ 

~~High baseline effort for integration~~ 



Personalized tracts

Independent studies

Self-paced classes

“Traditional educators can learn from this - we must move out of the way and give students the opportunity to learn on their own”

David Talbot, in reference to self-teaching Ethiopian students



Personalized tracts

Allowing students to take interest in subjects even without having enough to constitute a class

Collaboration between schools could permit students interested in a subject to collectively study or take part in courses taught through synchronous learning



My Life and Technology (Abridged)

ME

2005



2007



2009



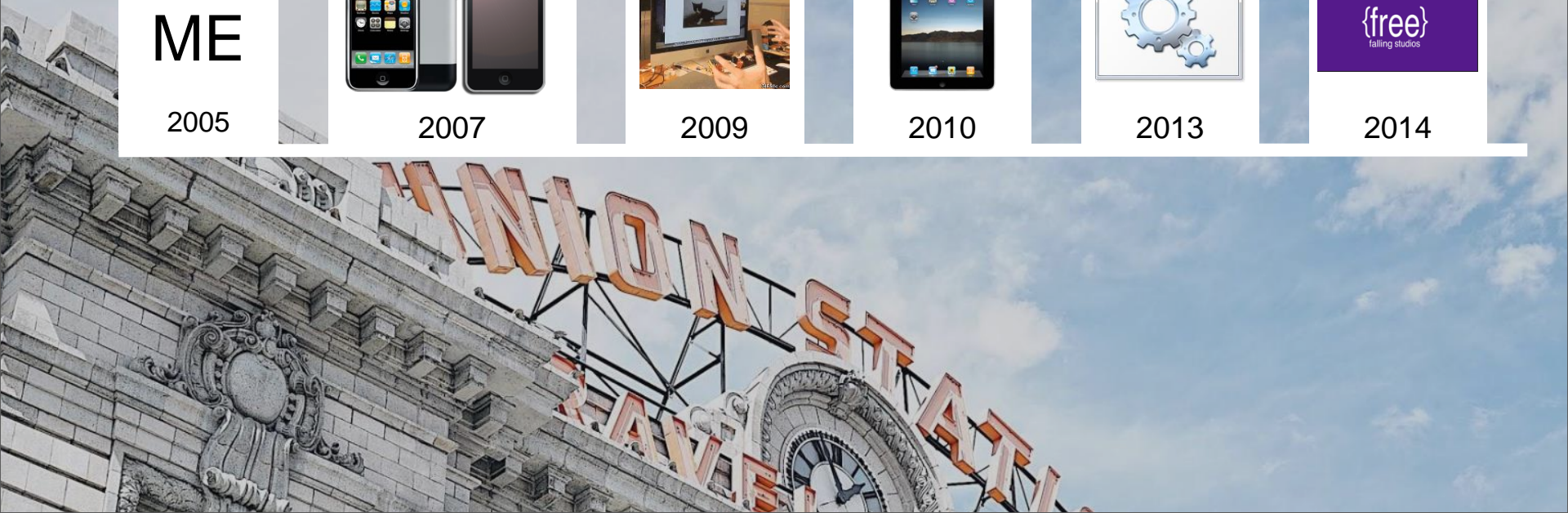
2010



2013



2014

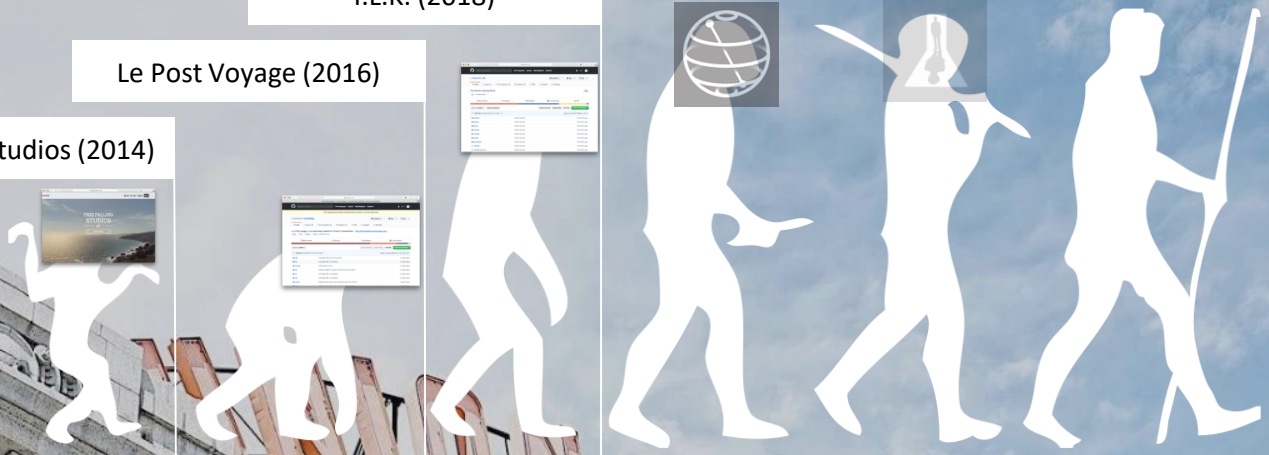
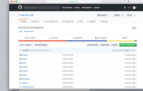


Start Earlier, Learn Orderly

I.L.K. (2018)

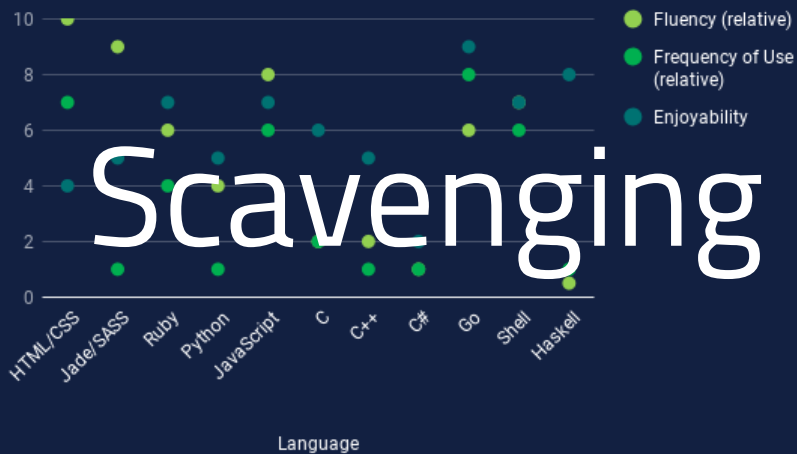
Le Post Voyage (2016)

Free Falling Studios (2014)



What comes next?

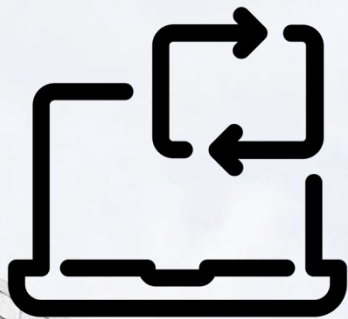
Fluency (relative), Frequency of Use (relative) and Enjoyability



Scavenging

Language

What compels you?



Independent Studies

Guided self-teaching sponsored by faculty

- *Test future courses*
- *Enable learning about more in-depth topics*



Personal Experience

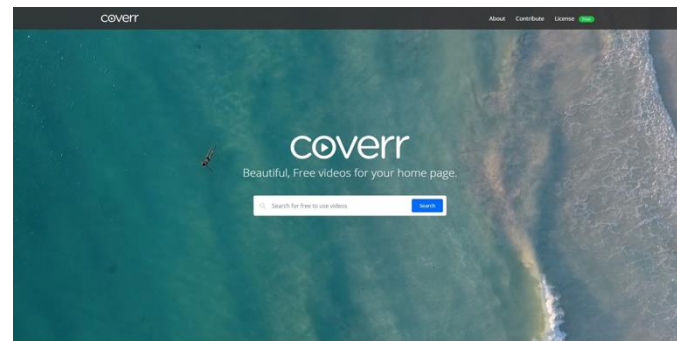
Question 9 1 pts

Fill in the blank in this code so it prints the sequence 10, 5, 0. Use the fewest spaces that makes a legal Python statement.

```
y = 10
while y >= 0:
    print(y)
    _____
```

School

Use of tools provided
by school and
research via open
source



Industry

Personal Experience cont.



CYBRARY
Cyber Security & IT Learning

Self-Paced Classes

Promotes student independence, allowing concurrency of cybersecurity education with standard curriculum, relieving deadline pressure



Personal Experiences





Problem-Based Learning
Internship Opportunities
Industry Connections
Vertical Integration

“Without meaningful opportunities to put problem-solving skills to work [...] students may gradually lose hope that they can make a difference”

Suzie Boss, regarding Terry Godwaldt,
Founder of Centre for Global Education



Problem Based Learning

Allows students to conquer real-world problems instead of hypothetical situations.

Will provide a basis for when the students enter the cybersecurity field





“Our Vision:

We envision a world of exponential possibilities where every child develops the innate knowledge, skills, creativity and character to thrive, lead and succeed in an ever-changing future”

“Strategies/Actions:

1. Employ problem-based learning for global impact.
2. Optimize resources and operations.
3. Embrace different perspectives-everyone is welcome.
4. Share, open source collaboration
5. Bridge industry and education.
6. Continuous re-definition of learning.
7. Keep pace with exponential change.
8. Build a parent community”

Personal Experience

Computer Technician



Networking



CyberPatriot





Internship Opportunities

Students can learn how to apply their knowledge in their desired profession before they complete their education

Learn on-the-job skills



Partnerships



CareerWise Colorado
MODERN YOUTH APPRENTICESHIP



P.TECH

Pathways in Technology
Early College High School

Independence is Key



Industry Connections

Industry professionals can guide students. Give students help in exploring the future possibilities and the variety of options available.



The background of the slide is a blurred photograph showing a person's hands holding a laptop keyboard. The person is wearing a white shirt. The image is out of focus, emphasizing the text in the foreground.

Vertical Integration

Students will be able to learn technical theory and practice real-world applications simultaneously.





Technology is the future

Questions?

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