# Envisioning the Else: An Evolving STEM Journey

### Eda Davis-Lowe STEM Education and Diversity Consultant

Partnering, Collaborating and Mentoring in our Digital Backyard

# Setting the Context

# How would you complete the sentence below?

**Bridging the Gap** 

To this point, my STEM journey has been . . .

# **Presentation Overview**

- Defining Encounters in the Journey
- Why Mentoring Matters
- Why Mentoring in STEM is Critical
- Lessons Learned along the Journey
- Questions

#### Partnering, Collaborating and Mentoring in our Digital Backyard

#### Program director

**Project director** 

**Program director** 

#### Programs coordinator

Programs assistant

Graduate assistant

Summer camp volunteer

Intended English major

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## A Hallway Conversation



#### Fitzgerald High School Grow your mind. Grow your life.

Success begins at Ben Hill County Schools

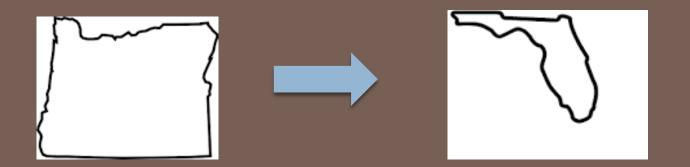
#### **Bridging the Gap**



- A seminar announcement
- An invitation to lunch
- A surprising conversation
- A still, small voice

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An Interview Invitation Involving a Forgotten Application



### Properly Ordered Priorities and a Grand Adventure

**Bridging the Gap** 

### An Unexpected Opportunity

# VALENCIACOLLEGE

### Louis Stokes Alliances for Minority Participation (LSAMP) Program

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### SMILE is . . .

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• A precollege program at Oregon State University

• A STEM enrichment program supporting minority, low-income, and first-generation-college students in 18 rural Oregon communities

• A statewide network of teachers and fourth through twelfth grade students involved in afterschool clubs

### Signature Elements of SMILE

- Teacher professional development
- Afterschool clubs

**Bridging the Gap** 

- Challenge and college connection events
- Developmental STEM pathway

### SMILE Alumni



Meet Circe Verba, Ph.D. From Participant to Mentor: NETL Researcher Aims to Inspire Next Generation of Scientists

https://www.orau.gov/netl/experiences/mentors/verba. html



#### Meet Our New CEO Nichole June Maher

https://grouphealthfoundation.org/meet-our-new-ceonichole-june-maher/

#### **Bridging the Gap**

### LSAMP is . . .

**Bridging the Gap** 

 A program authorized by Congress and established in 1991 to achieve greater diversity in STEM education and careers

• A model of student retention and achievement framed around academic integration, social integration, and career professionalization

 A national network of regional or statewide alliances working to meet goals of the program

### Central Florida LSAMP is . . .

**Bridging the Gap** 

 An alliance of three state colleges in Central Florida

 Implementing its second grant from the National Science Foundation

Recognized as 2015 Bright Spot in Hispanic
Education

• Impacting institutionalized changes at one or more alliance colleges

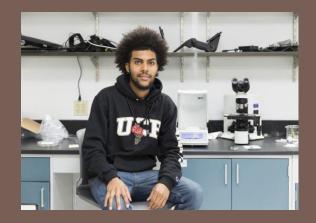
### Signature Elements of Central Florida LSAMP

- Dedicated STEM advising
- STEM-related student clubs
- Summer bridge program

**Bridging the Gap** 

- Assistantship/internship program
- Local student conference in STEM
- Travel to regional or national conferences in STEM

### **Central Florida LSAMP Participants**



#### Life in Homeless Shelter Spurs Student to Attend College

https://today.ucf.edu/life-homeless-shelterspurs-student-attend-college/



#### Valencia Student Lands Prestigious Summer Fellowship in Boston

http://news.valenciacollege.edu/student-life/valencia-studentlands-prestigious-summer-fellowship-in-boston/?utm\_source= feedburner&utm\_medium=feed &utm\_campaign= Feed%3A+valencia-college+%28Valencia+College+News%29

#### Bridging the Gap

### Mentoring in both programs is . . .

- A central engagement strategy
- Multi-tiered and cross-sectoral

**Bridging the Gap** 

 Designed and implemented with participant outcomes in view

 Supported through intentional preparation of mentors

## Why Mentoring Matters

Reports<sup>1,2,3</sup> of research on structured mentoring programs state positive outcomes in several youth development areas, including:

- Academic (increased high school graduation and college enrollment rates)
- Behavioral (improved behavior at school and home; healthier lifestyle choices)
- Emotional (enhanced self-esteem and self confidence)
- Social (healthier relationships; improved interpersonal skills)

#### **Bridging the Gap**

### Why Mentoring Matters

In *The Mentoring Effect*<sup>4</sup> study, researchers compared findings from at-risk youth with mentors to those of at-risk youth without mentors. Data suggest mentored youth were:

36% more likely to state plans to enroll in and graduate from college

**Bridging the Gap** 

- 78% more likely to volunteer regularly in community
- 81% more likely to participate in sports team, club, or other extracurricular activity at school
- 131% more likely to hold a leadership position in a club, sports, team, school council, or another group

# Why Mentoring in STEM is Critical

- Insufficient numbers to meet expected demand for STEM workers
- Innovation enhanced through diverse perspectives, backgrounds, and thinking

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- Persistent barriers limit STEM participation of underrepresented minorities and women
- STEM skills are critical across disciplines and in citizenship

### In an email from a student . . .

"...I'd like to thank you and the LSAMP program for giving me an opportunity to work as a physics research assistant in the Fall semester...I was able to obtain a position as a physics research assistant in the Ultrafast Laser lab (physical science department at UCF) thanks to the experience I gained from participating in the LSAMP Scholars Program."

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### Lessons Learned along the Journey

• Take time to become familiar with the context of the current work.

• Regular, intentional conversations promote sustained vision and efforts.

 Be prepared to move the work forward even if resistance persists.

• Be open to the suggestion of something else.

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### Lessons Learned along the Journey . . .

- Shared goals and diverse perspectives enhance system capacity.
- Clarify who is supporting the work.

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- Time spent in building one's team is time very well spent.
- Learn from positive and negative examples of leadership and become an intentional influencer.

### References

<sup>1</sup>Centre for Addiction and Mental Health. (2013). Youth mentoring linked to many positive effects, new study shows. *ScienceDaily*.

http://www.sciencedaily.com/releases/2013/01/ 130115143850.htm

<sup>2</sup>Eby, L. T., Allen, T. D., Evans, S. C., Ng, T., & DuBois, D. (2008). Does mentoring matter? A multidisciplinary meta-analysis comparing mentored and non-mentored individuals. *Journal of Vocational Behavior*, *7*2(2), 254–267.

http://doi.org/10.1016/j.jvb.2007.04.005

<sup>3</sup>Jekielek, S., Moore K. A., & Hair, E. C. (2002). Mentoring programs and youth development: A synthesis. Washington, DC: Child Trends. <u>http://www.mentorwalk.org/documents/mentoring-synthesis.pdf</u>

<sup>4</sup>Bruce, M., & Bridgeland, J. (2014). The mentoring effect: Young people's perspectives on the outcomes and availability of mentoring. Boston, MA: MENTOR: The National Mentoring Partnership. <u>https://www.mentoring.org/mentoringeffect</u>

#### Partnering, Collaborating and Mentoring in our Digital Backyard

#### **Other Resources**

Agard, E. (2016). 4 benefits to mentoring youth in STEM. https://www.profagard.com/single-post/2016/11/08/4-Benefits-To-Mentoring-Youth-In-STEM Ballard, M. (2014). The importance of STEM mentors. http://www.afterschoolalliance.org/afterschoolSnack/Mentoring-in-afterschool-STEM-programs\_02-12-2014.cfm Batt, L. (2014). STEM mentoring: Helping youth build literacy through supportive relationships. https://nationalmentoringresourcecenter.org/index.php/component/k2/item/297stem-mentoring-helping-youth-build-stem-literacy-through-relationships.html Brookshire, B. (2014). A teacher's guide to mentoring in STEM. https://www.sciencenewsforstudents.org/ article/teacher%E2%80%99s-guidementoring-stem

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#### **Other Resources**

Cohen, C., Patterson, D.G., Kovarik, D.N., & Chowning, J.T. (2013). Fostering STEM career awareness: Emerging opportunities for teachers. Washington Kappan, 6(2). https://journals.lib.washington.edu/index.php/wsk/article/view/14157/12260 Davis-Lowe, E. (2006). Fostering STEM diversity. https://www.researchgate.net/publication/267818819\_Fostering\_STEM\_Diversity Project Exploration and Coalition for Science After School. (2009). A watershed moment. http://www.projectexploration.org/publications/watershed/ Wayman, E. (2012). How teachers cultivate young scientists. https://www.sciencenewsforstudents.org/article/how-teachers-cultivate-youngscientists Williams, J. (2014). The crucial role of mentors in STEM. https://www.usnews.com/news/stem-solutions/articles/2014/04/24/the-crucial-roleof-mentors-in-stem

#### **Bridging the Gap**

# Closing the Conversation

How did you complete the sentence below?

**Bridging the Gap** 

To this point, my STEM journey has been . . .

### **Presenter's Information**

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# QUESTIONS?

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