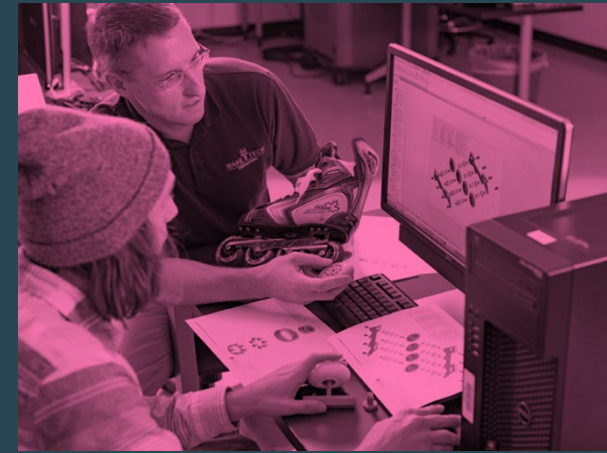


# Creating Online Environments To Promote Motivation and Learning: Perspectives From Students

SRI Education

Community College Research Center

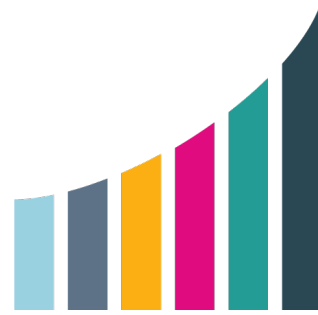
Tulsa Community College





# Welcome!

# Presenters



**Krystal Thomas**  
SRI Education



**Akilah H. Thompson**  
Community College  
Research Center  
(CCRC)

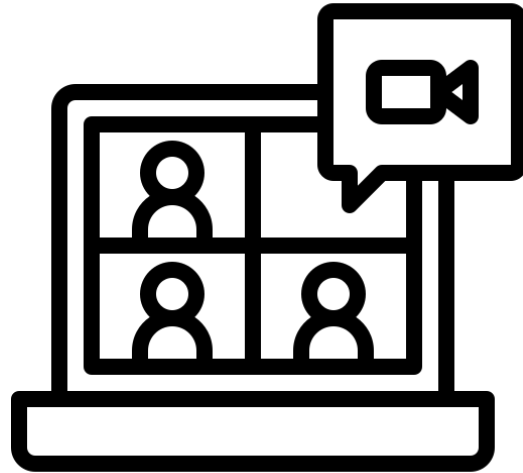


**Jill Taylor**  
Tulsa Community  
College (TCC)

# For today's presentation we will...



**Share a brief overview about the SDL & the Collaborative**



**Share an instructional example of an online classroom teaching practice**



**Elevate the student voice and their experiences**



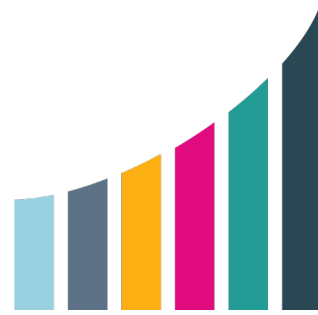
**Discuss takeaways and supports for instructors**

## What is the Collaborative?

A research and capacity-building center that aims to study and improve how faculty **teach** and use **technology** to help students apply and strengthen **self-directed learning skills** to increase their success in online courses.



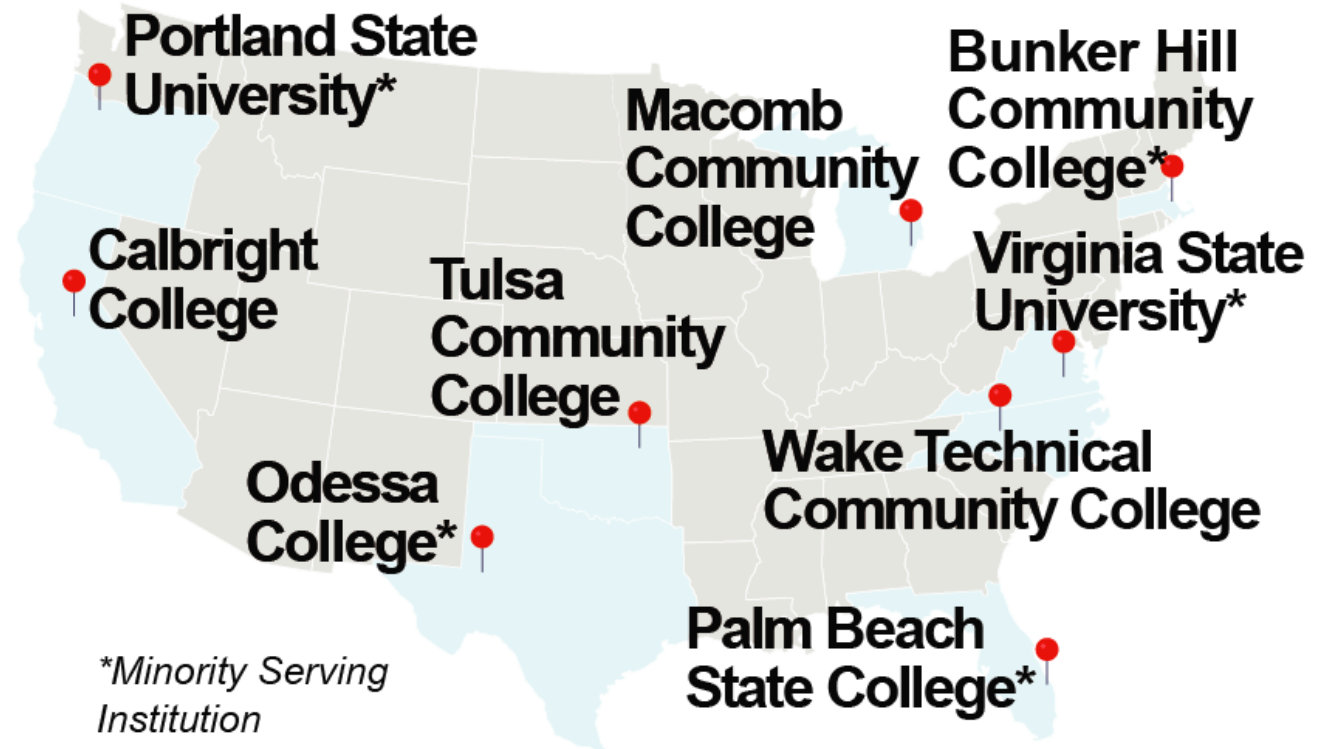
# Postsec Collab: Who we are



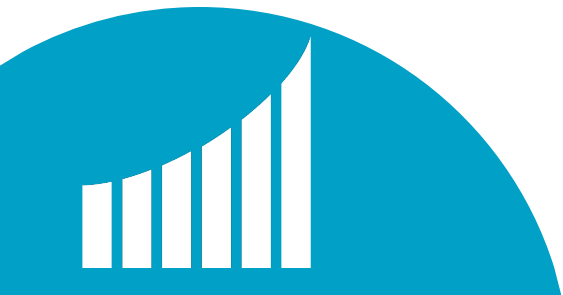
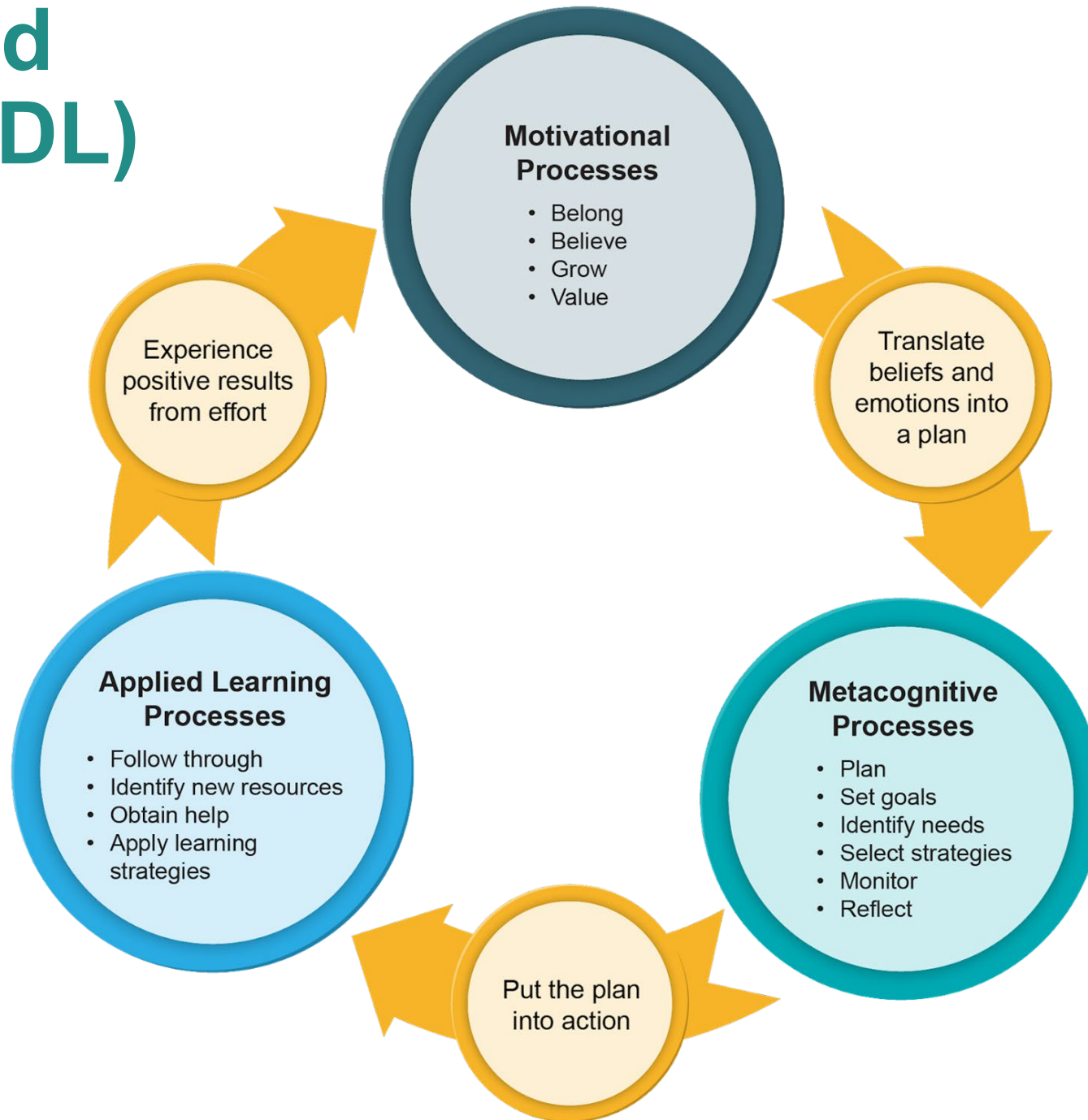
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**CCRC** COMMUNITY COLLEGE  
RESEARCH CENTER  
TEACHERS COLLEGE, COLUMBIA UNIVERSITY

**Achieving  
the Dream**



# Self-Directed Learning (SDL) skills are mutually reinforcing



# Applications Aligned to the Framework to Promote SDL: Group Activities



## Introduction Survey: Google Form

**Math 1513 Student information**  
Answer each completely.

Name \*

Your answer

What is the last math class you took and when was that? \*

Your answer

What grade do you think you will make in this class, and what will you do to make that grade? \*

Your answer

Why did you choose to take this class online? \*

Your answer

# Setting Expectations: Interaction

## Build a sense of belonging

- Survey: Student Information (using Google Forms) share commonalities
- Sample Questions:
  - Why did you choose online?
  - What is the last math class you took and when was that?
  - What grade do you think you will make in this class, and what will you do to make that grade?

# Setting Expectations: Interaction

---

## Build a sense of belonging (cont.)

- Introduction Slide Show: [link](#) (using Google Slides)
- Introduction video

# Introductions

Walton APSI June 26-29, 2023

Choose a slide, then add your info and a picture.



## Jill Taylor

State where you teach: [Oklahoma](#)

School: [Broken Arrow High School](#)

Years teaching: [22](#)

Something interesting about yourself:  
[I'm a big sports fan. My favorite sport to watch is baseball. Go Astros!](#)



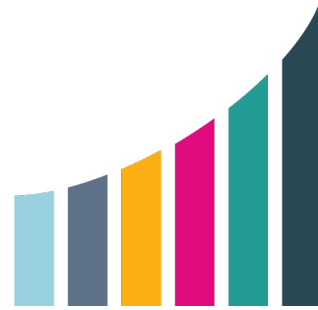
# Challenges



- **What factors contribute to challenges for students in STEM courses, especially online?**
  - Feeling alone, overwhelmed, lack of interaction
- **Students seeking help**
  - Invite students to campus: group study, tutoring center, one-on-one
  - Set up study groups for those who are interested
- **Defining the Struggle: Challenges of group activities in Online Courses**
  - Better breakout rooms
    - § Leader, Activity, Choice, Share Screen, Direction/Goal



# Engaging Students: Examples of Group Activities



## Unit Content Discussion

- On **Jamboard**, students collaborate in groups to...
  - Unit Overview
  - Pre-made activity
  - Ask questions
  - Brainstorm

Unit 1 Content Discussion

Take 10 minutes and look thoroughly through Unit 1, pages 31-50 (pdf pages 39-58), in the AP Precalculus CED. Are there any surprises, additions, or omissions you notice when thinking about your current Precalculus course?

### Surprises

- It seems like some Algebra 2 concepts (zeros of a function, multiplicity, etc) are being explored - seems to assume students are not getting these in A2?
- Limit Notation**
- "Global" max/min. I'm used to "absolute" max/min. Different terminology...
- Frequency of sinusoidal functions was not in my last book (reciprocal of period).
- "Input/output vocabulary is necessary."
- Using limit notation to describe the end behavior of a polynomial function
- The phrase "dominates the polynomial" is an idea we've used, but new terminology

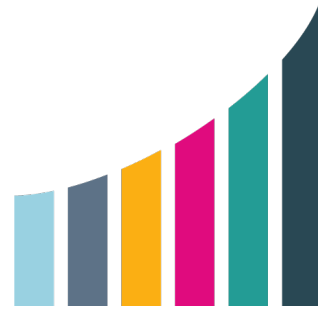
### Additions

- Using Dilation instead of Stretch or compression
- Calculus terms like "point of inflection" and "concavity" are being used
- Concavity
- Use of real-world data sets instead of only "math book" type problems
- Regressions of a variety of function types
- Relating "rate of change" to concavity.
- We haven't been talking about average rate of change in precal
- While we have always called it "Pre-calculus, the strong theme of rate of change on topics seems to make the course more conducive to preparing for Calculus
- Rational function end behavior @ asymptotes

### Omissions

- Domain and Range (See Topic 1.12 for domain and range)
- Operations with Rational Functions
- Synthetic Division
- Domain and Range
- Polynomial long division is relied upon over synthetic division. PLD has its uses, but most of our divisors will be linear.
- Inverse functions are usually a unit 1 topic for my precalculus classes in the past
- Domain and Range (See Topics 1.1, 1.12 for domain and range)

# Engaging Students: Examples of Group Activities (Cont.)



## Instructor Made Videos:

- Record videos of
  - Notes for each section
  - Help videos for homework
- Students can access these videos through the LMS
- Provided for **asynchronous** and **synchronous** classes

8.4 Help video

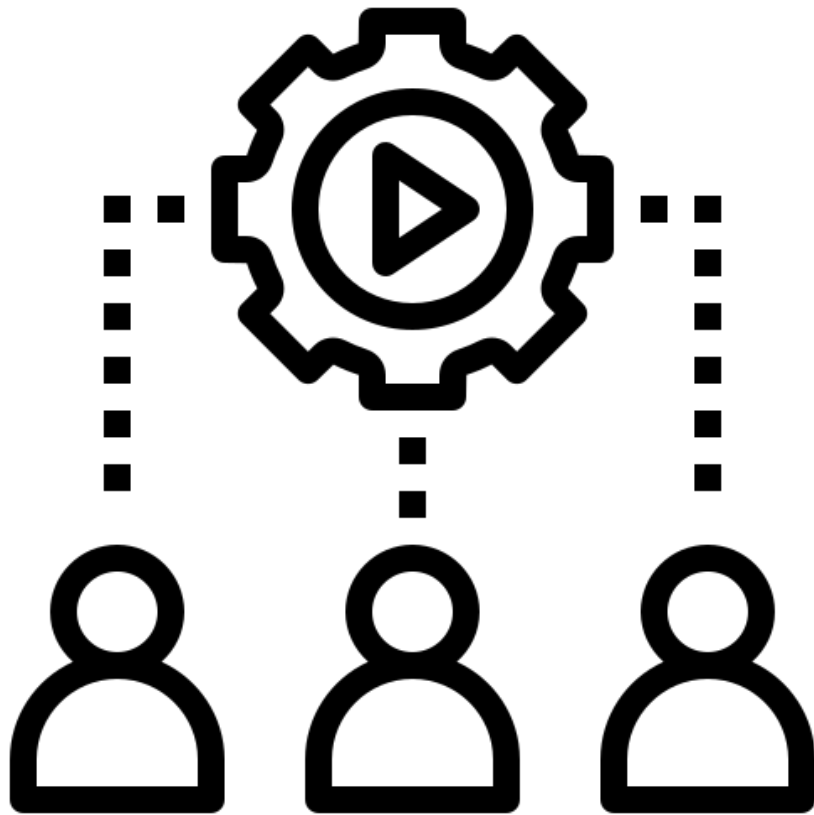
$$\int \frac{\sqrt{25x^2 - 36}}{x^3} dx$$
$$\int \frac{\sqrt{(5x)^2 - 6^2}}{x^3} dx$$
$$\int \frac{\sqrt{(6 \sec \theta)^2 - 6^2}}{(6/5 \sec \theta)^3} \cdot \frac{6}{5} \sec \theta \tan \theta d\theta$$
$$\int \frac{6 \tan \theta}{6/5 \sec^2 \theta}$$
$$(5x)^2 = 6^2$$
$$5x = 6 \sec \theta$$
$$x = \frac{6}{5} \sec \theta$$
$$dx = \frac{6}{5} \sec \theta \tan \theta d\theta$$
$$\sqrt{36 \sec^2 \theta - 36}$$
$$\sqrt{36(\sec^2 \theta - 1)}$$
$$\sqrt{36 \tan^2 \theta}$$
$$6 \tan \theta$$

Calc 2 - HELP on 8.4 HW  
Unlisted

# Student Voices: Benefits and Barriers to Online Group Activities



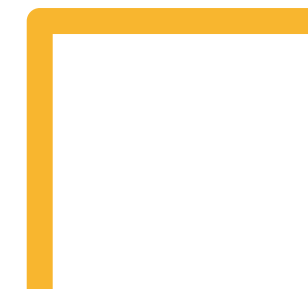
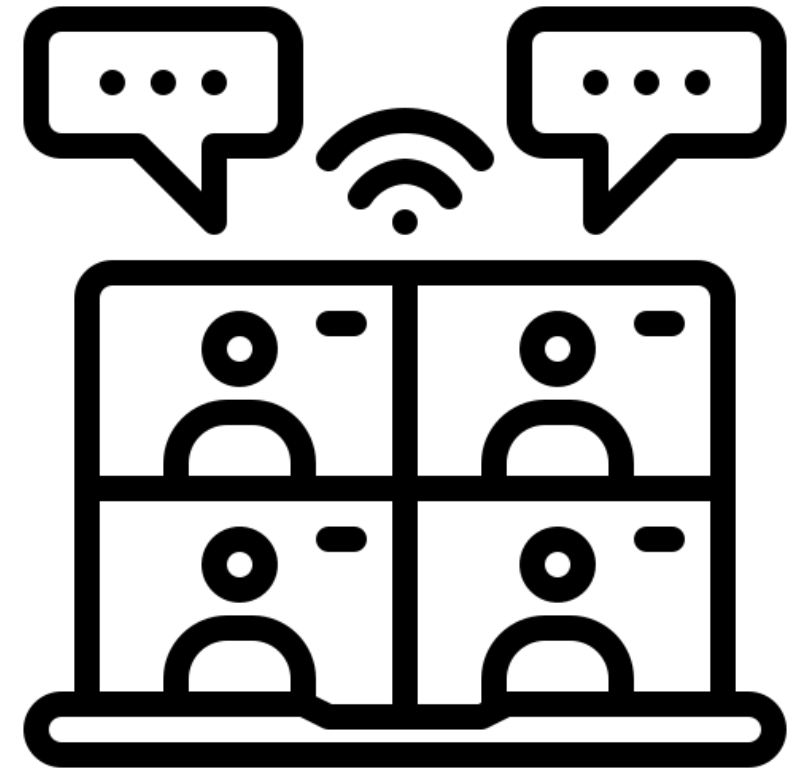
# Student perspectives on group activities



- Students shared their **varying experiences** with group assignments.
  - "...When it comes to groups, I don't like doing groups. I'd rather just do everything **by myself**."
- Working with other students can make it harder for students who like to learn independently.
  - "...[I like going at] my own pace. That's why we're doing online [...] I don't have to worry about getting behind..."

# Student experiences in online courses

- Opportunities for peer interaction can **increase motivation and connectedness**.
  - "...The breakout rooms only [...last], about 15 minutes and [then]...it goes back to the original class [...] so, you're not talking too long...You don't get [enough time] to **chit chat**..."

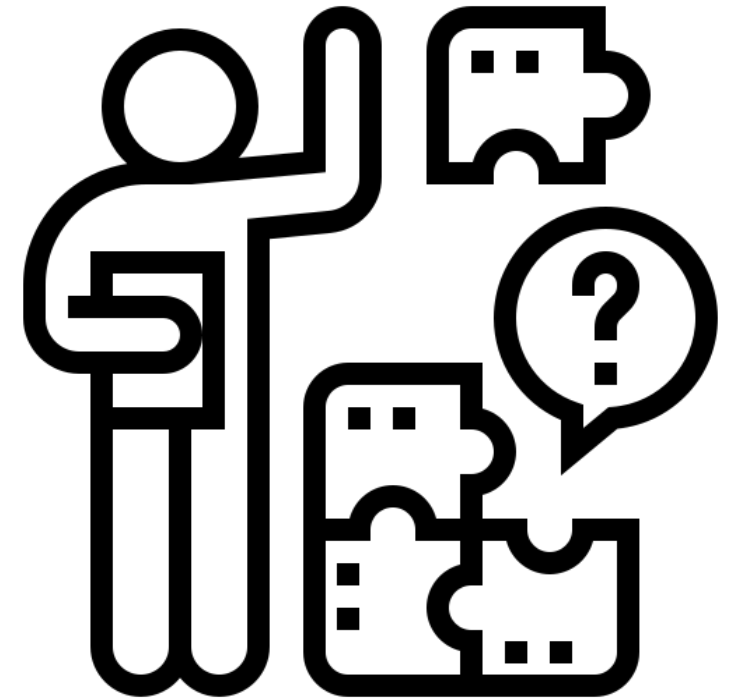




# Student perspectives on Motivational Processes



- Students reported **increased motivation and a sense of belonging** when they knew other students were struggling in the course.
  - “[Knowing that] you're all on the **same page**, [...] it's nice to have that.”
- Students appreciate **structure and roles** with group work:
  - “... I do like group work, but it depends on the group. [...] If you get people that just like, **drag their feet**, you know, it's probably one of the most frustrating things in school.”



# Student perspectives on Applied Learning Processes



- Collaborating with peers **increased confidence** in seeking help from instructor:
  - “... [It] was helpful to be able to talk to other students and [...] **teach each other** the material. [When we realized] we didn't know something...we would **ask the professor** at the next meeting.”



# Takeaways and Considerations

# Supporting Instructors with Strategies for Student SDL Skill Development



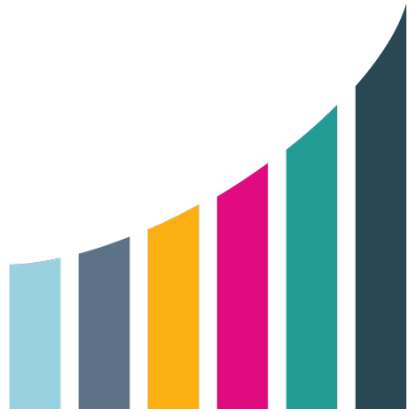
- **Institutional Supports**

- Access to equipment and resources
  - Computer labs
  - Accessible testing sites
- Professional development to support specific training
  - Include student perspective via panels

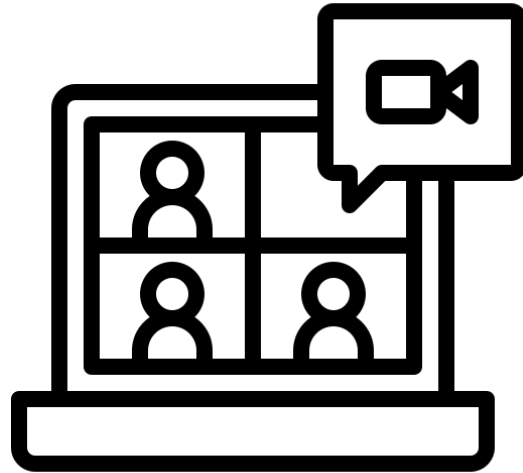
- **Equity Considerations**

- Affinity-based efforts to promote help-seeking
- Varied options to promote sense of belonging and community
- Student choice about taking online courses

# In today's presentation we...



**Shared a brief overview about the SDL & the Collaborative**



**Shared an instructional example of an online classroom teaching practice**



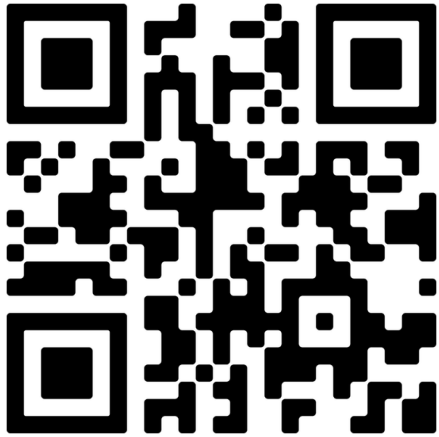
**Elevated the student voice and experience**



**Discussed takeaways and supports for instructors**

# Questions?





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