

DO NOW: Identify your top four

- On each of the five clusters of CS problems:
 - Identify and record the top four challenge areas you believe are the most important for us to address.
 - Your top priority = 4
 - Your second priority = 3
 - And etc – see example below

THEME 3: Statewide System and Structural Barriers	Committee Member Scores	Total
Ohio does not prioritize CS education (no budget for CS education). No dedicated state funding	2	
State agency does not have a deep understanding of what districts need curricularly in CS.		
No time/space for CS in School day with other state requirements x 2	1	
Students and families do not have access to adequate high-speed internet at home.		
Not all schools have adequate funding for CS.		
There is no dedicated office in the State of Ohio that oversees computer science education policy advancement, funding and implementation.	4	
The state lacks a structure to organize, support and fund successful and impactful work out of nonprofit organizations to increase overall CS access and participation.	3	
Ohio does not have a central way to convene the CS community around education.		

Third on my list of priorities.

Least important of my four priorities.

My top priority.

This is my second most priority.

THEME 1: CS Workforce and Competitiveness	Committee Member Scores	Total
<p>Not all students who want to pursue careers in CS have pathway with advanced CS offerings. Ohio students who wish to take advanced computer science courses or series of courses do not have universal access.</p>		
<p>Not enough students going into CS.</p>		
<p>Students need access to more relevant computer science education</p>		
<p>There is confusion and disagreement in bring together the computing disciplines while naming the initiative a specific computing discipline, computer science. Ohio's definition of computer science includes all computing disciplines, but many get stuck on computer science and ignore other disciplines like computer engineering, information technology, information systems, and others.</p>		
<p>Not enough opportunities for students to experience industry internships in k-12.</p>		
<p>Ohio's IT educational and industry infrastructure should be utilized as a resource to produce more Ohioan CS talents.</p>		
<p>Limited capacity for 4-year CS degrees at our colleges because CS departments have many students but few faculty.</p>		

THEME 2: Access and school needs	Committee Member Scores	Total
There is a lack of understanding of the real time labor needs.		
Not all schools recognize CS as foundational knowledge students need to enter the workforce.		
There is not awareness of what CS is and the opportunities that CS education opens for students.		
Many school leaders (school boards and superintendents) are not engaged in Computer Science and do not understand what they are missing.		
Ohio is behind other states in CS access/ Ohio needs more students educated in CS to become a national leader.		
Not all students have access to CS experiences. Students do not have early access to and exposure to Computer Science		
Schools do not have adequate technology for more widespread K-12 CS Education		
Ohio students who wish to take a computer science course or series of courses do not have universal access.		
Schools do not take advantage of virtual CS offerings		
Teachers and schools are inundated with resources and do not have time to find what resources are truly valuable for their students/courses.		
Existing CS curriculum is not flexible enough to fit within the many different school settings		
Ohio's learning standards for CS are not being utilized by schools to build and reinforce Computer Science knowledge for students.		
School administrators love the idea of k-12 CS but do not have the support to get started and the know how to practically implement CS across their school.		

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THEME 4: Student Interest, Participation, and Inclusion	Committee Member Scores	Total
CS is not promoted in ways to interest students. Computer Science does not have the "it" factor for a majority of students.		
We do not make enough meaningful connections between CS and students' intrinsic motivations to increase the under enrollment of females in CS		
Misconceptions of what Computer Science is/is not		
Few students study CS and participation is not representative of states demographics		
Students fear the unknown with Computer Science. "Computer science" is ambiguous and even a little frightening for some if they're not familiar with the field		
All students do not have basic knowledge of Computer Science		



STATE COMMITTEE ON COMPUTER SCIENCE

IN PARTNERSHIP WITH THE OHIO DEPARTMENT OF EDUCATION AND OHIO DEPARTMENT OF HIGHER EDUCATION

THEME 5: CS Teacher Shortage	Committee Member Scores	Total
Schools do not have appropriate staffing to offer CS.		
Teachers don't have a basic understanding of CS		
No consistent pipeline for teachers to learn CS		
K-8 teachers are generalists and need support to bring CS into their classrooms		
There are not practical options for teachers to be prepared and certified to teach CS		
More teachers are needed to teach the increased number of students		
Currently potential teachers can make a lot more money working in the field / There is a pay gap for computer science teachers vs computer science practitioners / Knowledge of CS makes teachers more valuable in the marketplace. Educator salaries can no longer be among the lowest earners if we are serious about prioritizing CS in our workforce / Those qualified to teach CS can make a lot more money working in the private sector. x4		
We need to increase the number of teachers equipped to teach computer science Need for more teachers and teachers with increased CS subject matter expertise.		
Teachers do not have the skills to teach CS.		
Ohio currently has a shortage of certified K-12 CS teachers.		
Costs of professional Learning are prohibitive to teachers.		
Limited supply of CS teachers in K-12		

SCCS

STATE COMMITTEE ON COMPUTER SCIENCE

IN PARTNERSHIP WITH THE OHIO DEPARTMENT OF EDUCATION AND OHIO DEPARTMENT OF HIGHER EDUCATION

Making  Ohio a National Leader in Computer Science Education

Organizational Meeting

Committee Facilitator Kelly Gaier Evans - Battelle

Chair: Mike Duffey, Ohio Department of Higher Education

Vice Chair: John Wiseman, Ohio Department of Education

December 15, 2021 from 9:30-12:00 p.m.



We Welcome

Thank you!

- We will total the numbers for each problem and find the four highest scores for each list. We will focus our time today on these four for each theme.
- Each group will also evaluate if something critical is missing as they dive deeper.
- **Reminder:** Can our ODE/ODHE friends joining us today to calculate these for us.

Today's Agenda

- 9:30 -9:45 a.m. Welcome
- Community building
 - Refer back to expectations and norms
 - Exit ticket
- 9:45-9:55 a.m. Recap
- *Recap the charge*
 - *Public comments*
- 9:55-10:05 a.m. Framing our time together
- 10:05-10:45 a.m. Root causes – small group discussions
- 10:45-10:55 a.m. Coffee and stretch break
- 10:55-11:45 a.m. Full group discussion and prioritization of problems
- 11:45-12:00 p.m Homework and Wrap up

Building Community

PreK-12	Post-Secondary	Nonprofit	Business	Federal
John Wiseman , Vice Chair Ohio Dept. of Education	Mike Duffey , Chair Ohio Dept. of Higher Education	Autum Barry Project Lead the Way	Tonjia Coverdale Nationwide	Lisa Nolan Air Force Research Lab
Tim Conley Bloom Vernon Schools	Debbie Jackson Cleveland State University	Lisa Chambers TECH CORPS	Courtney Falato JP Morgan Chase	
Chelsey Cook Kohn Cleveland Metro Schools	Tsavo Knott [†] Founder, Pieces.app	Kristi Clouse JobsOhio	Sean Lane Olive	
Mike Eilerman Tri-Star Career Center	Jong Kwan Lee Bowling Green State University	Katie Hendrickson Code.org	Doug McCullough Color Coded Labs	
Patricia Murakami Dayton Reginal STEM School	Rebekah Michael University of Cincinnati/Cyber-Range	Kelli Shrewsberry Teaching & Learning Collaborative		
Paula Naa Quartey [*] Student, KIPP Columbus	Tom Newman Cincinnati State			
Bryan Stewart Warren/Montgomery ESC	Tasha Penwell CSTA Designee/Hocking College			
Brent Wise Mariemont Schools	Paul Sivilotti The Ohio State University			

* Paula is a student at KIPP Columbus and special guest who can become a member of the committee in January 2022.

** Tsavo Knott is a recent college graduate and entrepreneur, representing post-secondary students.

*** Lisa Nolan is a non-voting federal government designee from Wright Patterson Air Force Base / Air Force Research Laboratory

What makes me forget to eat?
*(if it matters to you more than
food it says a lot)*

When I am problem solving,
I prefer to process out loud
with others or have individual
think time?

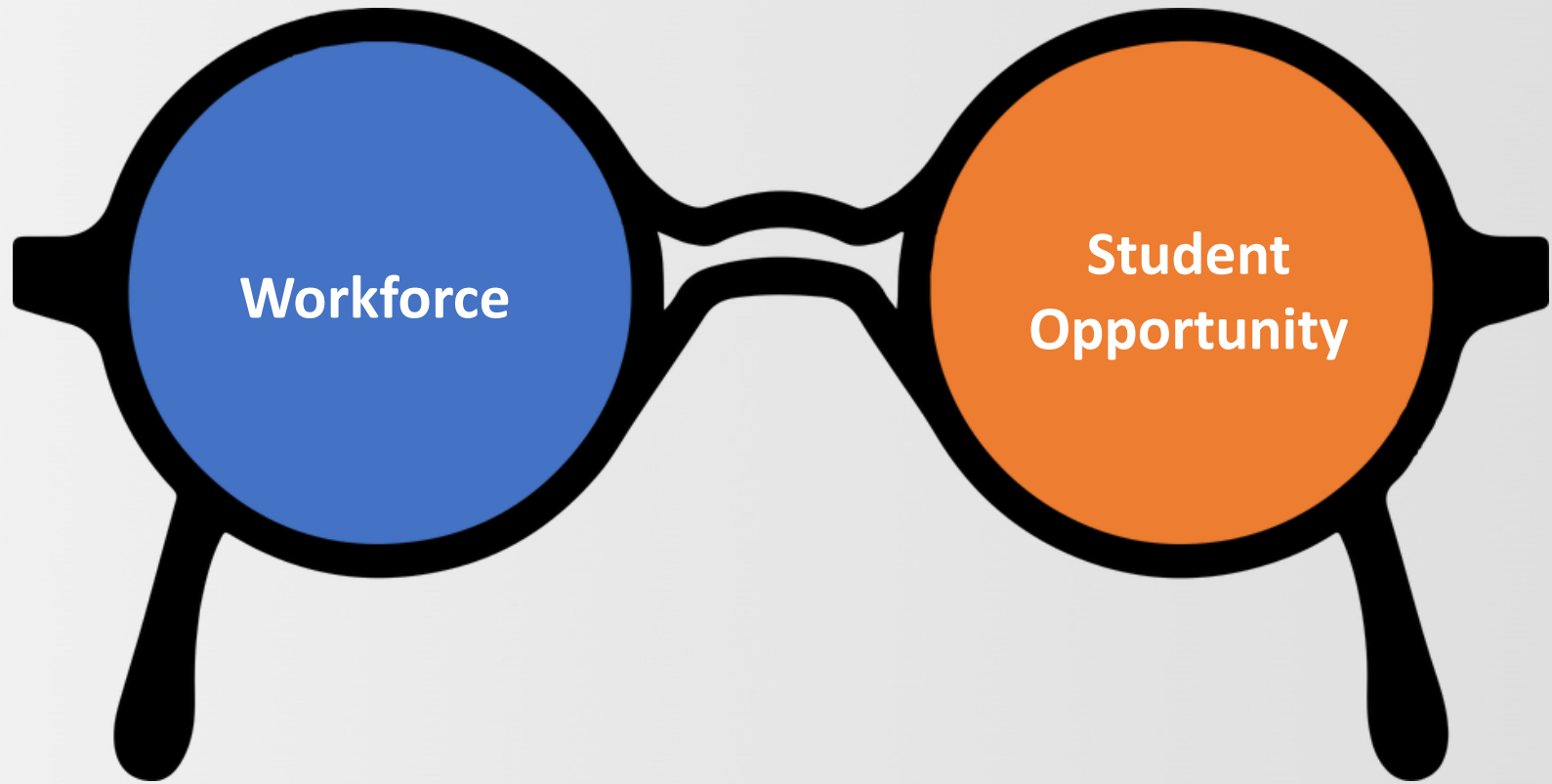
What have you always
wanted to try?

In a group setting, are you the person
who shares your thoughts immediately
OR the person who listens to everyone
else before sharing?

Norms

- We all have different filters, share yours
- Always assume positive intent
- Be curious and ask questions
- Be here now
- Communicative respectfully
- Safe space to contribute ideas (disagree w/content not the person)
- Treat everyone with courtesy and respect
- Embrace data, where it is and isn't available
- Come to meetings fully prepared which includes any homework or review of materials sent prior

Consider your filters.



Exit Ticket from November

What you GOT in the first meeting...

Setting the stage and gathering initial thoughts

Able to capture a significant amount of data.

Leaders conveyed the information we need as well as providing time to discuss via the elbow conversations and gallery walk.

We were able to capture a significant amount of data.

The collaboration and information shared.

Great energy and good information for the committee

Short, frequent opportunities to work with others and get to know them.

Level setting in the presentation - definition of CS, data we have, work that has been done, etc.

Understanding the problem first - there is a need and Ohio can deliver.

We've got a great group meeting together and a channel to actually create change.

Great group of people in the room, liked connecting 1:1 with folks. Very engaging.

Exit Ticket from November

What you NEED after the first session...

We will need to come to consensus about our recommendations which I assume will change the cadence of the meetings.

Entry to the facility was difficult before 9am. There was no one at the door and it was locked.

Improve the volume of the soft speakers.

Well guided but didn't allow for much collaboration between the groups. Maybe a bit more collaboration within the group as well - seemed a bit short but also understand the constraints as well.

Looking forward to specific recommendations from the committee and process around sorting/forming final product.

1. More time for brainstorming 2. More time for questions

We sprinted through important conversations. We need to spend more time and actually dig deep on these topics. Half-day meetings will produce slower and less deep results.

It's hard to talk with masks on in a small space -- hard to hear people when others are talking. Maybe a larger space so folks can spread out more?

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**TWO HOURS OF COLLABORATION TIME
& CONSENSUS BUILDING**

Should we modify expectations

- Meet monthly for 90 to 120 minutes [*proposed: up to 3 hours*] in person
- Work asynchronously between meetings for 60 to 120 minutes
- Be an active participant
- Work to meet our six-month milestones



RECAP

Our Charge – HB 110 - continued

(D) Within the plan, the committee ... shall include all of the following:

(1) An **examination of the challenges that prevent school districts from offering computer science courses**;

(2) A requirement that the department of education **collect any data regarding computer science courses offered by school districts** and school buildings operated by school districts, including the names of the courses and whether the courses were developed using the standards and model curriculum ...and post the collected data on its web site.

(3) A requirement that the committee determine **the best ways to compile data on computer science courses, teachers, and undergraduate students studying computer science** in universities.

(4) Any findings the committee determines appropriate based on its consideration of the topics described in division (B) of this section.

Our Charge – HB 110 - continued

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Our Charge – HB 110, recap

Importantly, the committee is given latitude to **consider any idea that might help make Ohio a national leader in computer science education and workforce pipeline.**

Please *seize the day* and *think big* about our charge.

Our goals should be aspirational but realistic.

We should also consider how implementation might work.



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Public Comment

- Mike Duffey and John Wiseman
- Noticing's between the opportunities and challenges surfaced by the committee and the public.

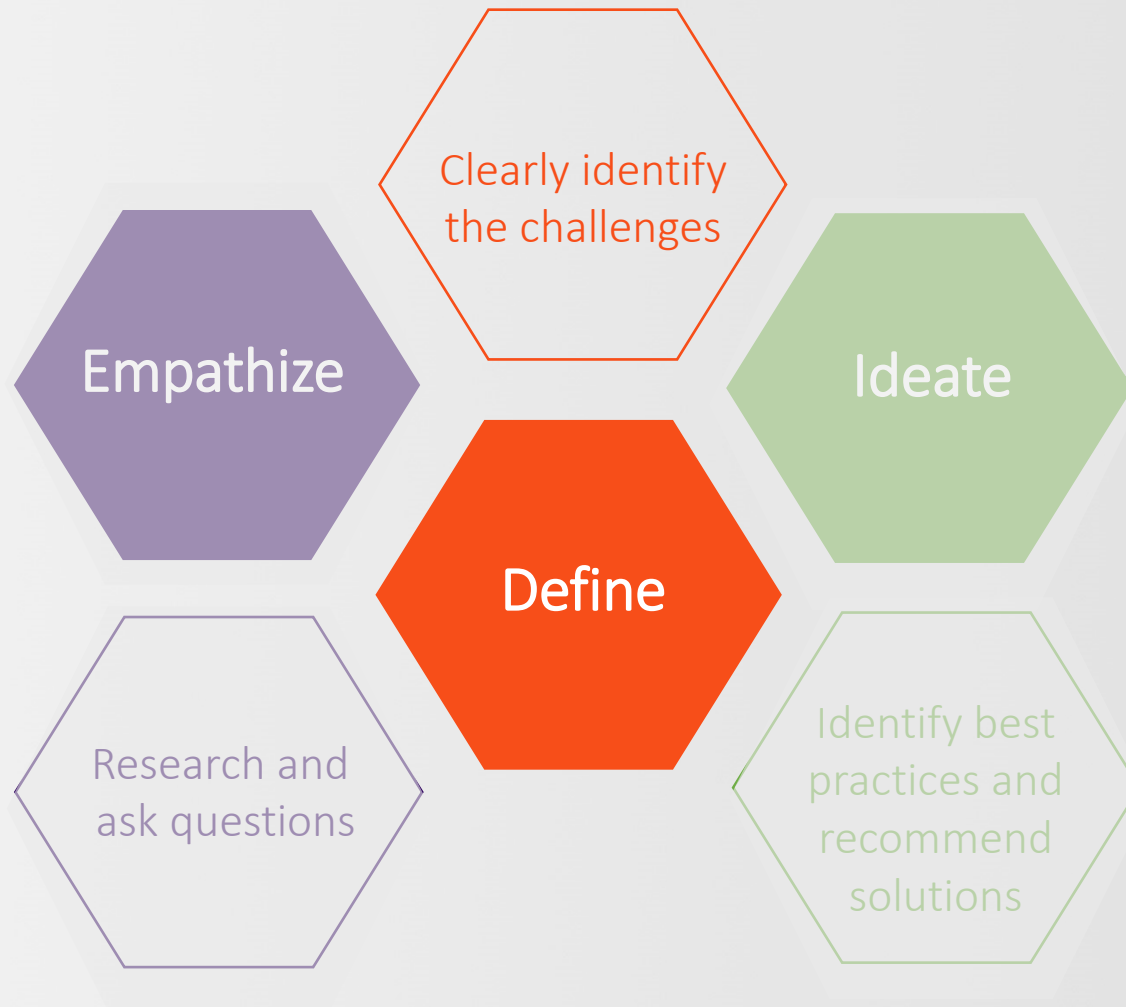


Framing our time

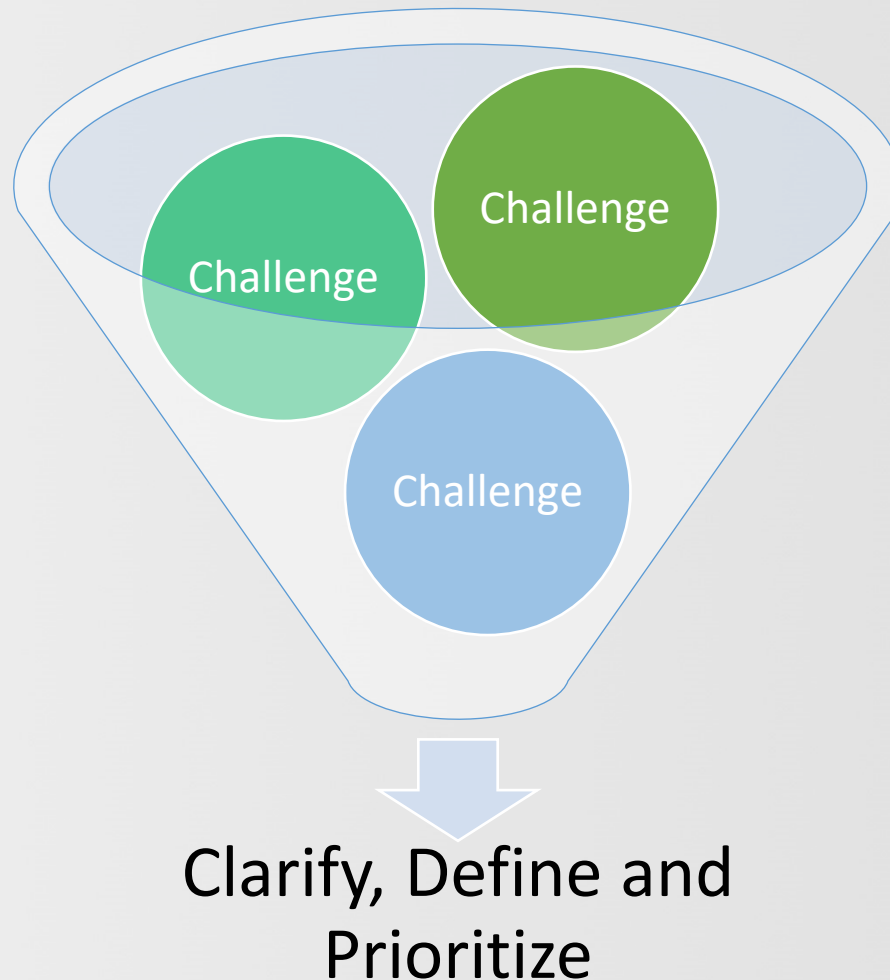
Homework – a little bit of all of this



Today – focus on DEFINE



Grapple with the messy





Define problem and identify root causes

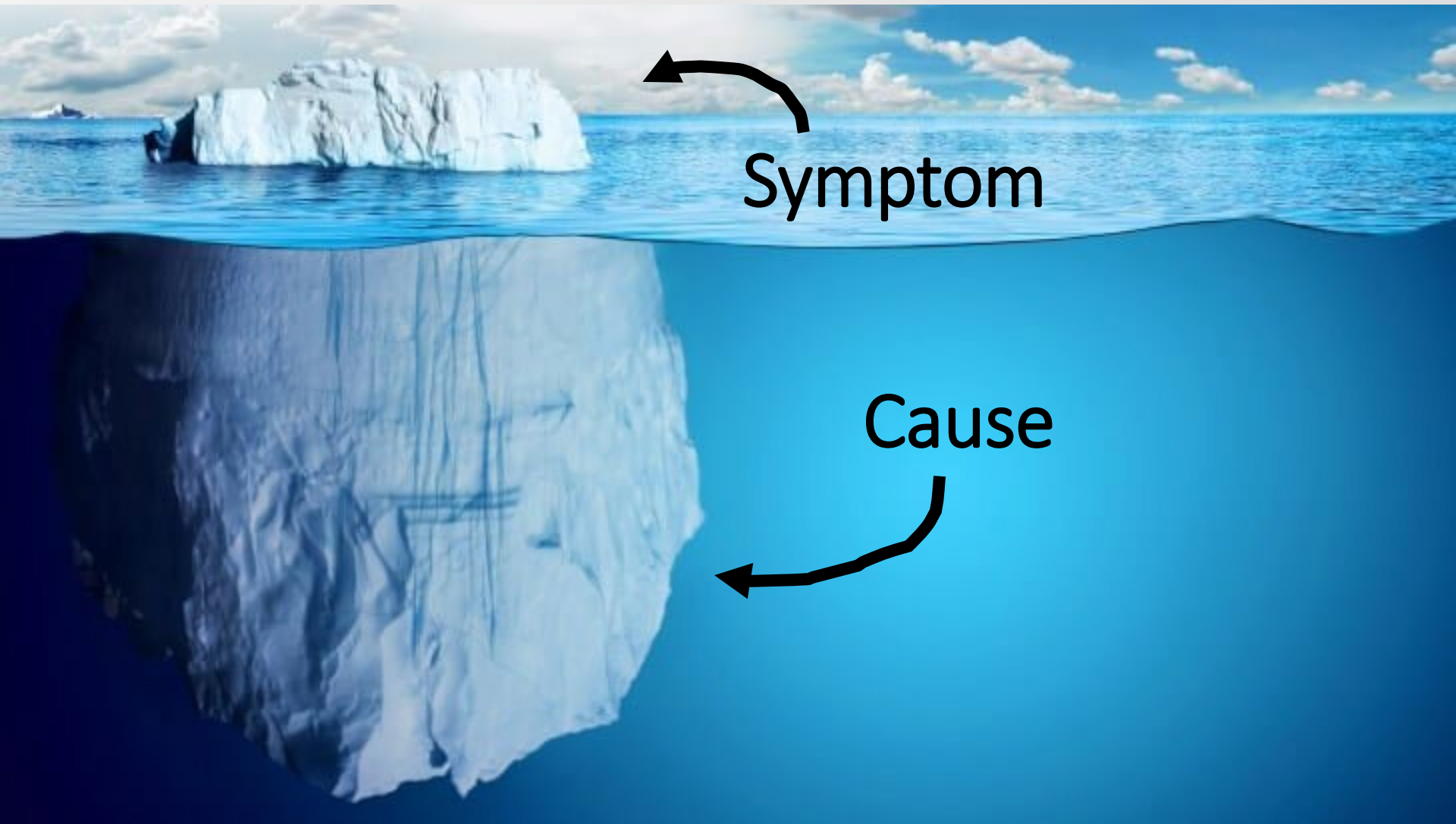


Photo by: Erlich Bachman

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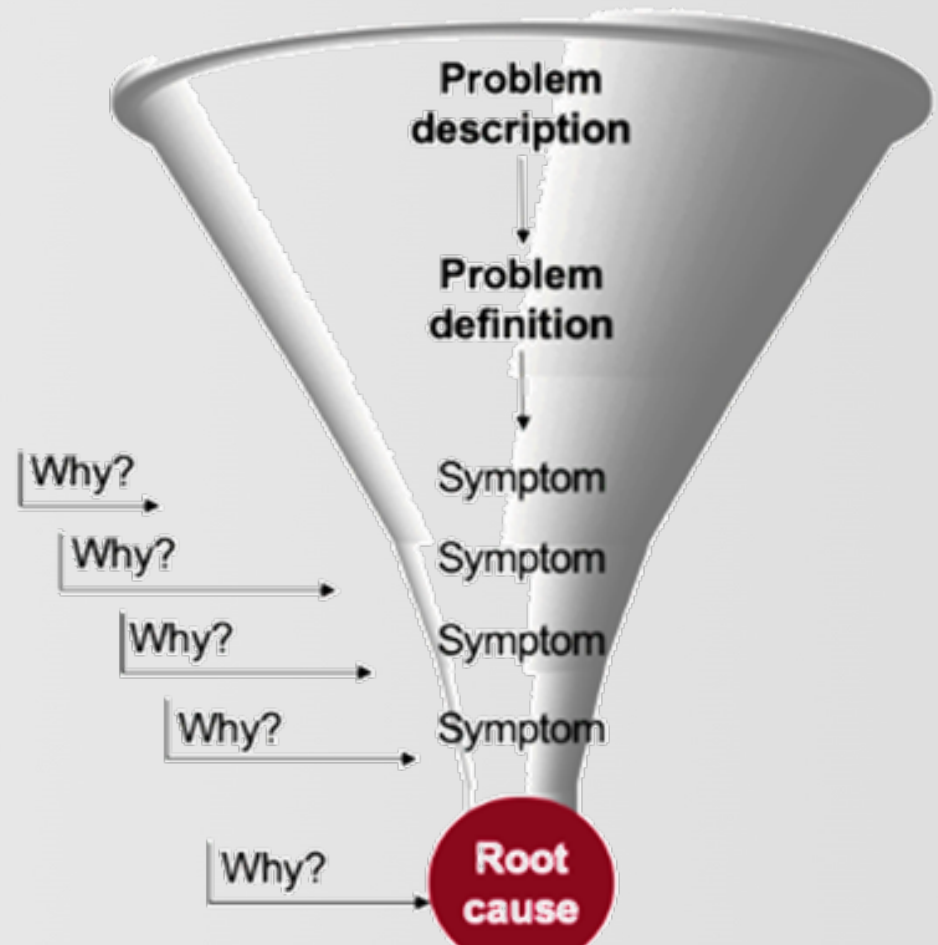
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Protocol: The Five Why's

What is it? A method of identifying the root cause of a problem by repeatedly asking “Why?”

You repeatedly ask “Why” peeling back the layers of the issue to find the root cause.



Why is the Five Why's Useful?

- **Advantages**

- Identify the cause of the problem, not just the symptoms
- Simple and easy to use
- Helps us to avoid taking actions without considering the real causes of the problems
- When we identify the root cause and solve it, then we prevent the problem from happening again.
- Discussion coming to a consensus

- **Disadvantages**

- Different people may get different answers as to the causes of the same problem.
- You may not dig deep enough to uncover the root cause of the problem entirely
- It is only as good as the knowledge and experience of the people in the room.

The Five Why's

Define the Problem				
↓				
Why?	→	Answer	→	Recommendation
	↙			
Why?	→	Answer	→	Recommendation
	↙			
Why?	→	Answer	→	Recommendation
	↙			
Why?	→	Answer	→	Recommendation
	↙			
Root Why?	→	Root Answer	→	Recommendation

The Five Why's

Problem: Parents don't feel that they receive timely and relevant communication from school.		
↓		
Why? Why do parents feel like they do not receive timely communication?	→	Answer: Because parents don't regularly check our school website.
	↙	
Why? Why don't parents regularly check our school website?	→	Answer: Because they might not know that the information is there.
	↙	
Why? Why do they not know the information is there?	→	Answer: Because we haven't told parents that the information is there.
	↙	
Why? Why haven't we told parents that the information is there?	→	Identified Root Cause: Because it's not something we normally plan for.

Five Themes around the room

- Step 1: Choose one of the five focus areas:
 1. CS Workforce and Competitiveness
 2. CS Access and School Needs
 3. Student Interest, Participation, and Inclusion
 4. Statewide System and Structural Barriers
 5. Teacher Shortage *Additional data provided*

- Step 2: Ensure each group has at least three of the four following represented: individual from PreK-12, Post-Secondary, Business, Nonprofit

STEPS

Each themed poster should have calculations identifying the top three issues circled in your themed bucket

1. Use the problem description to help your group define the problem in one sentence.

What is wrong? To what extent? How do I know? What is the standard we failed to meet?

Example) Parents don't feel that they receive timely and relevant communication from school.

2. Identify the Root Cause using the Five Why's

Your root cause should be something actionable that can be controlled for – if it is something not controllable, go up a few levels and re-evaluate your responses.

3. Repeat Steps 1-2 for top three problems (about 10 min each)

4. Re-prioritize

As a group, re-prioritize your three problems in order of most importance. Is there anything from your larger list that your group thinks bears re-visiting?

Identify a recorder and a speaker | Come back full group at 10:45AM

Recorder– this person should clearly capture each problem, set of symptoms, and root cause on a piece of chart paper. **Speaker** – be prepared to summarize your problems, root causes, and final prioritization in four minutes to the larger group.

Share out discussions

Each group has four (4) minutes to share out:

i) Your three top problems and root causes (2-3 minutes)

ii) Does your group agree with the full groups' prioritization earlier?

i) If not, how would you re-prioritize these top three challenges and why?

iii) Was anything missing we should take note of? (1-2 minute)

THEME 1: CS Workforce and Competitiveness	Committee Member Scores	Total
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<p>Not enough students going into CS.</p>		
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<p>There is confusion and disagreement in bring together the computing disciplines while naming the initiative a specific computing discipline, computer science. Ohio's definition of computer science includes all computing disciplines, but many get stuck on computer science and ignore other disciplines like computer engineering, information technology, information systems, and others.</p>		
<p>Not enough opportunities for students to experience industry internships in k-12.</p>		
<p>Ohio's IT educational and industry infrastructure should be utilized as a resource to produce more Ohioan CS talents.</p>		
<p>Limited capacity for 4-year CS degrees at our colleges because CS departments have many students but few faculty.</p>		

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There is not awareness of what CS is and the opportunities that CS education opens for students.		
Many school leaders (school boards and superintendents) are not engaged in Computer Science and do not understand what they are missing.		
Ohio is behind other states in CS access/ Ohio needs more students educated in CS to become a national leader.		
Not all students have access to CS experiences. Students do not have early access to and exposure to Computer Science		
Schools do not have adequate technology for more widespread K-12 CS Education		
Ohio students who wish to take a computer science course or series of courses do not have universal access.		
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Existing CS curriculum is not flexible enough to fit within the many different school settings		
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School administrators love the idea of k-12 CS but do not have the support to get started and the know how to practically implement CS across their school.		

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All students do not have basic knowledge of Computer Science		



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THEME 5: CS Teacher Shortage	Committee Member Scores	Total
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K-8 teachers are generalists and need support to bring CS into their classrooms		
There are not practical options for teachers to be prepared and certified to teach CS		
More teachers are needed to teach the increased number of students		
Currently potential teachers can make a lot more money working in the field / There is a pay gap for computer science teachers vs computer science practitioners / Knowledge of CS makes teachers more valuable in the marketplace. Educator salaries can no longer be among the lowest earners if we are serious about prioritizing CS in our workforce / Those qualified to teach CS can make a lot more money working in the private sector. x4		
We need to increase the number of teachers equipped to teach computer science Need for more teachers and teachers with increased CS subject matter expertise.		
Teachers do not have the skills to teach CS.		
Ohio currently has a shortage of certified K-12 CS teachers.		
Costs of professional Learning are prohibitive to teachers.		
Limited supply of CS teachers in K-12		



Coffee and stretch break – back at 10:55AM
It's a long morning. Please get some movement in.



Full group share out and prioritization

Our Charge – HB 110 - continued

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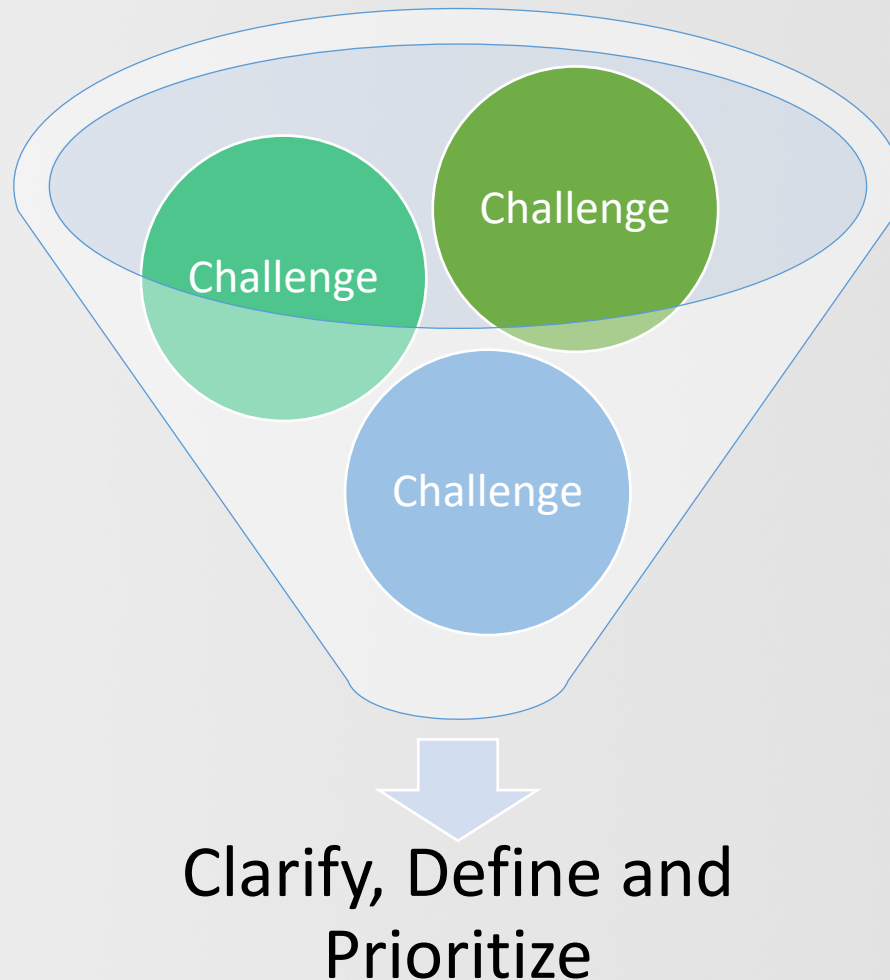
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(4) Any findings the committee determines appropriate based on its consideration of the topics described in division (B) of this section.

Grapple with the messy



Listen for...

Will be collected

Note catcher

Which problem would you tackle if you knew it wouldn't fail? If it did fail, what would be the likely cause?	What problem do you keep coming back to?
What problem, if solved, would be a game changer in making Ohio a leader in Computer Science?	If you look back a year from now, which problem will you <u>regret</u> if we don't address?
What challenge is missing?	What is not worth our time?

- Which problem would you tackle if you knew it wouldn't fail? If it did fail, what would be the likely cause?
- What problem do you keep coming back to?
- What problem, if solved, would be a game changer in making Ohio a leader in Computer Science?
- If you look back a year from now, which problem will you regret if we don't address?
- What is not worth our time?
- What challenge is missing?

Share out discussions

Each group has four (4) minutes to share out:

- i) Your three top problems and root causes.
- ii) Does your group agree with the full groups' prioritization earlier?
 - i) If not, how would you re-prioritize these top three challenges and why?
- iii) Was anything missing we should take note of?

NOTE KEEPER CAPTURING DISCUSSION

CS Workforce and Competitiveness

Problem statement	Root cause identified	Priority rank by full group	Priority rank by work group

Was there anything missing that surfaced during your discussion to take note of?

CS access and school needs

Problem statement	Root cause identified	Priority rank by full group	Priority rank by work group

Was there anything missing that surfaced during your discussion to take note of?

Statewide System and Structural Barriers

Problem statement	Root cause identified	Priority rank by full group	Priority rank by work group

Was there anything missing that surfaced during your discussion to take note of?

Student Interest, Participation, and Inclusion

Problem statement	Root cause identified	Priority rank by full group	Priority rank by work group

Was there anything missing that surfaced during your discussion to take note of?

Teacher shortage

Problem statement	Root cause identified	Priority rank by full group	Priority rank by work group

Was there anything missing that surfaced during your discussion to take note of?

Individual reflection – 3 minutes

Note catcher	
Which problem would you tackle if you knew it wouldn't fail? If it did fail, what would be the likely cause?	What problem do you keep coming back to?
What problem, if solved, would be a game changer in making Ohio a leader in Computer Science?	If you look back a year from now, which problem will you <u>regret</u> if we don't address?
What challenge is missing?	What is not worth our time?

- Which problem would you tackle if you knew it wouldn't fail? If it did fail, what would be the likely cause?
- What problem do you keep coming back to?
- What problem, if solved, would be a game changer in making Ohio a leader in Computer Science?
- If you look back a year from now, which problem will you regret if we don't address?
- What is not worth our time?
- What challenge is missing?

Small group discussion (10 minutes)

As a group of 3, discuss

- Capture group's reflections on key questions
- Capture to submit as a small group:
 - What top 3-5 challenges would your small group recommend Ohio tackle as a part of the state plan?
 - What 2-3 challenges would your group decide are not a priority to Ohio right now?

Will be collected

What top 3-5 challenges would your small group recommend Ohio tackle as a part of the state plan? Why?

Problem Statement	Why
1.	
2.	
3.	
4.	
5.	

What 2-3 challenges would your group decide are not a priority to Ohio right now? Why?

Problem Statement	Why
1.	
2.	
3.	

Large group discussion (10 minutes)

NOTE KEEPER CAPTURING DISCUSSION

What were
your top 2
problems you
would tackle?
Why?

What problem
would you not
address? Why?

Top 2 problems you would tackle? Why?

Top problems you would tackle?	+1's?	Why?

What problem would you not address? Why?

Problem to not tackle?	+1's?	Why?

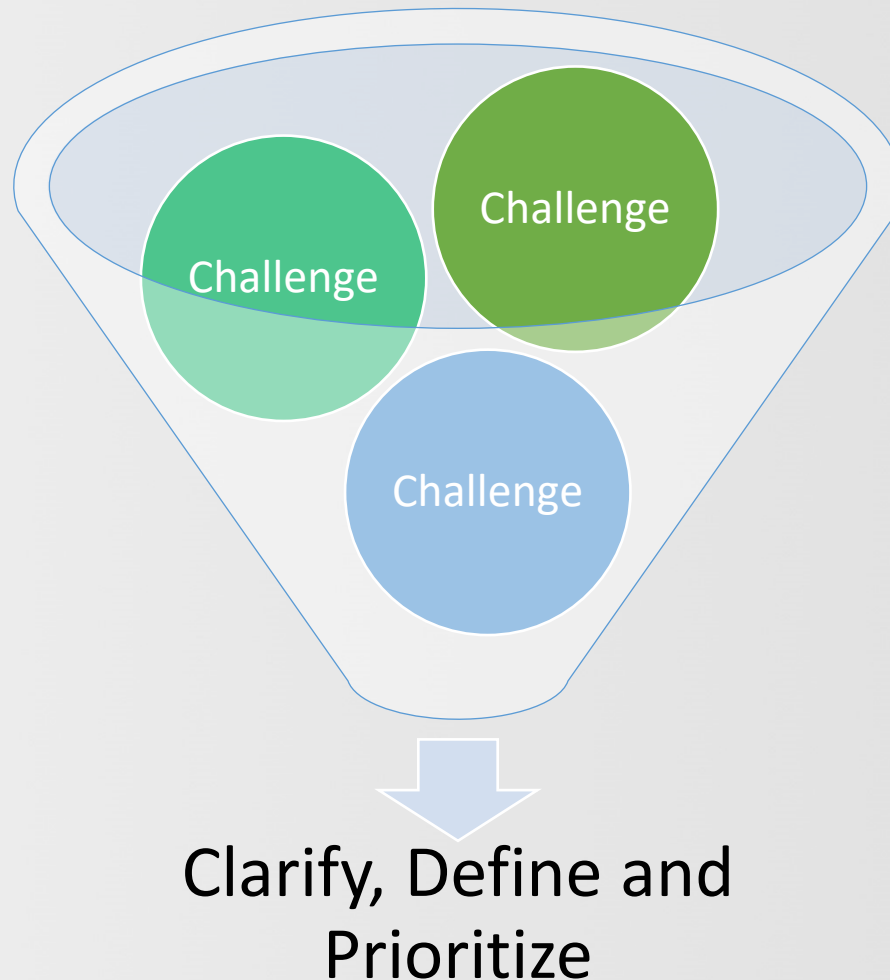
Large group discussion – (5 minutes)

What did you not get the opportunity to share?



Sorry WE'RE
CLOSED

Thank you for working through this



Exit Ticket and Homework

We are collecting your reflections and small group rankings – please submit this now using the instructions below.

1. Take a picture of your groups individual reflections and your small group ranking and submit to:
computerscience@education.ohio.gov.
2. *Please send the email today before you leave and include all group members names.*

OPTIONAL: *If you feel there is additional perspective you need to add to your groups ranking, please submit your personal ranking to computerscience@education.ohio.gov.*

DUE DATE: January 5, 2021 (recommend December 22, 2021)

Upcoming Meetings

January 19, 2022

February 16, 2022

March 16, 2022

April 20, 2022 [If needed]

May 18, 2021 [If needed]

** Note: HB 110 gives us until October 2022, but plan to finish in spring.*

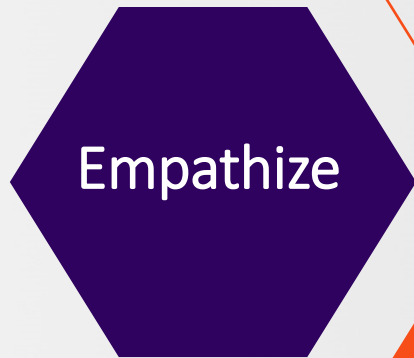


STATE COMMITTEE ON COMPUTER SCIENCE

IN PARTNERSHIP WITH THE OHIO DEPARTMENT OF EDUCATION AND OHIO DEPARTMENT OF HIGHER EDUCATION

Next few meetings

Legislation



Closing



STATE COMMITTEE ON COMPUTER SCIENCE
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