Note: This micro-credential is the sixth of eight in the Community Schools stack. The micro-credentials in this stack follow a sequence to best support educators in developing their capacity to support community schools.

6. Using Fishbone Diagrams to Represent Needs/Asset Assessment Data

Stakeholders create fishbone diagrams to visually represent and communicate a root cause analysis of a high-priority problem as identified through the needs/asset assessment process (as in the previous micro-credential).

Key Method

The stakeholders review data and key findings from a needs/asset assessment process to identify a high-priority need, define the problem, and complete a cause-effect process using a fishbone diagram.

Method Components

Definitions

- A **root cause** is the most fundamental reason for an occurrence of a problem.
- A **causal analysis** is a process to develop a shared understanding of a specific problem.
- A **fishbone diagram** can also be called a cause-and-effect diagram or Ishikawa diagram. This is a visualization tool used for categorizing the potential causes of a problem. This helps to identify root causes. A fishbone diagram is useful in brainstorming sessions to focus conversation. After the group has brainstormed all the possible causes of a problem, the facilitator helps the group rate the potential causes according to their level of importance and diagram a hierarchy. The design of the diagram looks much like the skeleton of a fish. Fishbone diagrams are typically worked right to left, with each large "bone" of the fish branching out to include smaller bones containing more detail.
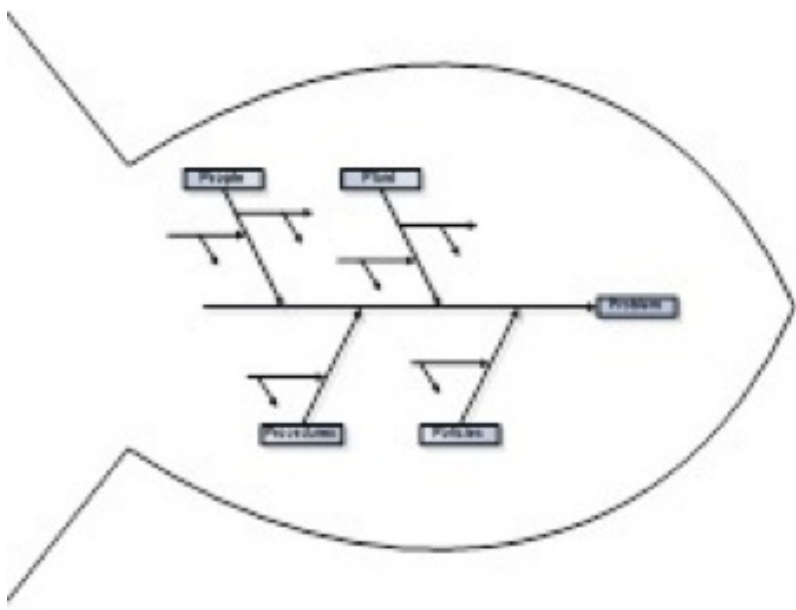
Components of Using Fishbone Diagrams

Step 1 Forming Teams

- **Review** the needs/asset assessment data and key findings.
- **Identify** the key stakeholder groups from the needs assessment.
- **Identify** underrepresented voices in your system or populations/groups most impacted by the identified need.
- **Create** teams that represent each of these groups.

Each team should continue with steps 2-5

Step 2 Find High-Priority Needs

- **Review** the needs/asset assessment and key findings report.
- **Identify** areas of overlap or intersectionality of needs.
- **Consider** immediacy of need and availability of resources.
- Come to **consensus** around which high-priority need you will analyze first. The big items in the word cloud should be the first (see Resources – consensus protocol).

Step 3 Write a Problem Statement (Head)

- **Review** your identified high-priority problem in your findings report.
- **Identify** the gap in performance—where you are versus where you want to be.
- Have each member of the group **create** a one-sentence statement of the high-priority need (see Resources – one-sentence summary protocol).
- One at a time, **share** out problem statements.
- Work together to **create** a synthesized problem statement.
- **Write** this problem statement on the "head " of your fishbone diagram (see Resources – fishbone template).

Step 4 Analyze Root Causes (Bones)

- Have each member individually **brainstorm** multiple causes. TIP: Causes should be specific vs. general. Instead of "motivation," it could be, "Students do not relate, engage with, or show interest in curriculum."
- As a group or in triads, **question** to find root causes of your problem (see Resources – 5 Whys protocol and template).
- Have each member **share** out one cause at a time and place ideas with like causes.
- **Examine** the groups of causes and create an affinity map to identify your categories (see Resources).
- **Write** each category at the tip of a "bone" on the fishbone diagram.
- **Enter** individual causes on smaller bones under their respective categories.

Step 5 Review and Repeat

- **Revisit** the diagram as a whole.
    - Does this reflect the root causes? Or are there deeper causes to explore? Make sure to use the data from your previous focus groups in the earlier stages of this MC stack.
- **Conduct** the 5 Whys with focus groups. You should plan on conducting focus groups with each stakeholder group to fill out your fishbone diagram.
- **Complete** additional fishbone diagrams for other high-priority needs from the findings report

Next Steps: Move Toward Drivers (Next Micro-Credential)

- **Review** multiple fishbone diagrams to identify overlapping and high-leverage points of possible action. For example, "unsafe path to school" or "trauma at home" might be located on two or more fishbone diagrams, which means that improvements in those areas will lead to improvements to multiple problems.
- **Make** a plan to use this fishbone to communicate the cause-effect data to all stakeholder groups.
- Stakeholders **use** the fishbone diagram in the next micro-credential to create a driver diagram as they strategically plan to address the problem.

Supporting Research

Chun, R. (2015). 6 Lessons academic research tells us about making data visualizations. Poynter. Retrieved May 2018 from **https://www.poynter.org/news/6-lessons-academic-research-tells-us-about-making-data-visualizations**

Few, S. (2014): Data Visualization for Human Perception. In Soegaard, Mads and Dam, Rikke Friis (eds.). The Encyclopedia of Human-Computer Interaction, 2nd Ed. Aarhus, Denmark: The Interaction Design Foundation. Retrieved May 2018 from **https://www.interaction-design.org/encyclopedia/data_visualization_for_human_perception.html**

Krauss, J. (2012). Infographics: More than words can say. Learning & Leading with Technology, 39(5), 10-14. **http://eric.ed.gov/?id=EJ982831**

National Center for Education Statistics (2016). Forum guide to data visualization: A resource for education agencies. Washington DC: Author. Retrieved from **https://nces.ed.gov/pubs2017/NFES2017016.pdf**

Bryk, Gomez, Grunow, and LeMahieu (2015). Learning to Improve: How America's Schools Can Get Better at Getting Better. Harvard Education Publishing **https://www.carnegiefoundation.org/resources/publications/learning-to-improve/**

Resources

Definitions

What is causal system analysis?**https://carnegienetworks.zendesk.com/hc/en-us/articles/115001187607-Causal-System-Analysis**

What is a fishbone diagram?**https://carnegienetworks.zendesk.com/hc/en-us/articles/115001231308-Fishbone-Diagram-Ishikawa-Diagram-Cause-and-Effect-Diagram**

Protocols & Templates

Unpack the Root Causes Contributing to a Problem
https://hthgse.edu/fishbone-diagram/

Completed Fishbone Example
https://docs.google.com/presentation/d/1_TTm6TaV5SsUhgihqFpB-0t2NB2Rt4gNEShzA1YmGVY/edit?usp=sharing

Blank fishbone diagram template
https://docs.google.com/presentation/d/1ZUCQzxjtzuvcufnNppjtriV6D9qBkbhOGFhSXt5ieY0/edit?usp=sharing

Affinity Mapping Process
http://www.schoolreforminitiative.org/download/affinity-mapping/

A Consensus Based Decision-Making Process
http://schoolreforminitiative.org/doc/consensus_decision.pdf

Collaborative Decision Making – A Consensus Building Protocol
https://docs.google.com/viewer?a=v&pid=sites&srcid=c21jcHMub3JnfHNtY3BzcGR8Z3g6MTdlZDc2NDBjMDA5MjNkYQ

One Sentence Summary
https://drive.google.com/file/d/1_dazSFI-AsypC2yP2x63JJ8yqJ7uTyjN/view?usp=sharing

Create a Fishbone Diagram
https://carnegienetworks.zendesk.com/hc/en-us/articles/115001171647-Create-a-Fishbone-Diagram

Wagon Wheels; Brainstorming (Protocol)
https://drive.google.com/file/d/1t2ajoapVzPetk_x8WjKVB7HQi2zQnAQO/view?usp=sharing

5 Whys: Getting to the Root of a Problem Quickly (origin and video example)
https://www.mindtools.com/pages/article/newTMC_5W.htm

The 5 Whys (protocol)
http://www.doe.mass.edu/acls/cp/referenced/5Whys-p24.pdf

The 5 Whys for Inquiry (protocol) https://drive.google.com/file/d/1I0OGWQcufpuc5veYBVgUFYFrrs9E2izl/view?usp=sharing

5 Whys (template)
https://docs.google.com/document/d/1mRO3NissBBOM5Blged07cyRUMaQSK79DJYJKCPf9FbU/edit?usp=sharing

MORE Examples and templates – fishbone diagrams
http://templatelab.com/fishbone-diagram-templates/#Fishbone_Diagram_Templates

Planning Tools

NEA The Six Pillars of Community Schools Toolkit
http://www.nea.org/assets/docs/Comm%20Schools%20ToolKit-final%20digi-web-72617.pdf

Effective Presentations

How to Display Data the Right Way in Presentations
https://www.duarte.com/presentation-skills-resources/display-data-in-presentations/

5 Top Tips for Presenting Data More Effectively https://www.forbes.com/sites/bernardmarr/2017/09/11/5-top-tips-for-presenting-data-more-effectively/#3d7825fd52a8

How to Use 6 Basic Charts to Create Effective Reports
https://fluidsurveys.com/university/use-different-chart-types/

Submission Guidelines & Evaluation Criteria

To earn the micro-credential, you must receive a passing score in Parts 1 and 3 and receive a proficient for all components in Part 2.

Part 1. Overview Questions

500-word limit

Please answer the following contextual questions to help our assessor understand your current situation. Please do not include any information that will make you identifiable to your reviewers.

1. Summarize the context, including demographics, in which you are applying the cause analysis process and how you developed your team to reflect this context.
2. Share the narrative or the history of the "problem" or problems that you are analyzing, including the current needs of students, staff, families, and community members.
3. Create a learning goal that describes what you hope to gain form earning this micro-credential.

- **Passing:** Response provides reasonable and accurate information that justifies the reason for choosing this micro-credential to address specific needs of the stakeholders. Educator includes a learning goal that describes what they hope to gain from earning this micro-credential.

Part 2. Work Examples / Artifacts

To earn this micro-credential, please submit the following **three artifacts** as evidence of your learning. *Please do not include any information that will make you or your students identifiable to your reviewers.*

Artifact 1: Evidence of Group Participation

Submit annotated evidence of active group participation in the three key phases of the process incluing:

- Problem or problems,
- High-priority need or needs
- Group and categorized your root causes.

This evidence could be in the form of:

- Photo Essay with annotations that tell about the process
- Charts or Graphic Organizers outlining your decision-making process.
- Agendas and Meeting Notes

Artifact 2: 5 Whys Templates

Submit 3 completed templates of the 5 Whys protocols.

Artifact 3: Fishbone Diagrams

Submit a completed fishbone diagram.

null	Proficient	Basic	Developing
Artifact 1: Evidence of Group Participation	Evidence submitted is annotated and clearly shows evidence of the	Evidence submitted may not be annotated and/or clearly show	Evidence submitted is not annotated nor does it clearly outline the

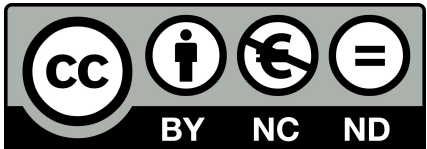|			
	group decision-making processes Each part of the process is labeled: -identifying a high-priority need -defining your problem -finding root causes	evidence of the group decision-making processes Each part of the process may or may not be labeled: - identifying a high-priority need -defining your problem -finding root causes	process of group decision-making The process is not labeled: - identifying a high-priority need -defining your problem -finding root causes
Artifact 2: 5 Whys Templates	All 3 templates are complete and go deep enough to identify a root cause that is meaningful and actionable	The templates may not go deep enough to identify a root cause that is meaningful and actionable and/or not all 3 templates are completed or submitted	The templates are not completed and/or all 3 templates are not submitted
Artifact 3: Fishbone Diagrams	Fishbone diagram has ALL of the following: -a relevant, defined problem identified -categories at the tip of each bone -specific or detailed root causes on smaller bones	Fishbone diagram has 2 of the following: -a relevant, defined problem identified -categories at the tip of each bone -specific or detailed root causes on smaller bones	Fishbone diagram has only 1 of the following: -a relevant, defined problem identified -categories at the tip of each bone -specific or detailed root causes on smaller bones

Reflection

200-word min to 300-word max

Please answer the following reflective questions Please do not include any information that will make you identifiable to your reviewers.

1. Compare this process to past problem-solving sessions you have participated in. Explain how this root cause analysis supported your understanding of the problem and your plan to use it as a communication tool to drive toward desired change.
2. Explain how The 5 Whys protocol helped your group target student need.
3. Describe where else you could use this process as part of any improvement work or cycle you are involved in.

- **Passing:** Reflection provides evidence that this activity has had a positive impacted on both educator practice and student success. Specific examples are cited directly from personal or work-related experiences to support claims. Also included are specific actionable steps the demonstrate how new learning will be integrated into future practices.