THIS WORLD OF HUMANS

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This World of Humans: Episode #2

Guide for Educators

Labor Conditions and Patient Health

These activities address NGSS ETS1.A, ETS1.B, ETS1.C, as well as specific Cross-Cutting Concepts and Science and Engineering Practices (see page 8). Many are also suitable for courses designated as "Writing-Intensive."

About the Article

This article addresses an important issue in public health: the effect of labor policies – particularly family-supportive policies – on the workers and their work. The authors use a mixed-method research design (qualitative and quantitative) to address questions about how work-family support provided to workers in a healthcare facility affects the quality of patient care provided by those workers.

About the interview

In this interview, Dr. Sembajwe discusses in broader detail the connections between health and work-labor policies – in particular, the effects of such policies on the health and welfare of the workers themselves and how that translates to the care they provide to their patients. It provides the origin story of the research and the significance of the research to society in general.

Both the article and the interview can be found here: https://www.visionlearning.com/en/twoh/#ep2

Recommended: pair these materials with *Scientific Ethics* (see "Extension Activities" on page 4).

https://www.visionlearning.com/en/library/Process-of-Science/49/Scientific-Ethics/161

Use in the Classroom

These materials are useful for exploring ways in which scientists engage in research – methodological approaches, identifying relevant research questions – as well as the ways in which they communicate the results of that research. Students should read the article before listening to the interview.

1. **Pre-reading and pre-listening activities** are provided to prompt prior knowledge and help students make connections between their own lives and the research they are learning about. Materials may be used in the classroom to generate discussion, or as homework if the article or interview will be read/listened to in-class. Having students write before speaking helps focus discussions and reading.
2. The **worksheet** is explicitly designed to walk students through the process of reading a scientific paper. It serves as an excellent homework assignment (if the article is read outside of class) and will direct students toward identifying important information about the research. While the answers provided can be used to check student reading, it is really an opportunity to assist students in how to read scientific material. Completed worksheets are excellent for small group discussions, allowing students to solve any discrepancies themselves, or as a debrief with the entire class.
3. **Post-reading and -listening activities** are designed to extend student thinking and engage them more deeply with the text and interview. These questions are great for small groups, for large class discussions, or for short-answer writing assignments.

Guide for Educators

Pre-reading and –listening activities

1. **Vocabulary preparation:** Provide students with the Vocabulary Worksheet and ask them to provide definitions. Clarifying terminology as a class is recommended. This worksheet is suitable for a 10-15 minute in-class activity if students have access to dictionaries or the internet.

2. **Design a research project**: This is best done in small groups of 3 or 4 students and is suited for in-class work where the instructor can regularly check-in with each group and offer guidance. This requires ~30 minutes of class time. One strategy is to assign the role of management specialist to one student, public health specialist to another, and policy maker to a third. (Additional students can self-select.) *Be certain to take at least 10 minutes to debrief as a class, hearing what each group designed and the rationale for their choices*. **Instructions to students, already partnered:**

   Each group is a research team made up of management specialists, public health professionals (doctors, medical researchers), and policy makers. Your job is to design a research project that answers the following question: ***Is there a connection between the workplace policies of a medical facility and the care its patients receive?*** *Specifically, I want you to focus on the policies the facility has with regard to a worker's ability to schedule the hours they work, take time off for sickness and childcare issues, and also deal with family emergencies. You have your research question. Your task, now, is to work as a group to identify how you are going to answer these questions. Thing to ask yourself:*

   1. *What methods will you use?*
   2. *What kind of data should you collect?*
   3. *What kind of information is that data going to tell you?*
   4. *Who are you going to collect data from?*
   5. *How many facilities, if more than one, will you collect data from?*
   6. *How long should the project take?*
   7. *What other considerations for the project's design are there?*

3. **Free-writes**: Freewriting is a practice where an individual writes continuously what comes to their mind (by hand or typing) for a specified period of time. The point of the exercise is to generate thoughts, not quality prose. Periods of 5 minutes (timed) are best for the questions posed below. It also helps to write the question on the board, or print it on a handout, so that students can refer back when necessary. *Do not collect these* – it should be a low-stakes writing task. However, you can ask for students to volunteer what came to mind and use these thoughts to generate discussion about the article they will be reading. ***Instructions to students:***

   We are going to do an exercise called a 'freewrite'. Please take out a notebook or blank sheet of paper, and something to write with. If you're using a computer – open a new file in your word processor. In a moment, I will give you a question to think about, then I'll set a timer for 5 minutes. During this time, I do not want you to stop writing. That means your pen or pencil should keep touching the paper, or your fingers pressing the keys. The point, here, is to write whatever comes to mind without any censoring or editing. Just your thoughts. If you can't think of anything, write "I can't think of anything." You do not have

to share your thoughts unless you want to – I will not collect these. Here is the question I want you think write about: [instructor: pick one]

1. *Being a student is only one part of your life. You might work, have family obligations, or even health concerns. How does your life outside of school influence your work as a student?*
2. *Think about a time when you had to supervise someone. Maybe you were a camp counselor, took on a supervisor role at work, or even took care of a relative. How did you juggle your role of being in charge with the desires of the person you were taking care of? What about the desires of the person that put you in charge? Whose best interests did you keep in mind?*
3. *Do you think there is a relationship between the work an individual does and their health? Why or why not? What about a relationship between an individual's health and their performance on-the-job? Why or why not?*

Post-reading and –listening activities

1. **Revisiting vocabulary:** Using the vocabulary sheet students completed at the start, clarify as a group/class how the authors used the terms. Were they used the same? Differently? Explain.

2. **Discussion questions:** Use the following list of questions to engage students in thinking more critically about the research and interview. These questions can be assigned as short-essay prompts, used for small-group discussion, or used to prompt whole-class discussion.

    - *What was the origin story for this research? Where did the research question come from?*
    - *How does Dr. Sembajwe talk about the data collection process? What rationale did she give for selecting the methods that were used?*
    - *How did the different methods used in the study help to answer the larger questions?*
    - *How did Dr. Sembajwe's discussion of a specific example (the mother whose child was being dropped off by a school bus driver) help your understanding of the research?*
    - *What impact do work-family support policies have on larger communities/society?*
    - *In what ways are workers' health influenced by the formal and informal policies held by a facility? The patients' health?*
    - *In the interview, Dr. Sembajwe spoke about the need for continuity of care. Why is continuity of care important? Who does it affect?*
    - *What were some of the challenges and/or constraints the research team encountered? How did they address them?*

3. **Revisit your research design:** If students conducted the research design activity before reading or listening to the materials, ask them to revisit *their* design in light of the materials. Provide the following questions:

    - *In what ways was your design similar to and different from the article's research team?*

- *What factors did the research team consider that your design did not? What factors did your design include that the research team's did not?*
- *Would the methods and approach your team came up with work to answer the research questions Dr. Sembajwe's team proposed? Why or why not? Does your design provide other information?*
- *Using either your own design or the research team's, what would a logical next step for research be? What would you investigate next?*

Extension activities – for use with the learning module *Scientific Ethics*

Article Critique (2 options): Ethics are a critical factor in research with live subjects (i.e., humans, animals). In this activity, students are asked to scrutinize the published article and assess the ethical considerations necessary for the type of research Sembajwe et al. conducted. This activity is suited for both in-class, small-group work, assigning one prompt per group, as well as used for analytical essay prompts (~1500 words in length). If used for small-group work, be sure to discuss all insights as a whole class. An assessment rubric for use as a writing assignment is provided below

(**Option 1: in-class groups**) Instructions to students:

Each group will receive one question prompt to examine. Use the article by Sembajwe et al. to answer your question, being sure to use evidence from the text to support your ideas (i.e., page numbers, quotations). Your job in this assignment is to question the article's validity and conclusions. Take 15 to 20 minutes to do this activity, and then we will regroup and talk through your insights as a class.

- *In the article Scientific Ethics, Carpi and Egger define ethics as "a set of moral obligations that define right and wrong in our practices and decisions." What moral obligations did Sembajwe et al. need to consider when conducting this research? In what ways is that reflected (or not reflected) in the article proper? In the interview?*
- *Look closely at the data used to support the claims in this article. Do they seem strong enough to support the claims made by the authors? Why, why not? What information can you find about the ways in which the authors selected the data to use? What data might they have left out?*
- *As Carpi and Egger note in Scientific Ethics, part of the ethical responsibility of researchers is to report their methodology so that it can be replicated by others. Study the Methods section of the article. What questions do you have about the way in which this research was conducted? Could you reproduce this study today, if necessary? Why or why not?*
- *In Scientific Ethics, Carpi and Egger discuss the moral obligations researchers have to society in general. In conducting this research, to whom do Sembajwe et al. have a moral obligation? Explain your answer.*
- *Using the article and interview as a resource, what ethical guidelines did Sembajwe et al. follow when designing their research? Where did these guidelines come from?*

(**Option 2: writing assignment**)

Writing Prompt:

Ethics are a critical factor in research with live subjects (i.e., humans, animals). Use the module Scientific Ethics by Carpi and Egger as a lens through which you critically examine the case of Sembajwe et al.'s research (the article as well as the interview with Dr. Sembajwe). In this examination, answer the following question:

[Insert one selected essay question from above]

Your essay should be approximately 1500 words long (5 to 6 pages, double-spaced). Use evidence from the text to support your ideas (i.e., page numbers, quotations, paraphrases). Your job in this assignment is to question the article's validity and conclusions. Take a critical eye/ear to the article and interview, using Carpi and Egger to frame your critique.

Outcomes Assessment/Rubric for Assignment

	Poor	Low	At standard	Exceeds	Outstanding
Uses all three sources (2 articles and interview)					
Explains context for this analysis-- frames the analysis around the essay question: What did they set out to do and why?					
Brief summaries of the case sources: Who are the authors? Where was it published? When? What's it about?					
Carefully attends to rhetorical elements of the chosen texts – how ethical decisions are reflected in the text and interview proper; what is included and excluded.					
Supports analysis with compelling evidence from the text being analyzed, including quotations from the article.					
Demonstrates successful use of appropriate citation conventions.					
Provides a conclusion that comments on the purpose of the analysis and points to implications on scientific research in general.					
Fulfills length and genre requirements.					

Vocabulary Worksheet

Below are a list of terms and phrases that you will encounter while reading the article and listening to the interview. Using a dictionary, provide definitions for each term or phrase. If you cannot find a formal definition, write down what you *think* the term or phrase might mean.

(For expected answers to these questions, see https://www.visionlearning.com/en/twoh/request)

Qualitative Research:

Quantitative Research:

Mixed-Methods Research:

Triangulate:

Worker:

Employee:

Work-Family Support:

Reading Guide and Worksheet

Use this worksheet to guide your reading of the primary article. As you read, answer the questions in your own words. Whenever possible, make notes as to where in the text you found your answer (e.g., in the Methods section, in the fifth paragraph on page 112).

(For expected answers to these questions, see https://www.visionlearning.com/en/twoh/request)

1. Who are the authors of the article? What information can you find about them in the article directly?

2. What specific problem is this research attempting to address? (Another way to think of this: What reasons do the authors give for conducting this research?)

3. What group(s) of people does the research focus on?

4. What were the specific research questions the study attempted to answer? (Another way to think of this is: What were the researchers' hypotheses? What were they trying to find out?)

5. List the methods the researchers used to collect data.

6. What did the researchers find? Summarize the key points.

7. What questions were raised in your reading of the article?

This World of Humans, Episode 2: Targeted NGSS, Cross-Cutting Concepts, and Science and Engineering Practices

The activities in this guide can be used to address the following standards, concepts, and practices.

Next Generation Science Standards	
ETS1.A: Defining and Delimiting an Engineering Problem	• Criteria and constraints also include satisfying any requirements set by society, such as taking issues of risk mitigation into account, and they should be quantified to the extent possible and stated in such a way that one can tell if a given design meets them. (HS-ETS1-1) (secondary to HS-PS2-3) (secondary to HS-PS3-3) • Humanity faces major global challenges today, such as the need for supplies of clean water and food or for energy sources that minimize pollution, which can be addressed through engineering. These global challenges also may have manifestations in local communities. (HSETS1-1)
ETS1.B: Developing Possible Solutions	• When evaluating solutions it is important to take into account a range of constraints including cost, safety, reliability and aesthetics and to consider social, cultural and environmental impacts. (secondary to HS-LS2-7) (secondary to HS-LS4-6) (secondary to HSESS3-2),(secondary HS-ESS3-4) (HS-ETS1-3)
ETS1.C: Optimizing the Design Solution	• Criteria may need to be broken down into simpler ones that can be approached systematically, and decisions about the priority of certain criteria over others (tradeoffs) may be needed. (HSETS1-2) (secondary to HS-PS1-6) (secondary to HS-PS2-3)
Science and Engineering Practices	
Asking Questions and Defining Problems	• Ask questions that arise from careful observation of phenomena, or unexpected results, to clarify and/or seek additional information. • Ask questions to determine relationships, including quantitative relationships, between independent and dependent variables. • Ask questions that can be investigated within the scope of the school laboratory, research facilities, or field (e.g., outdoor environment) with available resources and, when appropriate, frame a hypothesis based on a model or theory. • Define a design problem that involves the development of a process or system with interacting components and criteria and constraints that may include social, technical and/or environmental considerations.
Obtaining, Evaluating, and Communicating Information	• Critically read scientific literature adapted for classroom use to determine the central ideas or conclusions and/or to obtain scientific and/or technical information to summarize complex evidence, concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms. • Evaluate the validity and reliability of and/or synthesize multiple claims, methods, and/or designs that appear in scientific and technical texts or media reports, verifying the data when possible.
Cross-Cutting Concepts	
Cause and Effect: Mechanism and Prediction: Events have causes, sometimes simple, sometimes multifaceted. Deciphering causal relationships, and the mechanisms by which they are mediated, is a major activity of science and engineering.	• Empirical evidence is required to differentiate between cause and correlation and make claims about specific causes and effects. • Cause and effect relationships can be suggested and predicted for complex natural and human designed systems by examining what is known about smaller scale mechanisms within the system