Welcome to…

# AP Research

*2021 Student Workbook*

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**Pages 49–53:** Jeffrey S. Gerber and Paul A. Offit. "Vaccines and Autism: A Tale of Shifting Hypotheses," from Clinical Infectious Diseases 2009; 48:456–61. © 2009 by the Infectious Diseases Society of America. Used with permission of Oxford University Press.

**Pages 63–65:** "Project D.A.R.E. Outcome Effectiveness Revisited," West et al. From the American Journal of Public Health, 94(6); June 2004: 1027-1029. Used with permission of The American Public Health Association.

**Pages 106 and 185:** LEEDY, PAUL D.; ORMROD, JEANNE ELLIS, PRACTICAL RESEARCH: PLANNING AND DESIGN, 10th Ed., ©2013, pp.96, 99, 100, 197-200. Reprinted by permission of Pearson Education, Inc., New York, New York.

# Contents

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# Lesson 1: Demonstrating Understanding of the QUEST

## *The Academic Paper*

When you engage in the through-course assessment (Academic Paper and Presentation with Oral Defense) for the AP Research course, you must demonstrate content knowledge and effective application of the transferable skills and course proficiencies. In this activity, we will look at several student samples of the Academic Paper, identify the variety of ways the required elements of the Academic Paper appear in students work, and identify the range of understandings/skill level students may possess.

## Finding the Required Elements in the Academic Paper

### Directions

Your group will be assigned one of three sample papers (from the Exam tab on the AP Research course home page). Spend about 10 minutes reading the paper and then discuss with your group where the required elements of the Academic Paper are located within the sample. Indicate these page numbers on the table below.

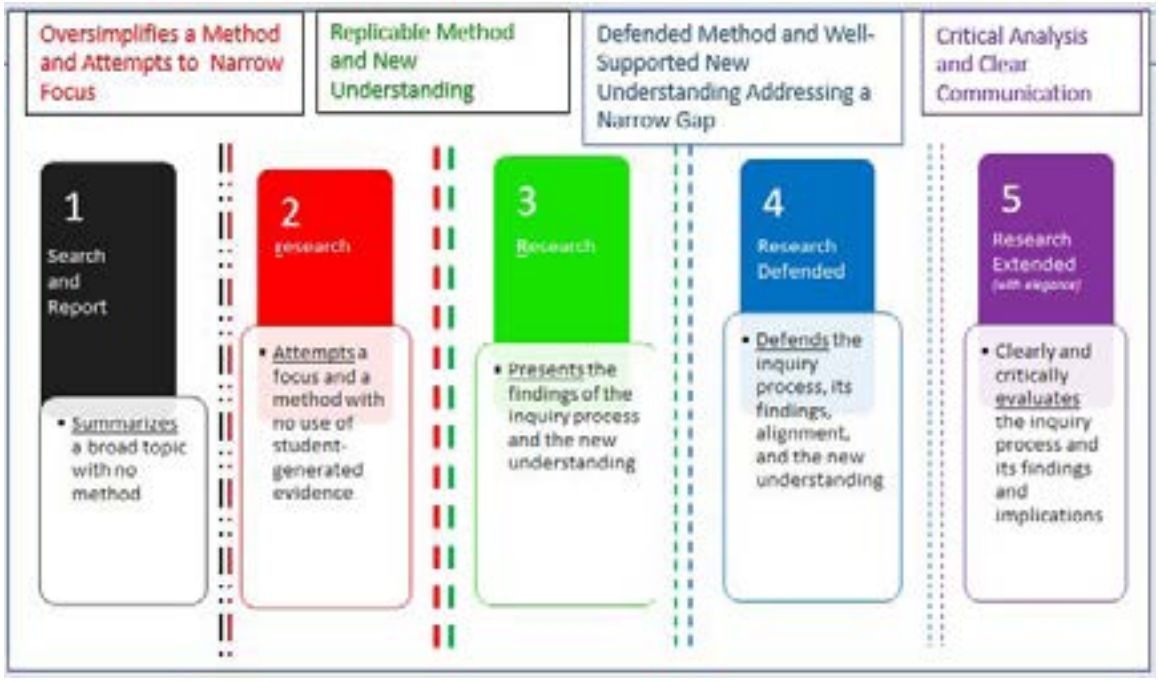
| Required Element | Description | Page numbers where this element is found in the sample paper |
|---|---|---|
| **Introduction and Literature Review** | Introduces research question/ project goal and reviews previous work in the field.<br><br>Synthesizes the varying perspectives in the scholarly literature to situate the research question/project goal within a gap in the current field of knowledge. | |
| **Method, Process, or Approach** | Explains and provides justification for the chosen method, process, or approach and its alignment with the research question. | |
| **Results, Product, or Findings** | Presents the findings, evidence, results, or performance/exhibit/ product generated by the research method. | |
| **Discussion, Analysis, and/or Evaluation** | Interprets the significance of the results, performance/exhibit/ product, or findings; explores connections to original research question/project goal. | |

| Required Element | Description | Page numbers where this element is found in the sample paper |
|---|---|---|
| **Conclusion and Future Directions** | Articulates the new understanding generated through the research process and the limitations of the conclusion or creative work.<br><br>Discusses the implications to the community of practice.<br><br>Identifies areas for future research. | |
| **Bibliography** | Provides a complete list of sources cited and consulted in the appropriate disciplinary style. | |

## Understanding the Five General Levels of Achievement with the Academic Paper

The Academic Paper rubric is in the style of what we call a holistic rubric. What that means is, a single score will be given to the paper as a whole instead of adding up sub-scores that are given for individual criteria (like is done with an analytical rubric).

For the Academic Paper, you can either receive a score of 1,2,3,4, or 5. And even though there are bullets used to describe the finer points of each of these score points or levels of achievement in the rubric, the readers who score the Academic Paper are not making a score decision about how many more bullets are reached under one score point versus another. The readers are making a score decision based on the balance of the strengths and weaknesses of the paper in relationship to the holistic description of each score point. The following figure is meant to simplify the rubric for the Academic Paper so that you can easily understand the holistic descriptions of the 5 different achievement levels with this component of the performance task.



## Evaluating Student Academic Papers

### Directions

Pair up with another person. Read one of the sample papers (via the Exam tab under the AP Research course home page) to which you have been assigned. Focus on the previous figure that holistically describes the five levels of achievement. Work with your partner to come to a consensus on the evidence that the student demonstrated a particular level of achievement as described in the figure. Be prepared to share out your pair's decision and evidence.

**Did You Know?**

Did you know about the Chief Reader Report? This document provides an overview of the academic paper component of the AP Research Performance Assessment Task and how students performed on this task, including typical student errors. The report includes general comments regarding the skills and content students frequently have the most problems with, and it provides suggestions for improving student performance in these areas. For more information, visit: **https://apcentral.collegeboard.org/courses/ap-research/exam?course=ap-research**

### Reflect

Take a few moments to think about what you have learned in this lesson and about your own understanding of the Academic Paper assessment for the course. Then respond to the questions below.

- If a student simply completed an Academic Paper that did not move beyond the components in the Individual Written Argument in the AP Seminar Course, what holistic score might they receive on their work?

- The figure in this lesson is a much simpler representation of the Academic Paper rubric. How could you use this figure throughout the year to check your own progress with developing your Academic Paper?

**Did You Know**

**Equity and Access Policy:**

The College Board strongly encourages educators to make equitable access a guiding principle for their AP® programs by giving all willing and academically prepared students the opportunity to participate in AP. We encourage the elimination of barriers that restrict access to AP for students from ethnic, racial, and socioeconomic groups that have been traditionally underrepresented. Schools should make every effort to ensure their AP classes reflect the diversity of their student population. The College Board also believes that all students should have access to academically challenging coursework before they enroll in AP classes, which can prepare them for AP success. It is only through a commitment to equitable preparation and access that true equity and excellence can be achieved.

# Lesson 2: Helping Students Situate the Approach for Their QUEST

There are specific disciplines/organizations with long-held paradigms that use their own ways of knowing to understand phenomena, collect and analyze data or information, and generate new understandings. In order to situate your research project (know where you are going), you must be aware of your own way of knowing and how it connects (or disconnects) with the discipline's way of knowing pertaining to your topic of inquiry. Additionally, to align your approach with the discipline of your topic of inquiry, you must be aware of the type of knowledge that is valued, the methods to get to that knowledge, and how that new knowledge is reported within a discipline.

## Identifying Discipline Specific Ways of Knowing

### Directions

Read or skim the discipline-specific background information as assigned to you or your group, to develop responses to the questions on the following pages.

#### HISTORY

**www.historians.org/publications-and-directories/perspectives-on-history/january-2007/what-does-it-mean-to-think-historically**

**https://sites.evergreen.edu/nsilc2016/wp-content/uploads/sites/153/2016/07/ATB-Connal-Parsons-Sample-of-Disciplinary-Understanding-Statements-from-National-Team-Oct-27-07.pdf**

#### SCIENCE/MATH

**www.educationforthinking.org/sites/default/files/pdf/05-02WhatIsScientificThinking.pdf**

**https://sites.evergreen.edu/nsilc2016/wp-content/uploads/sites/153/2016/07/ATB-Connal-Parsons-Sample-of-Disciplinary-Understanding-Statements-from-National-Team-Oct-27-07.pdf**

#### HUMANITIES

**http://chronicle.com/article/The-Unintended-Value-of-the/65619**

**https://sites.evergreen.edu/nsilc2016/wp-content/uploads/sites/153/2016/07/ATB-Connal-Parsons-Sample-of-Disciplinary-Understanding-Statements-from-National-Team-Oct-27-07.pdf**

#### ARTS

**https://sites.evergreen.edu/nsilc2016/wp-content/uploads/sites/153/2016/07/ATB-Connal-Parsons-Sample-of-Disciplinary-Understanding-Statements-from-National-Team-Oct-27-07.pdf**

After reviewing discipline-specific ways of knowing and inquiring, provide individual responses to the following questions and then discuss your answers with your group:

1. What method(s) does the discipline use to gather data or information to "know" or "understand" something?

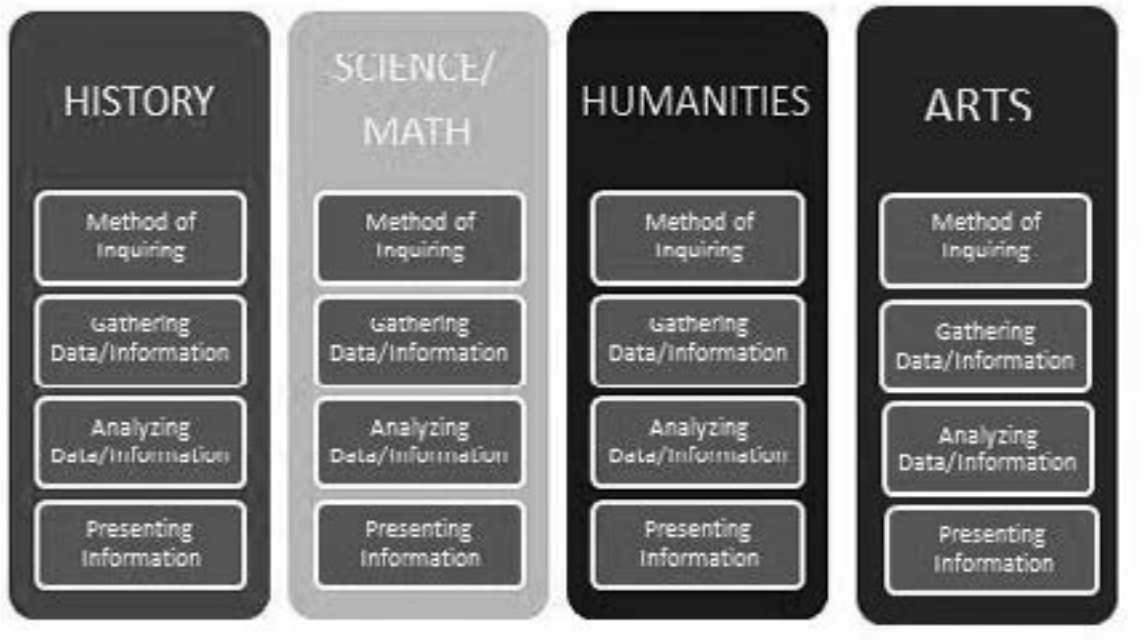
2. What are some ways a researcher should share or present information so it is valued by the discipline?

3. What are some topics that are commonly researched in the discipline?

## Colors of Disciplinary Understanding

### Directions

1. Develop a chart (with your group) that incorporates the discipline-specific information below. Using your responses and discussion from the previous task, add information to your discipline chart for the following categories and include one to three bullets for each category:
   - Method of Inquiring: Inductive or Deductive (prove a hypothesis or link together evidence to make a hypothesis)
   - Gathering Data/Information (What is a researcher in that discipline looking for?)
   - Analyzing Data/Information (How should that information be organized and interpreted?)
   - Presenting information (How should a researcher in that discipline present results to others in that discipline?)
2. Share your group's responses when directed.



## Reflect

- What did you learn from the ways of knowing activity that helped you understand your own way of knowing?

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# Lesson 3: Types of Researchers

## Background Information

"Most of us have our own unique style of inquiry. Some styles embody the traditional norms of science while others exemplify nontraditional norms. There is no one right or wrong way to investigate a problem per se, but if you have a very strong research style, you might find it frustrating to work on a project that is designed for a different type of researcher. A [research] topic should be an original contribution to scholarly research that fills a void in the literature and extends prior knowledge. An [inquiry] can replicate a study in a different environment or time or develop a new theory. Regardless of its intent, you should find a project that you are passionate (or extremely interested) about working diligently on.

**Note:** It is important to keep in mind that in doing research there is room for the daring, speculative, inventive spirit who creates new theories or tried bold, imaginative experiments, as well as for the cautious, critical spirit who examines theories searchingly or for those who will patiently design experiments requiring complete attention to detail. There are researchers who prefer the precision of mathematics and those who prefer the color of words; those who prefer to deal with human beings and human problems and others who prefer to work with computers or microscopes. However, according to Goldstein and Goldstein in their book How We Know (1985), 'for all there should be the same goal---the joy and excitement of discovery and the same outcome---knowledge'." (Simon, 2011).

## Directions:

This activity was adapted from the "Choosing Your Research Project" activity from http://dissertationrecipes.com

## Lesson 2: Types of Researchers-Survey

1. Read each statement below and indicate on the accompanying Likert-type scale how strongly you agree with each declaration. Note that this questions are intentionally complex and force a commitment to one view rather than allowing for a neutral or a no opinion option:

T: To truly understand the AIDS epidemic, one must ascertain the truth about AIDS. A researcher must look at the data, make recommendations for further study based on these findings, and not base conclusions on information obtained through subjective means or anecdotal stories that rely too heavily on his or her personal feelings.

disagree totally agree totally

1 2 3 4 T = _____

F: To truly understand the AIDS epidemic, one must look at the individuals afflicted with the disease and note the similarities and differences that exist between those tormented with AIDS. Recommendation for further study should be based on the immediate needs of those individuals as well as how the researcher feels he or she could best be personally involved.

disagree totally agree totally

1 2 3 4 F = _____

S: To deal with environmental problems, one should look at the methods available and determine the most practical way to solve these problems now and not spend the time on some vague plan in the unspecified future.

disagree totally agree totally

1 2 3 4 S = _____

I: To deal with environmental problems, one should look at all the possibilities that exist now and, more important, could exist and take a broad, long-range view of the situation. A quick fix to the problem should be avoided.

disagree totally agree totally

1 2 3 4 I = _____

2. To discover your research typology:
   a. Enter your T, F, I, and S numbers in the spaces provided below in the table.
   b. Fill in the remainder of the table by computing the sums of:
      i. T + I in cell I
      ii. T + S in cell II
      iii. S + F in cell III
      iv. I + F in cell IV
   c. Your research style(s) is (are) the cell(s) with the largest sum.
   d. Underline the style(s) with the largest sum (Types I, II, III, or IV)

| | T-value: _____ | F-value: _____ |
|---|---|---|
| I-value: _____ | I. (T+I) _____ | IV. (F+I) _____ |
| S-value:_____ | II. (T+S)_____ | III. (F+S) _____ |
| | I. Conceptual Theorist | II. Analytical Scientist |
| | III. Particular Humanist | IV. Conceptual Humanist |

| | Type of Researcher | Brief Description |
|---|---|---|
| **I** | Conceptual Theorist | Holistic and imaginative-believes in TOE (Theory of Everything) |
| **II** | Analytical Scientist | Preference for exactness, precision, and unambiguous situations |
| **III** | Particular Humanist | Humans are too complex to study as a whole |
| **IV** | Conceptual Humanist | Knowledge exists to better humanity |

3. Read about your research style(s) below and evaluate the strength of the descriptions and your computed style with how you feel you engage in inquiry.

   **I. Conceptual Theorist.**

   a. This type of researcher believes in TOE, i.e., the Theory of Everything. A conceptual theorist is holistic and imaginative. He or she believes in multiple causations and the development of a coherent testable framework through large-scale correlation. Science holds a definite privilege in this type of thinking but it is not the only way that a conceptual theorist views a problem.

   b. Motto: Intellectual conflict is an important characteristic of research and should not be dismissed. Such conflict is vital to the development of both methods and theories.

   c. Methodologies that would likely appeal to a conceptual theorist: correlational studies, factor analyses, descriptive research, repertory grid analysis, Q-methodology, and Delphi study.

d. Research topics that would likely appeal to a conceptual theorist if asked to choose a research topic on smoking and health: Determine the correlation between smoking and diseases, smoking and personality types, why people smoke, and as many multiple correlations as one can ascertain between smoking and other factors.

**II. Analytical Scientist.**

a. This type of researcher prefers exactness, precision, and unambiguous situations. Science is also paramount and exact in this type of thinking. The analytical scientist sees science as ruled by nature. The ideal experiment is one where all variables are controlled.

b. Motto: In order to label something a scientific theory, it must be cast into a logical form so that, given the proper antecedent conditions (X, A), one can make the valid deduction (Y). Otherwise (according to the analytical science view) it is nonscientific.

c. Methodologies that would likely appeal to an analytical scientist: experimental design, quasi-experimental design semiotics, trend analysis, design-based research, regression-discontinuity design, and retrospective record review.

d. Research topics that would likely appeal to an analytical scientist if asked to choose a research topic on smoking and health: Determine definitively if cigarette smoking causes cancer. Simulate smoking in laboratory animals and determine if cancer is caused.

**III. Particular Humanist.**

a. This type of researcher prefers personal knowledge to rational knowledge. Science is not privileged in this type of thinking and is subordinate to other disciplines such as poetry and literature. The particular humanist believes that humans are too complex to study as a whole.

b. Motto: It is absurd to think that science has remained immune to outside influences. The challenge is to develop a methodology that does justice not only to the humanity of the participants studied but to the researcher as well. Only a person who is passionately involved in his or her research can make a difference.

c. Methodologies that would likely appeal to a particular humanist: case study, appreciative inquiry, action research, semiology, phenomenology, grounded theory, critical incident technique, and hermeneutics.

d. Research topics that would likely appeal to a particular humanist if asked to choose a research topic on smoking and health: Study a smoker and determine why this person started smoking and any ill effects attributed to smoking. Have cancer patients who have smoked keep a diary and study their feelings and concerns.

**IV. Conceptual Humanist.**

a. This type of researcher prefers holistic knowledge. Science has no special privilege in this type of thinking. Knowledge exists only to better humanity. To further understand humanity, a conceptual humanist believes that one must study human behavior from many points of view and constantly develop new approaches to improve human life based on these observations.

b. Motto: The question is not, "Is storytelling science?" but "Can science be used for the betterment of humanity?"

c. Methodologies that would likely appeal to a conceptual humanist: grounded theory, phenomenology, evaluative case study, causal comparative research, historical research, appreciative inquiry, content analysis, Delphi method.

d. Research topics that would likely appeal to a conceptual humanist if asked to choose a research topic on smoking and health: Survey ex-smokers and determine the most effective ways each person was able to stop smoking. Use this information to develop a program to help people stop smoking.

4. Look at the *Choosing Your Research Method* table below and answer the following questions:

   a. Which three methods appeal to you the most and why?

   b. Which three methods appeal to you the least and why?

| Research Method | Brief Description | Type |
|---|---|---|
| Case Study research | Group observation to determine how and why a situation exists | III |
| Content analysis | Analyze text and make inferences | IV |
| Correlational research | Collect data and determine level of correlation between variables | I |
| Delphi research | Analysis of expert knowledge to forecast future events | I, IV |
| Descriptive research | Study of "as is" phenomena | I |
| Ethnographic | Cultural observation of a group | |
| Evaluation research | Study the effectiveness of an intervention or program | IV |
| Experimental research | Study the effect of manipulating a variable or variables | II |
| Factor analysis | Statistically assess the relationship between large numbers of variables | I |
| Grounded Theory | Produce a theory that explains a process based on observation | III, IV |
| Hermeneutic research | Study the meaning of subjects/texts by concentrating on the historical meaning of the experience and its developmental and cumulative effects on the individual and society | III |
| Historical research | Historical data collection and analysis of person or organization | IV |
| Meta-analysis research | Seek patterns in data collected by other studies and formulate principals | |
| Narrative research | Study of a single person's experiences | |
| Needs assessment | Systematic process of determine the needs of a defined demographic population | |
| Phenomenography | Answer questions about thinking and learning | |
| Phenomenology | Make sense of lived experiences of participants regarding a specified phenomenon. | III, IV |
| Semiology | Study the meaning of symbols | II, III |
| Trend Analysis research | Formulate a forecast based on regression analysis of data | II |

## Reflect

- To what extent do you believe your identified type of researcher, motto, research topics, and associated methods align with how you feel you actually engage in everyday inquiry?

- What do you believe (if any) are the potential challenges with engaging in research methods that do not align with your natural way of inquiry?

# Thinking Ahead: Developing Research Questions

### Directions

1. In preparation for your next lesson, think about topics, problems, or issues that interest you. Develop three research questions that you could use to design and implement a six-month to year-long investigation to yield a new understanding about this problem, issue, or topic.
2. Choose one research question to bring to class.

_____

_____

3. List at least three criteria that you used to develop your research questions. Be prepared to talk about your list with your group during your next class.

- _____
- _____
- _____

**Note:** You could search existing scholarly, peer-reviewed journal articles to get a general understanding of what research questions look like embedded in academic papers. EBSCOhost database for scholarly, peer-reviewed journals can be accessed via the Digital Portfolio.

# Lesson 4: Big Idea 1: Question and Explore

## *Developing and Revising Research Questions*

Many of the problems students encounter with doing research have to do with poorly written or ill- defined research questions. If the research question fails, the paper fails; it's important to get this right. A simple change in words can help align the research question to what you really want to investigate and ensure appropriate scope, focus, value, and feasibility.

Use the criteria you listed for developing effective research questions from your Thinking Ahead homework assignment to generate responses to the following questions:

What are the steps to take to transform a topic of inquiry or a problem into a well-defined research question capable of yielding a long- term investigation?

What are the critical elements of an effective research question, and how do you know if those elements are present?

## "Research" versus "research"

You must be careful when crafting your research question. Your research question must be aligned with the purpose of Capital "R" Research or your work will not demonstrate achievement within the AP Research course.

**To clarify:**

Little "r" research is basically just searching for literature to develop an argument or stance around an issue or to report on what is known about a problem or question.

- Questions that look more like debates about controversial issues are little "r" research questions and must be avoided.
- Questions that can be answered by looking up scholarly works that have already been published are little "r" research questions and must be avoided.

Capital "R" Research is where a student has a well-articulated research method to generate evidence to support a new understanding or new piece of knowledge, which, if someone else "repeated" it, that person could come up with the same understanding and validate the new piece of knowledge.

- Questions that are narrow, focused, and unanswerable by the literature in the field are Capital "R" Research questions and are required for this course.

# AP Research Teacher and Student Dialogue about Research Questions

**AP Research Teacher and Student Skit:**

**AP Research Student:** I just love Disney. I want my topic of research to be about Disney.

**AP Research Teacher:** What about Disney do you love: Disney princesses, Disney theme parks, Disney merchandising, Walt Disney himself?

**AP Research Student:** Ooooo—Disney theme parks. I just love the theme parks.

**AP Research Teacher:** What about the theme parks: The food, rides, cosplayers, long lines, costs? Which theme park? (there are so many)

**AP Research Student:** Oh the one in Orlando. I've been there 100 times. I love that place.

**AP Research Teacher:** That place is huge. What about it? What do you want to know more about? What will others want to know that is valuable? Is there a problem that needs to be solved with Disney World Orlando?

**AP Research Student:** The castle: I love the Disney World castle.

**AP Research Teacher:** What about it: the architecture, the number of people who visit, the effects of Florida humidity on the erosion of the limestone used in the bricks?

**AP Research Student:** I want to learn more about the actual design of the rooms in the castle.

**AP Research Teacher:** Which rooms: all the rooms? What about the design: the color palette used, the adherence to historical criteria? Again, what would people want to know? Is there a problem with these rooms?

**AP Research Student:** I always wondered why they would have a fireplace in a castle in Florida. I could be the world's foremost expert on that fireplace in the Cinderella Suite in that castle in the Magic Kingdom. But should I inquire about all the fireplaces in all the Disney castles of all the Disney parks?

**AP Research Teacher:** Again, what isn't already known and would anybody care about this new information?

**AP Research Student:** Well what if I wanted to study the effects of efficiency of heating and cooling systems in Disney Resort castles and how it affects the costs of staying at those resorts.

**AP Research Teacher:** Are you prepared to do the math that comes with a correlation study? What if there is already a published study on the heating and cooling systems at Disney?

**AP Research Student:** I guess I will have to do some digging/searching to find that out.

**AP Research Teacher:** Do you think the data or information you need is easily obtained? What if there isn't very much searchable information about that castle fireplace or all the Disney fireplaces?

**AP Research Student:** Gee, I don't know if I have the time OR the money to personally go to all the resort castles and gather the data myself. I wouldn't even know who to talk to.

**AP Research Teacher:** So now what?

## Transforming a Topic or Issue into a Problem Statement

One strategy to help you develop an effective research question, is to organize your ideas into a problem statement. The problem statement is not a required element of the academic paper; but many scholarly papers contain them. Problem statements are different for every discipline because what is considered a problem in one discipline may not be considered a problem in another. The following represents a series of problem statements that you could use to describe and narrow your topic of inquiry:

**Problem Statement Templates**

**Science/Social Science**

- There is a problem in or with **_____.**
- Despite **_____(something that should be happening), _____** is occurring **(provide supporting evidence after this statement).**
- This problem has negatively impacted**_____ (victims of problem)** because **_____.**
- A possible cause of this problem is **_____.** Perhaps a study which investigates **_____** by a **_____ (method)** could remedy this situation**.**

**History**

- There is a problem in or with the understanding of **_____.**
- Despite the belief that **_____ (something that is general accepted in current scholarship) _____ (something that refutes accepted thinking) (provide supporting evidence after this statement)**
- This problem has negatively affected our ability to understand **_____**because **_____ (provide supporting evidence after this statement).**
- A possible cause of the problem is **_____**. Perhaps a study which investigates **_____** through **_____ (method)** could remedy this problem.

**Humanities**

- There is a problem in or with determining the root cause of **_____**
- Despite the pervading theory that **_____ (a commonly accepted explanation), _____** has been offered as an explanation **(provide supporting evidence after this statement)**.
- This problem has negatively impacted **_____(something influenced by the theory)** because **_____ (provide supporting evidence after this statement)**.
- A possible cause of this problem is **_____.** Perhaps a study which investigates **_____** by **_____ (method)** could remedy this problem.

## Directions

1. Look at the excerpt from a research paper below and transform the excerpt into a problem statement format.
2. Share your statement with your group and note the similarities and differences.

> Bullying is one of the most critical issues facing middle school education in the 21st century. When conflicts arise children can use their expertise with interactive technologies to humiliate and bully their peers online, in what is referred to as *cyberbullying*, and avoid reprimand from adults or foes. Parents often plead technological ignorance regarding cyberbullying, and many schools decline to discipline *off-campus* behavior.
>
> Beane (2008) found that approximately 28% of middle school students are subjected to cyberbullying, and that this affects about ten million middle school children each year. E-mail messages and Web sites have increasingly become vehicles to threaten, tease, and humiliate other students. Incidents of online bullying can be just as hurtful as face to face bullying, yet are less likely to be detected or prevented by adults. To date there has been little, if any, formal evaluation of how cyberbullying has been addressed. In order to understand the complexities of online bullying, it is important that a mixed-method case study be conducted to determine the ill effects of online bullying and examine a case where online bullying was detected and dealt with.

- There is a problem in or with _____
- Despite _____ _____ (something that should be happening), _____ is occurring (provide supporting evidence after this sentence).

  _____
- This problem has negatively impacted _____ victims of problem) because _____

  _____
- A possible cause of this problem is _____ _____. Perhaps a study that investigates _____ _____ _____ (method) could remedy this situation.

## Transforming a Problem Statement into a Research Question

### Directions

After your instructor reviews the six criteria for effective research questions, work with your group to list three examples you might see in scholarly research papers for each of the criteria (for example, what would a narrow scope of interest look like for the cyberbullying topic, what would some variables be for the cyberbullying topic). Discuss your examples with the whole group when prompted. Add to your list of examples as necessary.

1. Focused Topic: A narrowed scope of interest

2. Purpose: To explore, explain, or create

3. Variables: Components or elements of a phenomenon that can be counted or measured, or connected to other variables via correlation studies

4. Context/Scope: Specified time, place, population, genre, etc.

5. Value: A statement of importance, significance, or relevance to the body of knowledge of the discipline or to society at large

6. Feasibility: A statement of how this topic of inquiry can be investigated using time and resources available to the researcher.

## Evaluating and Revising Research Questions

### Directions

Your group will be assigned one of the questions below to evaluate and revise (if necessary) to adhere to the criteria for effective research questions:

1. What are the causes of cyberbullying by middle schoolers from 2010 to 2020?

**Focused topic:**

**Purpose:**

**Context/Scope:**

**Variables:**

**Value:**

**Feasibility:**

* Revised Question (if warranted)

2. To what extent is embedding journalists an ethical and effective way of reporting truth in wartime?

**Focused topic:**

**Purpose:**

**Context/Scope:**

**Variables:**

**Value:**

**Feasibility:**

* Revised Question (if warranted)

### Reflect

- Looking back at the research question you developed for homework, would you revise it? If so, how?

- What purpose (if any) does a problem statement serve in the AP Research course?

# Lesson 5: Big Idea 2: Understand and Analyze

## *Initial Searches and Annotated Bibliographies*

An annotated bibliography is a list of citations to books, articles, and documents. Each citation is followed by a brief (usually about 150 words) descriptive and evaluative paragraph, otherwise known as the annotation. Annotated bibliographies are used to help researchers keep track of their searches, information that was found, and the relevance of such information to their own inquiry. It is important to document one's search and evaluation of the relevance and reliability of sources to one's own inquiry so that the sources can be used appropriately to support one's claims and choices throughout the inquiry process.

Each annotated bibliographic entry usually contains the following:

- the citation of the source (using a discipline specific citation style)
- a summary of the significant findings or key information from the source
- an evaluation of the credibility and relevance of the source as it pertains to one's inquiry
- direct quotes from the source that are applicable to one's inquiry (if necessary)
- A reflection on whether or not the source will be used in one's academic paper and if not, why not.

## Annotated Bibliography Example Templates

Hanover Research Council. (2009). Best Practices in Online Teaching Strategies . Washington, DC: Academy Administration Practice.

This article focuses on the_____. The author(s) (year) believe_____. These authors use _____to provide evidence for _____. Additionally, the authors provide explanations for the effects of_____. Author(s) (year) claim _____. Furthermore, the authors recommend _____. The authors' conclusion (or process) is of interest to me in my research on _____ because _____.

Palmquist, M. (2012). Avoiding Plagiarism. In The Bedford Researcher (pp. 120-134). New York: Bedford/St. Martin .

This text focuses on the_____. The author(s) (year) believe_____. The author(s) uses _____to provide evidence for _____. Additionally, the author(s) provide explanations for the effects of_____. Author(s) (year) claim _____. Furthermore, the author(s) recommend _____. The authors' conclusion (or process) is of interest to me in my research on _____ because _____.

## Choosing a Discipline-Specific Style

### Directions

1. Consider the following questions and be prepared to share your answers with the group:
   a. What courses have you taken in the past that required a specific documentation style for specific assignments?

   b. With which of the following discipline-specific styles are you familiar? (Circle all that apply.):
      i. Modern Language Association (MLA)
      ii. American Psychological Association (APA)
      iii. Chicago Manual of Style (CMS), and/or Council of Science Editors (CSE)
   c. What type of writing were you developing when you used this style(s)?

2. Use the following websites to note the differences in common discipline-specific styles (MLA, APA, Chicago, and AMA)

   **https://owl.english.purdue.edu/media/pdf/20110928111055_949.pdf**

   **http://www.lib.jmu.edu/citation/amaguide.pdf**
3. Consider the following questions as you complete the table on the next page:
   a. How do the in-text citations compare among the styles? What is emphasized? What is deemphasized?
   b. What do the differences among the styles of the disciplines indicate about what evidence or knowledge is important to the discipline? For MLA? APA? Chicago? AMA?
   c. What does the discipline-specific style tell you about what is valued by the discipline?

| Style | Discipline(s) | Bibliography Entry for a journal article | In-text Citations | Evidence Emphasized/Valued |
|---|---|---|---|---|
| MLA | | Devine, Patricia G., and Steven J. Sherman. "Intuitive Versus Rational Judgment and the Role of Stereotyping in the Human Condition: Kirk or Spock?" *Psychological Inquiry* 3.2 (1992): 153-59. Print. | During the turbulent 1960s, science fiction programs on television reflected the public's attitudes toward the older generation (Hodges 179).<br>Hodges discussed how, during the turbulent 1960s, science fiction programs on television reflected the public's attitudes toward the older generation (179). | |
| APA | | Devine, P. G., & Sherman, S. J. (1992). Intuitive versus rational<br>judgment and the role of stereotyping in the human condition: Kirk or Spock? *Psychological Inquiry*, *3*(2), 153-159. **http://dx.doi.org/10.1207/s15327965pli030213** | During the turbulent 1960s, science fiction programs on television reflected the public's attitudes toward the older generation (Hodges, 2000).<br>Hodges (2000) discussed how, during the turbulent 1960s, science fiction programs on television reflected the public's attitudes toward the older generation. | |
| Chicago | | Devine, Patricia G., and Steven J. Sherman. 1992. "Intuitive Versus Rational Judgment and the Role of Stereotyping in the Human Condition: Kirk or Spock?" *Psychological Inquiry* 3, no. 2 (1992): **153- 59.doi:**10.1207/s15327965pli0302_13. | During the turbulent 1960s, science fiction programs on television reflected the public's attitudes toward the older generation (Hodges 2003, 176).<br>Hodges (2003, 176) discussed how, during the turbulent 1960s, science fiction programs on television reflected the public's attitudes toward the older generation. | |

| Style | Discipline(s) | Bibliography Entry for a journal article | In-text Citations | Evidence Emphasized/Valued |
|---|---|---|---|---|
| AMA | | 1. Devine, P.G. Intuitive Versus Rational Judgment and the Role of Stereotyping in the Human Condition: Kirk or Spock? *Psychological Inquiry*. 1992; 3: 153-59. | Science fiction programs on television reflected public attitudes toward the older generations.[1] | |

## Crafting Annotated Bibliography Entries Using Scholarly Phrases

### Directions

1. Imagine you are interested in teaching mathematics and your research question is: *Which teaching techniques produce the greatest student retention of mathematical ideas?* You are looking for what others have said about your topic of inquiry as well as finding sources to support your choices in your inquiry process. Through your initial search, you find the Chamberlin & Powers article (see pages following the directions) and decide it is worth creating an entry for your annotated bibliography.
2. Your entry must clearly show what about this article you think is significant or relevant to your inquiry and why. "Mine" the pages of the article for key phrases and messages. *When mining for information, it is best to read the first two pages of an article and the last two pages (right before the reference section) to get a good idea about the major points of the study.*
3. First cite the article using an appropriate discipline-specific style.
4. Use sample sentences from the template below to write your own annotated bibliography entry. You may also use the Phrases for Annotated Bibliography and Literature Review in the table below to help you craft your entry. Be prepared to compare your entry with other members of your group when prompted.

| Phrases for the Annotated Bibliography and Literature Review | | | | | |
|---|---|---|---|---|---|
| _____ advanced the notion of ... | _____ ,commenting on _____, explained ... | _____ displayed indifference to ... | _____ executed a study on ... | _____ gave credence to ... | _____ introduced the idea of ... |
| _____ affirmed the fact ... | _____ concentrated on ... | _____ drew a parallel between ... | _____ explored the subject of ... | _____ has shown ... | _____ measured the impact of... |
| _____ affirmed the work of ... | _____ conclude that... | _____ elaborated further and revealed that ... | _____ expressed the view of ... | _____ highlighted another problem ... | _____ noted a major discrepancy ... |
| _____ arrived at the conclusion in her study that ... | _____ conducted a study of ... | _____ emphasized the plausibility of ... | _____ failed to consider ... | _____ hypothesize that... because... | _____ pointed out ... |

| Phrases for the Annotated Bibliography and Literature Review | | | | | |
|---|---|---|---|---|---|
| _____ attested to ... | _____ confirms the work of ... | _____ established a connection between ... | _____ focused on ... | _____ identified and reported ... | _____ presented a clear evaluation of ... |
| _____ called attention to ... | _____ developed the conceptual framework for ... | _____ established a connection to ... | _____ gave attention to ... | _____ identified the problem of ... | _____ presented a strong argument ... |
| _____ cited the need for ... | _____ discovered in his studies that ... | _____ established a convincing case ... | _____ gave a description of ... | _____ illustrated the problems of ... | _____ presented evidence of ... |
| _____ clarified the point that ... | _____ discussed the problem of ... | _____ examined the effect of ... | _____ gave cognizance to ... | _____ in a more recent study, explored ... | _____ raised the question of ... |

**Example Annotated Bibliography Entry Template**

Citation:

This article focuses on the_____. Chamberlin and Powers (2010) believe_____. These authors use _____to provide evidence for _____. Additionally, the authors provide explanations for the effects of_____. Chamberlin and Powers (2010) claim _____**.Furthermore**, the authors recommend _____. The authors' conclusion (or process) is of interest to me in my research on _____ because _____.

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# The promise of differentiated instruction for enhancing the mathematical understandings of college students

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**Mathematics instructors must respond to diverse needs of individual students, including different abilities, interests, learning styles and cultural backgrounds. To do so, grade kindergarten-12 teachers have been using differentiated instruction, a process of proactively modifying instruction based on students' needs. It is supported by literature on learning and has resulted in the improvement of grade K-12 students' learning. Yet, there is no research literature that reports work on differentiated instruction at the undergraduate level for meeting the diverse needs of college students, particularly in mathematics courses. Students frequently report their college mathematics classes to be unstimulating, boring, irrelevant, poorly taught or transmissive. This study examined the use of differentiated instruction in an undergraduate mathematics course for addressing such concerns and thereby improving students' mathematical learning. A concurrent mixed methods research study was used to address the central research question: What impact does differentiated instruction in a college mathematics class have on students' mathematical understandings? A quasi-experimental pre-test and post-test control-group research design measured the relationship between the differentiated instruction in the course and the students' mathematical understandings. Simultaneously, the impact of the differentiated instruction on the students' mathematical understandings was explored using interviews and analyses of students' work. The participants included elementary education majors enrolled in a mathematics course covering the topic of number and operations. Results showed that students receiving differentiated instruction experienced greater gains in their mathematical understandings. Suggestions for incorporating differentiated instruction in undergraduate mathematics courses are provided along with plans for further research.**

## 1. Introduction

Instructors in undergraduate mathematics courses will readily admit that their students are all different. Yet, many mathematics teachers find it difficult to address the needs of all students, including their

different abilities, interests, learning styles and cultural backgrounds. One way grade kindergarten-12 teachers have addressed this issue is through *differentiated instruction*, a process of proactively modifying instruction based on students' needs. These changes are based on students' current abilities and understandings, personal interests and learning preferences. Effective characteristics of differentiated instruction include clear learning goals, ongoing and diagnostic assessments that modify instruction and challenging tasks for all students. Despite the evidence supporting learning gains and other benefits of differentiated instruction of grade kindergarten-12 students (e.g., Subban, 2006; Tomlinson *et al.*, 2003), differentiated instruction is scarcely used at the undergraduate level for meeting the diverse needs of college students, particularly in mathematics courses. The objective of this study was to examine the use of differentiated instruction in an undergraduate mathematics course for meeting students' diverse needs and improving their mathematical learning.

## 2. Review of relevant literature

While the focus of the study was an undergraduate mathematics course, the vast majority of researches on differentiated instruction have been reported in K-12 education. Students in grades K-12 have many diverse needs with regard to their background knowledge, abilities, motivations, interests and modes of learning (Tomlinson, 2005; Tomlinson *et al.*, 2003). In addition, classrooms in the United States are becoming more culturally and ethnically diverse to the extent 'that educators no longer have a legitimate choice about *whether* to respond to the academically diverse populations in most classrooms; rather, they can only decide *how* to respond' (Tomlinson *et al.*, 2003, p. 121). Many teachers of grades K-12 have responded by using differentiated instruction. It is a process of proactively modifying curricula, teaching methods, learning activities and assessments to meet the diverse needs of students and thereby to maximize access to, motivation for and efficiency of learning (Subban, 2006; Tomlinson, 1999). These changes are based on students' readiness (current abilities and understandings), personal interests and learning profiles (learning styles, culture and gender) (Tomlinson *et al.*, 2003).

Several core principles guide differentiated instruction (Tomlinson, 1999; 2001; Tomlinson *et al.*, 2003; Tomlinson & Eidson, 2003). First, teachers articulate what is essential for students to learn about a subject, which helps to link assessment to curriculum and instruction. In the differentiated classroom, assessment is ongoing, continuously informs instruction, and includes the assessment of students' understanding of the current material, their personal interests and their learning profiles. Second, teachers attend to student differences. They accept students as they are, but expect them to become and understand all that they can. Third, all students participate in respectful work. Teachers challenge students at a level attainable for them, and lessons for all students emphasize critical or creative thinking that promote individual growth. Fourth, the teacher and students collaborate in learning, maintaining a balance between teacher-assigned and student-selected tasks and working arrangements. Fifth, teachers are flexible in their use of groups and whole class discussion. Students work in a variety of groups according to their readiness, interests or learning profiles, and group work is intermingled with other whole class discussions and activities. Sixth, differentiated instruction is proactive rather than reactive. The teacher plans lessons that address learner variance from the outset rather than relying on adjusting instruction during real-time when the lesson is not working for some students. Finally, space, time and materials are used flexibly to suit the needs of various learners.

In describing differentiated instruction, it is also helpful to describe what it is not (Tomlinson, 2001; Wormeli, 2005). First, differentiated instruction is not synonymous with individualized instruction in which the teacher varies instruction for every student. Such an individualized approach tends to be overwhelming and time-consuming for the teacher. In addition, such individualization often leads to

TABLE 7. Organizational table for differentiating instruction

| | Content | Process | Product | Classroom environment |
|---|---|---|---|---|
| Students' readiness | | | | |
| Students' interests | | | | |
| Students' learning profiles | | | | |

While the six students were chosen for their varying performance on the pre-test, there were no indications of a correspondence between performance on the pre-test and mastery of the learning objectives. Thus, mathematical learning occurred for all six students regardless of their performance on the pre-test as well as for the other four treatment students that were interviewed. While more research is needed to fully investigate the following conclusion, it appears that the differentiated instruction may have been successful in supporting the learning of students regardless of their incoming mathematical understandings. Furthermore, the qualitative results provide detailed information about the mathematical learning of the students, verifying that students in the treatment group did learn the material as measured by the pre- and post-test.

## 9. Discussion

The purpose of this study was to examine the potential of differentiated instruction for meeting the diverse needs of college mathematics students and thereby enhancing students' mathematical understandings. Both the quantitative and qualitative results provide evidence that the differentiated instruction supported the mathematical learning of students. We view these results as evidence of the promise for differentiated instruction in mathematics classes at the undergraduate level, almost akin to an existence proof.

Due to this promise, we share lessons learned about differentiating our instruction here in case others wish to consider similar implementations in their courses. First, we found it especially helpful to identify early and explicitly the learning objectives for the course. Outlining these objectives is crucial in making later decisions about how and when to differentiate aspects of the course. Second, we found organizing the course by units or chapters a helpful unit of analysis. One may wish to organize the differentiation in each unit by utilizing a grid that showcases how and for what reason instruction will be differentiated, whether differentiating content, process, product or classroom environment according to students' readiness, interests or learning profiles (see Table 7).

Third, we found it helpful to keep in mind that it was not necessary to differentiate every class or every assignment. When done purposely in response to students' needs, most instructors differentiate their instruction one-third to one-half of the time. Fourth, we recommend starting small. Instructors may want to incorporate just one or two ideas at a time, such as differentiating one-to-two homework problems, keeping a log of learning objectives or allowing different products on a classroom project. Fifth, to assist with differentiating based on students' interests and learning profiles instructors may want to ask students to complete interest and learning profile surveys as well as incorporate a variety of instructional formats across the semester. For example, by including a variety of verbal, visual, kinesthetic, individual, small group and whole class activities, we felt that we were providing students with opportunities to learn in their preferred styles at least some of the time in addition to providing students with experiences outside of their preferences, which can have advantages as well. Finally, to differentiate based on students' readiness, we found it very helpful to keep a log of each student's progress in meeting the learning objectives.

While we began this study by reviewing the literature on differentiating instruction in grades K-12, we did find some differences for differentiating at the undergraduate level. Grade K-12 instructors often have more classroom contact time with students. In addition, at the undergraduate level, there is a common expectation to 'cover' a topic once in class. These realities and expectations make it challenging for a college instructor to take time to revisit, re-teach or extend a topic. Thus, we found one needs to be purposeful and deliberate about decisions to utilize class time in such ways. Fortunately, explicitly stating the learning objectives and drawing upon student assessment data can be helpful in justifying such decisions. Another complication is that college instructors rarely have their own classroom and therefore may be more limited in how much they can alter the classroom environment. However, they can probably still do some things with seating and variety between individual, small group and whole class work. We also want to note that a few benefits are available to undergraduate instructors wishing to differentiate their instruction. First, collegiate instructors and college students often have more access to course websites, e-mail and other technology that can be used to inform students of differentiated aspects. Second, college students are older and as such are often more cognizant of their learning preferences and personal interests. Thus, they can take a more active role in helping an instructor incorporate these aspects into the classroom.

While this study points to the promise of differentiated instruction at the undergraduate level, additional work remains. First, we plan to replicate the study in additional mathematics classes in upcoming semesters. Demonstrating the effectiveness of differentiated instruction in a variety of undergraduate mathematics courses, including terminal courses such as college algebra or liberal art mathematics, may help change how mathematics educators address the needs of non-mathematics majors. Second, we want to learn more about the process of differentiating instruction and how it enhances learning. We are currently using *lesson experiments* to investigate this second area. The purpose of a lesson experiment is to engage in cycles of creating and testing hypotheses about cause-effect relationships between teaching and learning during classroom lessons (Hiebert *et al.*, 2003, 2007). Through such experiments, we hope to learn specific differentiation techniques that are particularly effective in undergraduate mathematics courses. Students' concerns about their college mathematics classes are important, as they affect students' learning of mathematics and their life choices about mathematically intensive majors and careers. We feel the direction of this research is significant as it utilizes differentiated instruction as a means to address the diverse needs of college students in mathematics courses. By meeting students' needs, we have witnessed increased mathematical understandings as well as anecdotal evidence that their dispositions toward mathematics classes have improved. The hope is that better meeting students' needs in college mathematics classes will ultimately increase the retention of students, potentially including women and minorities, in mathematically intensive majors and careers.

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Brimijoin, K. (2002) Expertise in differentiation: a preservice and inservice teacher make their way. *Unpublished Doctoral Dissertation*, University of Virginia, Charlottesville, VA.

## Reflect

- What criteria will you use to determine the appropriate style for your academic paper?

- What resources will you use to ensure you are accurately, consistently applying a chosen style to your academic paper?

- What will you include in each of your annotated bibliography entries to ensure you are moving beyond summarizing a resource to engaging with the resource to situate your work within a larger academic community?

- How can you use initial searches to clarify your question and method?

# Lesson 6: Big Ideas 1 & 2: Establishing Your Own Credibility

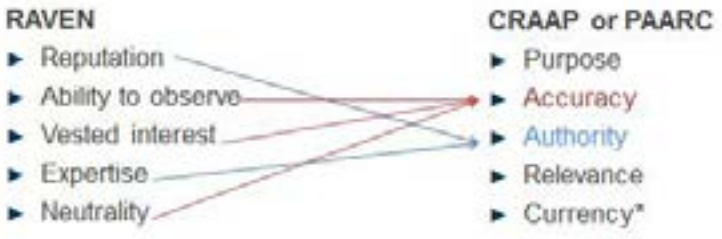
AP Research is about making choices for a process or a replicable method to establish a valid, new understanding associated with a research question and to effectively add to the larger body of knowledge. In AP Seminar, your learned to evaluate other's credibility; whereas in AP Research, you are establishing your own credibility. In order to do this, your choices must be acknowledged and supported by the literature of the field.

Consider past activities you may have done in other courses:

- How will you know if you are using strong source materials for your inquiries?
- What criteria will you use to determine the strength of your sources?
- What criteria will you use to determine what components of the sources you will incorporate or not incorporate in your inquiry?

## RAVEN versus PAARC

Even though you may have learned to "raven" a source in AP Seminar, this particular skill is not required when you write your Academic Paper. In published, scholarly research, it is not the usual practice to provide an explanation of the "credibility" of every source used in the literature review. Although it is important that you engage in "due-diligence" in finding and using credible sources, what is most important is that you use sources that are relevant and significant to your topic of inquiry. Further, in your paper, you should explain why certain sources are relevant and significant to your topic of inquiry. This is where using the PAARC test comes in. The credibility of your sources will be determined by the reader when they look at your citation entries in the references or bibliography section of your paper. Below is a helpful chart to aid you in understanding the similarities and differences between RAVEN and PAARC.



## The Purpose of Establishing Credibility

You must engage with the literature of the field to find sources of information that are credible, valid, and relevant to your topic of inquiry. You must engage with the literature of the field to refine the scope and the definitions associated with your inquiry. You must be able to explain why you chose to include certain sources of information or references over others. The questions associated with the credibility test below will help you make these choices.

### Credibility Test Questions

**Purpose:** The reason the information exists.

- What is the purpose of the information, and do the authors make this purpose clear (inform, teach, sell, entertain, or persuade)?
- Is the information fact, opinion, or propaganda?
- Does the point of view appear objective and impartial?
- Are there political, ideological, cultural, religious, institutional, or personal biases?

**Accuracy:** The reliability, truthfulness, and correctness of the content.

- Where does the information come from?
- Is the information supported by evidence?
- Has the information been reviewed or refereed?
- Can you verify any of the information in another source or from personal knowledge?
- Does the language or tone seem unbiased and free of emotion?
- Are there spelling, grammar, or typographical errors?

**Authority:** The source of the information.

- Who is the author/publisher/source/sponsor?
- What are the author's credentials or organizational affiliations?
- Is the author qualified to write on the topic?
- Is there contact information, such as a publisher or email address?
- Does the URL reveal anything about the author or source? examples: .com .edu .gov .org .net

**Relevance:** The importance of the information for your needs.

- Does the information relate to your topic or answer your question?
- Who is the intended audience?
- Is the information at an appropriate level (i.e., not too elementary or advanced for your needs)?
- Have you looked at a variety of sources before determining this is one you will use?
- Would you be comfortable citing this source in your research paper?

**Currency:** The timeliness of the information.

- When was the information published or posted?
- Has the information been revised or updated?
- Does your topic require current information, or will older sources work as well?
- Are the links functional?

## Does It Pass the Credibility Test?

### Directions

You are investigating the topic of inquiry pertaining to the extent to which vaccines cause autism.

1. Use the letter of the PAARC acronym you have been assigned to evaluate the credibility and extent to which you will use the source shown in the video clip.

   Assigned letter _____

   Evaluation of Source:

2. Use the letter of the PAARC acronym you have been assigned to evaluate the credibility and extent to which you will use the source Gerber & Offit (see pages that follow).

   Assigned letter _____

   Evaluation of Source:

3. What if you were investigating the topic of inquiry pertaining to exploring the attitudes and perspectives of parents of children with autism as to the cause of the disorder? Would your PAARC evaluation of one or both of the sources change? If so, how?

VACCINES INVITED ARTICLE

Stanley Plotkin, Section Editor

# Vaccines and Autism: A Tale of Shifting Hypotheses

**Jeffrey S. Gerber and Paul A. Offit**

Division of Infectious Diseases, The Children's Hospital of Philadelphia, Philadelphia, Pennsylvania

**Although child vaccination rates remain high, some parental concern persists that vaccines might cause autism. Three specific hypotheses have been proposed: (1) the combination measles-mumps-rubella vaccine causes autism by damaging the intestinal lining, which allows the entrance of encephalopathic proteins; (2) thimerosal, an ethylmercury-containing preservative in some vaccines, is toxic to the central nervous system; and (3) the simultaneous administration of multiple vaccines overwhelms or weakens the immune system. We will discuss the genesis of each of these theories and review the relevant epidemiological evidence.**

A worldwide increase in the rate of autism diagnoses—likely driven by broadened diagnostic criteria and increased awareness—has fueled concerns that an environmental exposure like vaccines might cause autism. Theories for this putative association have centered on the measles-mumps-rubella (MMR) vaccine, thimerosal, and the large number of vaccines currently administered. However, both epidemiological and biological studies fail to support these claims.

## MMR

On 28 February 1998, Andrew Wakefield, a British gastroenterologist, and colleagues [1] published a paper in *The Lancet* that described 8 children whose first symptoms of autism appeared within 1 month after receiving an MMR vaccine. All 8 of these children had gastrointestinal symptoms and signs and lymphoid nodular hyperplasia revealed on endoscopy. From these observations, Wakefield postulated that MMR vaccine caused intestinal inflammation that led to translocation of usually nonpermeable peptides to the bloodstream and, subsequently, to the brain, where they affected development.

Several issues undermine the interpretation by Wakefield et al. [1] of this case series. First, the self-referred cohort did not include control subjects, which precluded the authors from determining whether the occurrence of autism following receipt of MMR vaccine was causal or coincidental. Because ~50,000 British children per month received MMR vaccine between ages 1 and 2 years—at a time when autism typically presents—coincidental associations were inevitable. Indeed, given the prevalence of autism in England in 1998 of 1 in 2000 children [2], ~25 children per month would receive a diagnosis of the disorder soon after receiving MMR vaccine by chance alone. Second, endoscopic or neuropsychological assessments were not blind, and data were not collected systematically or completely. Third, gastrointestinal symptoms did not predate autism in several children, which is inconsistent with the notion that intestinal inflammation facilitated bloodstream invasion of encephalopathic peptides. Fourth, measles, mumps, or rubella vaccine viruses have not been found to cause chronic intestinal inflammation or loss of intestinal barrier function. Indeed, a recent study by Hornig et al. [3] found that the measles vaccine virus genome was not detected more commonly in children with or without autism. Fifth, putative encephalopathic peptides traveling from the intestine to the brain have never been identified. In contrast, the genes that have been associated with autism spectrum disorder to date have been found to code for endogenous proteins that influence neuronal synapse function, neuronal cell adhesion, neuronal activity regulation, or endosomal trafficking [4].

Although no data supporting an association between MMR vaccine and autism existed and a plausible biological mechanism was lacking, several epidemiologic studies were performed to address parental fears created by the publication by Wakefield et al. [1] (table 1). Fortunately, several features of large-scale vaccination programs allowed for excellent descriptive and observational studies—specifically, large numbers of subjects, which generated substantial statistical power; high-quality vac-

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DOI: 10.1086/596476

**Table 1. Studies that fail to support an association between measles-mumps-rubella vaccine and autism.**

| Source | Study design | Study location |
|---|---|---|
| Taylor et al., 1999 [5] | Ecological | United Kingdom |
| Farrington et al., 2001 [6] | Ecological | United Kingdom |
| Kaye et al., 2001 [7] | Ecological | United Kingdom |
| Dales et al., 2001 [8] | Ecological | United States |
| Fombonne et al., 2006 [9] | Ecological | Canada |
| Fombonne and Chakrabarti, 2001 [10] | Ecological | United Kingdom |
| Taylor et al., 2002 [11] | Ecological | United Kingdom |
| DeWilde et al., 2001 [12] | Case-control | United Kingdom |
| Makela et al., 2002 [13] | Retrospective cohort | Finland |
| Madsen et al., 2002 [14] | Retrospective cohort | Denmark |
| DeStefano et al., 2004 [15] | Case-control | United States |
| Peltola et al., 1998 [16] | Prospective cohort | Finland |
| Patja et al., 2000 [17] | Prospective cohort | Finland |

cination records, which provided reliable historical data; multinational use of similar vaccine constituents and schedules; electronic medical records, which facilitated accurate analysis of outcome data; and the relatively recent introduction of MMR vaccine in some countries, which allowed for before and after comparisons.

***Ecological studies.*** Researchers in several countries performed ecological studies that addressed the question of whether MMR vaccine causes autism. Such analyses employ large databases that compare vaccination rates with autism diagnoses at the population level.

1. In the United Kingdom, researchers evaluated 498 autistic children born from 1979 through 1992 who were identified by computerized health records from 8 health districts [5]. Although a trend toward increasing autism diagnoses by year of birth was confirmed, no change in the rates of autism diagnoses after the 1987 introduction of MMR vaccine was observed. Further, MMR vaccination rates of autistic children were similar to those of the entire study population. Also, investigators did not observe a clustering of autism diagnoses relative to the time that children received MMR vaccine, nor did they observe a difference in age at autism diagnosis between those vaccinated and not vaccinated or between those vaccinated before or after 18 months of age. These authors also found no differences in autism rates among vaccinated and unvaccinated children when they extended their analysis to include a longer time after MMR exposure or a second dose of MMR [6].
2. Also in the United Kingdom, researchers performed a time-trend analysis using the General Practice Research Database—a high-quality, extensively validated electronic medical record with virtually complete vaccination data [7]. More than 3 million person-years of observation during 1988–1999 confirmed an increase in autism diagnoses despite stable MMR vaccination rates.
3. In California, researchers compared year-specific MMR vaccination rates of kindergarten students with the yearly autism case load of the California Department of Developmental Services during 1980–1994 [8]. As was observed in the United Kingdom, the increase in the number of autism diagnoses did not correlate with MMR vaccination rates.
4. In Canada, researchers estimated the prevalence of pervasive developmental disorder with respect to MMR vaccination in 27,749 children from 55 schools in Quebec [9]. Autism rates increased coincident with a decrease in MMR vaccination rates. The results were unchanged when both exposure and outcome definitions varied, including a strict diagnosis of autism.

Additional population-based studies considered the relationship between MMR vaccine and the "new variant" form of autism proposed by Wakefield et al. [1]—specifically, developmental regression with gastrointestinal symptoms. Although it is difficult to analyze such a phenomenon when it is unclear that one exists (which complicates the formulation of a case definition), conclusions may be gleaned from the data with respect to developmental regression alone (i.e., autism irrespective of coincident bowel problems).

1. In England, researchers performed a cross-sectional study of 262 autistic children and demonstrated no difference in age of first parental concerns or rate of developmental regression by exposure to MMR vaccine [10]. No association between developmental regression and gastrointestinal symptoms was observed.
2. In London, an analysis of 473 autistic children used the 1987 introduction of MMR to compare vaccinated and

unvaccinated cohorts [11]. The incidence of developmental regression did not differ between cohorts, and the authors observed no difference in the prevalence of gastrointestinal symptoms between vaccinated and unvaccinated autistic children.

Two conclusions are evident from these data. First, the explicit consideration of developmental regression among autistic children does not alter the consistent independence of MMR vaccine and autism. Second, these data argue against the existence of a new variant form of autism.

***Retrospective, observational studies.*** Four retrospective, observational studies addressed the relationship between MMR vaccine and autism.

1. In the United Kingdom, 71 MMR-vaccinated autistic children were compared with 284 MMR-vaccinated matched control children through use of the Doctor's Independent Network, a general practice database [12]. The authors observed no differences between case and control children in practitioner consultation rates—a surrogate for parental concerns about their child's development—within 6 months after MMR vaccination, which suggests that the diagnosis of autism was not temporally related to MMR vaccination.
2. In Finland, using national registers, researchers linked hospitalization records to vaccination records in 535,544 children vaccinated during 1982–1986 [13]. Of 309 children hospitalized for autistic disorders, no clustering occurred relative to the time of MMR vaccination.
3. In Denmark, again using a national registry, researchers determined vaccination status and autism diagnosis in 537,303 children born during 1991–1998 [14]. The authors observed no differences in the relative risk of autism between those who did and those who did not receive MMR vaccine. Among autistic children, no relationship between date of vaccination and development of autism was observed.
4. In metropolitan Atlanta, using a developmental surveillance program, researchers compared 624 autistic children with 1824 matched control children [15]. Vaccination records were obtained from state immunization forms. The authors observed no differences in age at vaccination between autistic and nonautistic children, which suggests that early age of MMR vaccine exposure was not a risk factor for autism.

***Prospective observational studies.*** Capitalizing on a long-term vaccination project maintained by the National Board of Health, investigators in Finland performed 2 prospective cohort studies. Researchers prospectively recorded adverse events associated with MMR-vaccinated children during 1982–1996 and identified 31 with gastrointestinal symptoms; none of the children developed autism [16]. A further analysis of this cohort revealed no vaccine-associated cases of autism among 1.8 million children [17]. Although this cohort was analyzed using a passive surveillance system, the complete absence of an association between gastrointestinal disease and autism after MMR vaccination was compelling.

## THIMEROSAL

Thimerosal—50% ethylmercury by weight—is an antibacterial compound that has been used effectively in multidose vaccine preparations for >50 years [18] (thimerosal is not contained in live-virus vaccines, such as MMR). In 1997, the US Food and Drug Administration Modernization Act mandated identification and quantification of mercury in all food and drugs; 2 years later, the US Food and Drug Administration found that children might be receiving as much as 187.5 $\mu$g of mercury within the first 6 months of life. Despite the absence of data suggesting harm from quantities of ethylmercury contained in vaccines, in 1999, the American Academy of Pediatrics and the Public Health Service recommended the immediate removal of mercury from all vaccines given to young infants [19]. Widespread and predictable misinterpretation of this conservative, precautionary directive, coupled with a public already concerned by a proposed but unsubstantiated link between vaccination and autism, understandably provoked concern among parents, which led to the birth of several antimercury advocacy groups. However, because the signs and symptoms of autism are clearly distinct from those of mercury poisoning, concerns about mercury as a cause of autism were—similar to those with MMR vaccine—biologically implausible [20]; children with mercury poisoning show characteristic motor, speech, sensory, psychiatric, visual, and head circumference changes that are either fundamentally different from those of or absent in children with autism. Consistent with this, a study performed by scientists at the Centers for Disease Control and Prevention years later showed that mercury in vaccines did not cause even subtle signs or symptoms of mercury poisoning [21].

Despite the biological implausibility of the contention that thimerosal in vaccines caused autism, 7 studies—again descriptive or observational—were performed (table 2). Four other

**Table 2. Studies that fail to support an association between thimerosal in vaccines and autism.**

| Source | Study design | Location |
|---|---|---|
| Stehr-Green et al., 2003 [22] | Ecological | Sweden and Denmark |
| Madsen et al., 2003 [23] | Ecological | Denmark |
| Fombonne et al., 2006 [9] | Ecological | Canada |
| Hviid et al., 2003 [24] | Retrospective cohort | Denmark |
| Verstraeten et al., 2003 [25] | Retrospective cohort | United States |
| Heron and Golding, 2004 [26] | Prospective cohort | United Kingdom |
| Andrews et al., 2004 [27] | Retrospective cohort | United Kingdom |

studies have been reviewed in detail elsewhere [28] but are not discussed here because their methodology is incomplete and unclear and, thus, cause difficulty in drawing meaningful conclusions.

***Ecological studies.*** Three ecological studies performed in 3 different countries compared the incidence of autism with thimerosal exposure from vaccines. In each case, the nationwide removal of thimerosal—which occurred in 1992 in Europe and in 2001 in the United States—allowed robust comparisons of vaccination with thimerosal-containing and thimerosal-free products, as follows:

1. In Sweden and Denmark, researchers found a relatively stable incidence of autism when thimerosal-containing vaccines were in use (1980–1990), including years when children were exposed to as much as 200 μg of ethylmercury (concentrations similar to peak US exposures) [22]. However, in 1990, a steady increase in the incidence of autism began in both countries and continued through the end of the study period in 2000, despite the removal of thimerosal from vaccines in 1992.
2. In Denmark, researchers performed a study comparing the incidence of autism in children who had received 200 μg (1961–1970), 125 μg (1970–1992), or 0 μg of thimerosal (1992–2000) and again demonstrated no relationship between thimerosal exposure and autism [23].
3. In Quebec, researchers grouped 27,749 children from 55 schools by date of birth and estimated thimerosal exposure on the basis of the corresponding Ministry of Health vaccine schedules. School records were obtained to determine age-specific rates of pervasive developmental disorder [9]. Thimerosal exposure and pervasive developmental disorder diagnosis were found to be independent variables. Similar to previous analyses, the highest rates of pervasive developmental disorder were found in cohorts exposed to thimerosal-free vaccines. The results were unchanged when both exposure and outcome definitions varied.

***Cohort studies.*** Four cohort studies that examined thimerosal exposure and autism have been performed, as follows:

1. In Denmark, researchers examined >1200 children with autism that was identified during 1990–1996, which comprised ~3 million person-years. They found that the risk of autism did not differ between children vaccinated with thimerosal-containing vaccines and those vaccinated with thimerosal-free vaccines or between children who received greater or lower quantities of thimerosal [24]. They also found that the rates of autism increased after the removal of thimerosal from all vaccines.
2. In the United States, using the Vaccine Safety Data Link, researchers at the Centers for Disease Control and Prevention examined 140,887 US children born during 1991–1999, including >200 children with autism [25]. The researchers found no relationship between receipt of thimerosal-containing vaccines and autism.
3. In England, researchers prospectively followed 12,810 children for whom they had complete vaccination records who were born during 1991–1992, and they found no relationship between early thimerosal exposure and deleterious neurological or psychological outcomes [26].
4. In the United Kingdom, researchers evaluated the vaccination records of 100,572 children born during 1988–1997, using the General Practice Research Database, 104 of whom were affected with autism [27]. No relationship between thimerosal exposure and autism diagnosis was observed.

## TOO MANY VACCINES

When studies of MMR vaccine and thimerosal-containing vaccines failed to show an association with autism, alternative theories emerged. The most prominent theory suggests that the simultaneous administration of multiple vaccines overwhelms or weakens the immune system and creates an interaction with the nervous system that triggers autism in a susceptible host. This theory was recently popularized in the wake of a concession by the Vaccine Injury Compensation Program with regard to the case of a 9-year-old girl with a mitochondrial enzyme deficiency whose encephalopathy, which included features of autism spectrum disorder, was judged to have worsened following the receipt of multiple vaccines at age 19 months [29]. Despite reassurances by the Centers for Disease Control and Prevention that the Vaccine Injury Compensation Program's action should not be interpreted as scientific evidence that vaccines cause autism, many in the lay press and the public have not been reassured.

The notion that children might be receiving too many vaccines too soon and that these vaccines either overwhelm an immature immune system or generate a pathologic, autism-inducing autoimmune response is flawed for several reasons:

1. Vaccines do not overwhelm the immune system. Although the infant immune system is relatively naive, it is immediately capable of generating a vast array of protective responses; even conservative estimates predict the capacity to respond to thousands of vaccines simultaneously [30]. Consistent with this theoretical exercise, combinations of vaccines induce immune responses comparable to those given individually [31]. Also, although the number of recommended childhood vaccines has increased during the past 30 years, with advances in protein chemistry and recombinant DNA technology, the immunologic load has actually decreased. The 14 vaccines given today contain

<200 bacterial and viral proteins or polysaccharides, compared with >3000 of these immunological components in the 7 vaccines administered in 1980 [30]. Further, vaccines represent a minute fraction of what a child's immune system routinely navigates; the average child is infected with 4–6 viruses per year [32]. The immune response elicited from the vast antigen exposure of unattenuated viral replication supersedes that of even multiple, simultaneous vaccines.

2. Multiple vaccinations do not weaken the immune system. Vaccinated and unvaccinated children do not differ in their susceptibility to infections not prevented by vaccines [33–35]. In other words, vaccination does not suppress the immune system in a clinically relevant manner. However, infections with some vaccine-preventable diseases predispose children to severe, invasive infections with other pathogens [36, 37]. Therefore, the available data suggest that vaccines do not weaken the immune system.
3. Autism is not an immune-mediated disease. Unlike autoimmune diseases such as multiple sclerosis, there is no evidence of immune activation or inflammatory lesions in the CNS of people with autism [38]. In fact, current data suggest that genetic variation in neuronal circuitry that affects synaptic development might in part account for autistic behavior [39]. Thus, speculation that an exaggerated or inappropriate immune response to vaccination precipitates autism is at variance with current scientific data that address the pathogenesis of autism.
4. No studies have compared the incidence of autism in vaccinated, unvaccinated, or alternatively vaccinated children (i.e., schedules that spread out vaccines, avoid combination vaccines, or include only select vaccines). These studies would be difficult to perform because of the likely differences among these 3 groups in health care seeking behavior and the ethics of experimentally studying children who have not received vaccines.

## CONCLUSIONS

Twenty epidemiologic studies have shown that neither thimerosal nor MMR vaccine causes autism. These studies have been performed in several countries by many different investigators who have employed a multitude of epidemiologic and statistical methods. The large size of the studied populations has afforded a level of statistical power sufficient to detect even rare associations. These studies, in concert with the biological implausibility that vaccines overwhelm a child's immune system, have effectively dismissed the notion that vaccines cause autism. Further studies on the cause or causes of autism should focus on more-promising leads.

## Acknowledgments

***Potential conflicts of interest.*** P.A.O. is a coinventor and patent co-holder of the rotavirus vaccine Rotateq and has served on a scientific advisory board to Merck. J.S.G.: no conflicts.

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## Addressing Credibility Through Use of Ethical Research Practices — Addressing Plagiarism, Copyright Infringement, and Falsification/Fabrication of Information

A researcher's credibility is further jeopardized if the researcher fails to assign credit for ideas or understandings that he or she does not already know or has not developed through sound, ethical research methods. As Marilyn Simon and Jim Goes (2011) suggest, "If there is any doubt about whether or not to cite a source, the formal nature of academic writing itself expects that the source be cited. It is preferable to err by assuming information is not commonly known than to make a false assumption that information is commonly known. In short, when in doubt, cite the source" (p. 1).

At times, simply citing another's work does not necessarily grant a student the right to include someone else's work in their own scholarly inquiry. Section 107 of the Copyright Act of 1976 states that use of copyrighted materials for purposes of "criticism, comment, news reporting, teaching (including multiple copies for classroom use), scholarship, or research, is not an infringement of copyright" (p. 19). However, this applies to shorter sections or paraphrased portions of the work. If a significant portion of the work is to be used, written permission may need to be sought (see Bedford Researcher, 4th ed., 2012, 126–127, for a sample letter to ask for permission from an author).

Audio and visual material and/or performances, as well as products of private citizens or companies, are subject to different copyright laws than written work. If in doubt, consult the Copyright Act (http:// **copyright.gov/title17/circ92.pdf**).

Countries other than the United States have their own copyright policies, which may be different. For example, in Canada, copyright laws differ for K–12 and postsecondary institutions. It is always worth ensuring that the school or board you work with is aware of copyright agreements and that both students and teachers follow these agreements.

#### References

*Copyright Act of 1976*. Retrieved from **http://copyright.gov/title17/circ92.pdf**

Palmquist, M. (2012) *Avoiding Plagiarism*. In The Bedford Researcher, 4th ed. New York: Bedford/St. Martin's. 120–134.

Simon, M. & Goes, J. (2011). *What Is Common Knowledge?* [pdf]. Retrieved from **http://dissertationrecipes.com/wp-content/uploads/2011/04/What-is-common-knowledge.pdf**

# Is It Common Knowledge; Copyright Infringement; Plagiarism; Falsification or Fabrication of Information; or Ethical, Scholarly Writing?

## Directions

After reviewing what is considered plagiarism, copyright infringement, or falsification/fabrication of information with your instructor, read the nine scenarios/statements in the table below and indicate whether the scenarios/situations represent common knowledge, violation of copyright or intellectual property, plagiarism, and/or falsification or fabrication of data. Provide a brief note why or why not (note if the error is plagiarism or a citation error).

| Scenario/Situation | Research Ethics Problem(s)? Why/why not? |
|---|---|
| 1. A student writes:<br>*Vision-impaired people have sharper hearing than fully sighted people.* | |
| 2. A student writes:<br>*According to Jane Ross, the Renaissance never actually occurred.* The student doesn't cite or attribute the source at the end of the quotation. | |
| 3. A student is working in a consultant's lab over the summer. The student wonders whether she should include data that she has collected in the lab in her paper as her own work. | |
| 4. A student writes the following in his paper:<br>*According to several studies, annual worldwide precipitation has gone up 5% in the past three years*. The student doesn't quote the material, or include citation information in the bibliography. | |
| 5. A student is pulling together all her sources for the first draft of her AP Research Academic Paper. She finds a handwritten note in her binder, but cannot remember where it was from. There is no citation, so she assumes she must have written it and includes it in her paper anyway. | |

| Scenario/Situation | Research Ethics Problem(s)? Why/why not? |
|---|---|
| 6. A student is conducting an empirical study and cannot seem to get the data that his consultant said he would surely get if he followed a certain procedure. He runs out of time to collect data, so he decides to provide theoretical instead of actual results in his paper. He credits the lab team and does not claim the work as his own. | |
| 7. A student is developing a new musical piece and finds a perfect part of an older song to insert in the middle of one of his verses. As most of the rest of the work is his own, he figures that it will not be an issue to include that short segment of another piece. | |
| 8. A student writes:<br>*The lifespan of North Americans is longer than it was 100 years ago*. Is a citation of this information required? | |
| 9. A student uses information from a paper that he wrote for a previous course in his AP Research paper. All outside material is cited and attributed correctly. | |
| 10. A student uses a figure from another published work but fails to cite the figure in their own paper (in-text or bibliography section). | |

## Reflect

- How will you evaluate the credibility of your own work throughout the AP Research course?

- What steps can you take to ensure you are not carrying out unethical research practices in your own academic writing?

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# Lesson 7: Big Ideas 1 & 2: Acknowledging the Connections of Multiple Perspectives to Your Topic of Inquiry

Acknowledging, evaluating, and connecting multiple perspectives to one's topic of inquiry is an important yet difficult balance to achieve when trying to establishing one's credibility. A researcher could have a myopic or singular view and assume there is only one perspective or line of reasoning pertaining to a problem, issue, or concept and thus ignore all others. In so doing, that researcher's credibility is diminished because the complexities of this world dictate that there isn't one singular truth for all things. Conversely, the researcher who attempts to address as many perspectives as possible will have difficulty establishing credibility. It will be difficult for someone to replicate that researcher's line of reasoning, inquiry choices, and ultimate conclusions pertaining to a new understanding if all variables, theories, and paradigms are accepted and valued. As the old adage goes, "If you stand for nothing, you fall for anything."

## Putting Sources in Conversation with Each Other

In scholarly research, it is the usual practice to use several relevant, significant sources in the literature review, which represent a variety of perspectives on your topic of inquiry. Again, a "variety of perspectives" means different than your perspective. However, it is also important that the sources are in conversation with each other and connected to your topic of inquiry. If each source is simply identified and summarized, it becomes obvious that you are having trouble effectively synthesizing what is known in the field about your topic of inquiry. You need to practice writing about how the sources relate to each other in terms of significance and also how they relate (in terms of significance) to your own topic of inquiry

## Constructing Meaning from Multiple Sources

### Directions

1. Imagine you are researching the question, *To what extent do school-based drug education programs succeed in reducing drug use in teens*?
2. Skim the West & O'Neal article (see the following extracted pages).
3. Identify or highlight specific elements and quotes from this article that address this research question.
4. Use those elements to fill in the Constructing Meaning from Multiple Sources template for article 1.
5. Follow the same steps after reading the the Hammond et. al article included in the following pages.

#### Template for Constructing Meaning from Multiple Sources

Conduct a close reading of two articles. Then complete the three-part document below:

**Part I**

Brief description of issue presented by both articles:

Article 1 citation

Article 2 Citation

**Part II**

Use information from both articles to fill in the table below:

| | West & O'Neal Article | Hammond et al., Article |
|---|---|---|
| Elements for Comparison and Contrast | Description in my own words<br>Evidence from the text<br>(include direct quotes, page numbers) | Description in my own words<br>Evidence from the text<br>(include direct quotes, page numbers) |
| Explicit Meaning<br>▸ What is the author's intended message?<br>▸ How does the author convey this message? | | |
| Implicit Meaning<br>▸ What assumptions underlie the author's message?<br>▸ What belief system does the text convey?<br>▸ What contradictions exist between the explicit and implicit meanings you identified? | | |
| My situatedness with respect to the texts<br>Be aware of your own biases, assumptions, perspectives, orientations, interests, preferences. | | |

**Part III**

Based on your close reading and the information in your template, write one or two paragraphs synthesizing the scholarly discourse of the multiple perspectives about your chosen issue. Beyond summarizing the articles individually, critically assess the similarities and differences among the authors' perspectives and approaches, essentially reviewing the texts as in dialogue with one another as well as connecting that dialogue back to the rationale for the decisions you have made in your inquiry process.

For example, your comparison might:

- Describe conceptual or philosophical tensions between the articles and how one philosophy aligns more with your own paradigm or choices.
- Describe logical or historicized foundations common to both articles and how those align with the perspective you have in your inquiry.
- Describe methods the articles share and the potential rationale for those methods chosen for those studies and how they connect with your own idea for your inquiry method.

**West & O'Neal: Article 1**

RESEARCH AND PRACTICE

# Project D.A.R.E. Outcome Effectiveness Revisited

Steven L. West, PhD, and Keri K. O'Neal, PhD

*Objectives.* We provide an updated meta-analysis on the effectiveness of Project D.A.R.E. in preventing alcohol, tobacco, and illicit drug use among school-aged youths.

*Methods.* We used meta-analytic techniques to create an overall effect size for D.A.R.E. outcome evaluations reported in scientific journals.

*Results.* The overall weighted effect size for the included D.A.R.E. studies was extremely small (correlation coefficient = 0.011; Cohen *d* = 0.023; 95% confidence interval = –0.04, 0.08) and nonsignificant (*z* = 0.73, NS).

*Conclusions.* Our study supports previous findings indicating that D.A.R.E. is ineffective. (*Am J Public Health.* 2004;94:1027–1029)

In the United States, Project D.A.R.E. (Drug Abuse Resistance Education) is one of the most widely used substance abuse prevention programs targeted at school-aged youths. In recent years, D.A.R.E. has been the country's largest single school-based prevention program in terms of federal expenditures, with an average of three quarters of a billion dollars spent on its provision annually.[1] Although its effectiveness in preventing substance use has been called into question, its application in our nation's schools remains extensive.[2–6]

Given the recent increases in alcohol and other drug use among high school and college students,[7] the continued use of D.A.R.E. and similar programs seems likely. In a meta-analysis examining the effectiveness of D.A.R.E., Ennett et al.[3] noted negligible yet positive effect sizes (ranging from 0.00 to 0.11) when outcomes occurring immediately after program completion were considered. However, this analysis involved 2 major limitations. First, Ennett et al. included research from nonpeer-reviewed sources, including annual reports produced for agencies associated with the provision of D.A.R.E. services. While such an inclusion does not necessarily represent a serious methodological flaw, use of such sources has been called into question.[8]

Second, Ennett and colleagues included only studies in which postintervention assessment was conducted immediately at program termination. As noted by Lynam et al.,[6] the developmental trajectories of drug experimentation and use vary over time. Thus, if individuals are assessed during periods in which rates of experimentation and use are naturally high, any positive effects that could be found at times of lower experimentation will be deflated. Likewise, assessments made during periods in which experimentation and use are slight will exaggerate the overall effect of the intervention.

Ideally, problems such as those just described could be solved by the use of large-scale longitudinal studies involving extensive follow-up over a period of years. There have been several longer term follow-ups, but the cost of such efforts may limit the number of longitudinal studies that can be conducted. In the present analysis, we attempted to overcome this difficulty by including a wider range of follow-up reports, from immediate posttests to 10-year postintervention assessments, in an updated meta-analysis of all currently available research articles reporting an outcome evaluation of Project D.A.R.E.

## METHODS

We conducted computer searches of the ERIC, MEDLINE, and PsycINFO databases in late fall 2002 to obtain articles for the present study. In addition, we reviewed the reference lists of the acquired articles for other potential sources. We initially reviewed roughly 40 articles from these efforts; 11 studies appearing in the literature from 1991 to 2002 met our 3 inclusion criteria, which were as follows:

1. The research was reported in a peer-reviewed journal; reports from dissertations/theses, books, and unpublished manuscripts were not included. We selected this criterion in an attempt to ensure inclusion of only those studies with rigorous methodologies. As noted, a previous meta-analysis of Project D.A.R.E. included research from nonreviewed sources, a fact that critics have suggested may have added error to the reported findings.[8]
2. The research included a control or comparison group (i.e., the research must have involved an experimental or quasi-experimental design).
3. The research included both preintervention and postintervention assessments of at least 1 of 3 key variables: alcohol use, illicit drug use, and tobacco use. We chose to include only those effect sizes that concerned actual substance use behaviors, since the true test of a substance use prevention effort is its impact on actual rates of use.

Using these criteria, we refined the original list of studies to 11 studies (Table 1). We calculated effect sizes using the procedures outlined by Rosenthal.[9] Meta-analysis results are commonly presented in the form of either a correlation coefficient (*r*) or the difference in the means of the treatment and control conditions divided by the pooled standard deviation (Cohen's *d*).[10] Since both are ratings of effect size, they can readily be converted to one another, and, if not provided in the original analyses, they can be calculated via F, *t*, and $\chi^2$ statistics as well as means and standard deviations.[9]

We calculated both estimations for the individual included studies and for the overall analysis. As discussed by Amato and Keith,[11] tests of significance used in meta-analyses require that effect sizes be independent; therefore, if 2 or more effect sizes were generated within the same outcome category, we used the mean effect size. We also used the procedure for weighting effect sizes suggested by Shadish and Haddock[12] to ensure that all effect sizes were in the form of a common metric. In addition, we calculated 95% confidence intervals (CIs) for each study and for the overall analysis.

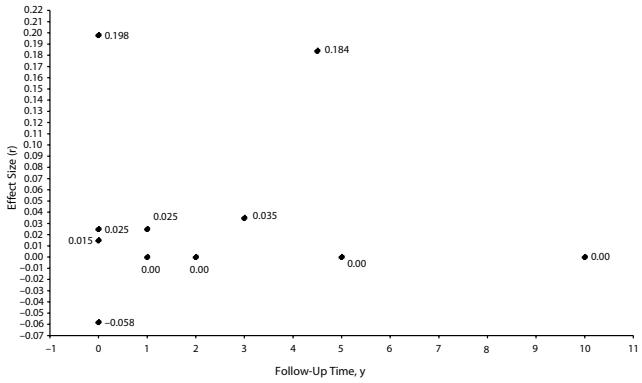


**FIGURE 1—Plot of effect sizes, by follow-up time.**

**TABLE 1—Primary Articles Included in the Meta-Analysis**

| Study (Year) | Sample | *r* | *d* | 95% Confidence Interval |
|---|---|---|---|---|
| Ringwalt et al. (1991)[18] | 5th & 6th graders (n = 1270; 52% female/48% male; 50% African American/40% Anglo/10% other), posttested immediately | 0.025 | 0.056 | –0.06, 0.16 |
| Becker et al. (1992)[19] | 5th graders (n = 2878), posttested immediately | –0.058 | –0.117 | –0.19, –0.04 |
| Harmon (1993)[20] | 5th graders (n = 708), posttested immediately | 0.015 | 0.030 | –0.12, 0.18 |
| Ennett et al. (1994)[21] | 7th & 8th graders (n = 1334; 54% Anglo/22% African American/9% Hispanic/15% other), 2 years post-D.A.R.E. | 0.000 | 0.000[a] | –0.11, 0.11 |
| Rosenbaum et al. (1994)[22] | 6th & 7th graders (n = 1584; 49.7% female/50.3% male; 49.9% Anglo/24.7% African American/8.9% Hispanic/16.5% other) 1 year post-D.A.R.E. | 0.000 | 0.000[a] | –0.10, 0.10 |
| Wysong et al. (1994)[23] | 12th graders (n = 619), 5 years post-D.A.R.E. | 0.000 | 0.000[a] | –0.16, 0.16 |
| Dukes et al. (1996)[24] | 9th graders (n = 849), 3 years post-D.A.R.E. | 0.035 | 0.072 | –0.06, 0.21 |
| Zagumny & Thompson (1997)[25] | 6th graders (n = 395; 48% female/52% male), 4–5 years post-D.A.R.E. | 0.184 | 0.376 | 0.07, 0.68 |
| Lynam et al. (1999)[6] | 6th graders (n = 1002; 57% female/43% male; 75.1% Anglo/20.4% African American/0.5% other), 10 years post-D.A.R.E. | 0.000 | 0.000[a] | –0.15, 0.15 |
| Thombs (2000)[26] | 5th through 10th graders (n = 630; 90.4% Anglo, 5.5% African American, 4.1% other), posttested at least 1 to 6 years post-D.A.R.E. | 0.025 | 0.038 | –0.15, 0.23 |
| Ahmed et al. (2002)[14] | 5th and 6th graders (n = 236; 50% female/50% male; 69% Anglo, 24% African American, 7% other), posttested immediately | 0.198 | 0.405 | 0.01, 0.80 |

*Note.* *r* = correlation coefficient; d = difference in the means of the treatment and control conditions divided by the pooled standard deviation. Negative signs for *r* and *d* indicate greater effectiveness of control/comparison group.
[a]Assumed effect size.

## RESULTS

The average weighted effect size (*r*) for all studies was 0.011 (*d*=0.023; 95% CI=–0.04, 0.08), indicating marginally better outcomes for individuals participating in D.A.R.E. relative to participants in control conditions. The fact that the associated CI included a negative value indicates that the average effect size was not significantly greater than zero at $P<.05$. According to the guidelines developed by Cohen,[13] both of the effect sizes obtained were below the level normally considered small. Four of the included studies noted no effect of D.A.R.E. relative to control conditions, and 1 study noted that D.A.R.E. was less effective than the control condition.

Furthermore, the 6 reports indicating that D.A.R.E. had more positive effects were, for the most part, small (Figure 1). The largest effect size was found in a report[14] in which the only outcome examined was smoking. Finally, we conducted a test of cumulative significance to determine whether differences existed between D.A.R.E. participants and non–D.A.R.E. participants. This test produced nonsignificant results ($z$=0.73, NS).

## DISCUSSION

Our results confirm the findings of a previous meta-analysis[3] indicating that Project D.A.R.E. is ineffective. This is not surprising, given the substantial information developed over the past decade to that effect. Critics of the present analysis might argue that, despite the magnitude of our findings, the direction of the effect of D.A.R.E. was generally positive. While this is the case, it should be emphasized that the effects we found did not differ significantly from the variation one would expect by chance. According to Cohen's guidelines,[13] the effect size we obtained would have needed to be 20 times larger to be considered even small. Given the tremendous expenditures in time and money involved with D.A.R.E., it would appear that continued efforts should focus on other techniques and programs that might produce more substantial effects.

Our findings also indicate that D.A.R.E. was minimally effective during the follow-up periods that would place its participants in the very age groups targeted. Indeed, no no-

ticeable effects could be discerned in nearly half of the reports, including the study involving the longest follow-up period. This is an important consideration for those involved in program planning and development.

As noted earlier, progression in regard to experimentation and use varies over time. Use of alcohol and other drugs reaches a peak during adolescence or young adulthood and decreases steadily thereafter.[7,15] Such a developmental path would be expected of all individuals, regardless of their exposure to a prevention effort. Ideally, individuals enrolled in a program such as D.A.R.E. would report limited or no use during their adolescent and young adult years. The fact that half of the included studies reported no beneficial effect of D.A.R.E. beyond what would be expected by chance casts serious doubt on its utility.

One shortcoming of our analysis should be noted. In many of the studies we included, individual students were the unit of analysis in calculating effects. As noted by Rosenbaum and Hanson,[16] this practice tends to lead to overestimates of program effectiveness, since the true unit of analysis is the schools in which the students are "nested." Because our meta-analysis was limited to the types of data and related information available from the original articles, the potential for such inflation of program effectiveness exists. However, the overall effect sizes calculated here were small and nonsignificant, and thus it is unlikely that inclusion of studies making this error had a significant impact on the current findings.

An additional caveat is that all of the studies included in this analysis represent evaluations of what is commonly referred to as the "old D.A.R.E.": programs generally based on the original formulations of the D.A.R.E. model. In response to the many critiques of the program, the D.A.R.E. prevention model was substantially revamped in 2001, thanks in part to a $13.6 million grant provided by the Robert Wood Johnson Foundation.[17] The revisions to the model have since given rise to programs working under the "new D.A.R.E." paradigm. However, at the time of the writing of this article we were unable to find any major evaluation of the new D.A.R.E. model in the research literature, and the effectiveness of such efforts has yet to be determined. ■


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S.L. West and K.K. O'Neal contributed equally to all aspects of study design, data analysis, and the writing of this article.


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**Hammond et al: Article 2**

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# Do adolescents perceive police officers as credible instructors of substance abuse prevention programs?

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## Abstract

**Although program recipients' attitudes toward instructors are crucial to program outcomes, they have not been adequately examined in the substance abuse prevention literature. This study uses survey data to explore attitudes toward instructors of prevention programming held by students from a national longitudinal evaluation of a school-based substance abuse prevention program delivered by Drug Abuse Resistance Education (D.A.R.E.) officers. Our analyses indicated that students who had police officers as instructors evaluated program instructors significantly higher than students who had non-police officers as instructors. The evaluation of police instructors varied according to students' sociodemographic characteristics. Implications for future research and practice are considered.**

## Introduction

Program recipients' acceptance of and reaction to information presented in prevention curricula depend, among other things, on their trust in and their perceived credibility of program instructors. Therefore, as suggested by the Elaboration Likelihood Model (ELM) [1, 2], the effectiveness of prevention programs to some extent might depend on program recipients' attitudes toward instructors. Although attitudes toward program instructors are crucial to program success, they have not been adequately examined in the literature.

Studies that document the types of substance abuse prevention programs delivered in the nation's schools indicate that Drug Abuse Resistance Education (D.A.R.E.) programs are delivered in ~80% of all school districts [3]. Given that police officers deliver D.A.R.E. and other school-based prevention programs, it is important to consider whether students' attitudes toward police instructors influence the success of prevention programming. Moreover, students' attitudes toward police instructors of prevention programs have not been fully examined. Studies of the effectiveness of the D.A.R.E. delivery network have examined the effect on students' attitudes toward police officers in general [4–7]. A dominant finding from these studies is that students exposed to D.A.R.E. officers tend to have positive attitudes toward police officers in general. However, these studies did not consider the factors influencing the observed attitudes or their relation to attitudes toward police officer instructors. Other limitations of these studies are that they focus on specific geographic locations and only on elementary school students, particularly fifth and sixth graders.

Against the backdrop of these limitations is an ongoing debate in prevention research on whether police officers should deliver drug prevention

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programs. This question is very important given that a large body of literature exists elsewhere indicating that in general adolescents have negative attitudes toward police officers [8–15]. This literature suggests that the presence of police officers in schools is likely to pose a psychological threat to, and alienate, students who already have negative attitudes toward them [11].

This study addresses the limitations of and builds on previous research by exploring adolescents' attitudes toward instructors of substance use prevention programs. Specifically, the study explores differences in students' attitudes toward police instructors of drug prevention programs in six metropolitan areas in the United States of America. The key questions addressed in this study are as follows:

(i) What are students' attitudes toward instructors of drug prevention programs?
(ii) Are students' attitudes toward program instructors different for police and non-police instructors?
(iii) Are there variations in students' attitudes toward police instructors according to:
(a) Their general attitudes toward the police?
(b) Their prior exposure to the D.A.R.E. program?
(c) Their sociodemographic characteristics?
(d) The sociodemographic characteristics of their neighborhoods?

## Factors influencing adolescents' attitudes toward police officers

Studies examining adolescents' attitudes toward the police have indicated that individual characteristics, neighborhood conditions and type of encounters with the police are key factors influencing such attitudes. Among the individual characteristics shaping adolescents' attitudes toward the police are gender, deviance and race. For instance, delinquent adolescents are noted to have more negative attitudes toward the police [16, 17]. Similarly, non-White adolescents are reported to have more negative attitudes toward the police than White adolescents [15, 16, 18]. This general tendency to view the police negatively on the part of adolescents varies not only across race and gender [15, 16, 18–21] but across dimensions of evaluation as well. For example, based on semantic differentials, Moretz [22] concludes that ''students in the present study saw them (the police) as a valuable agency in society'' (223). Furthermore, Moretz argues that the police, while viewed as potent and valuable, are not well understood by adolescents.

Adolescents residing in suburban neighborhoods and/or smaller cities are reported to have more positive attitudes toward the police than their counterparts residing in other areas [10, 12, 23]. Research has also demonstrated the importance of individuals' perceptions of conditions in their neighborhoods in shaping their attitudes toward the police. People perceiving their neighborhood conditions as 'bad' tend to have more negative attitudes toward the police than those with positive perceptions of their neighborhoods [8, 12, 16].

The nature of contacts between the public and the police as well as public perceptions of these contacts have also been found to affect attitudes toward the police [9, 10, 12, 15, 16, 24]. Adolescents who have had prior involuntary encounters with the police (such as being arrested or stopped for traffic violations) have more negative attitudes toward the police than adolescents with prior voluntary encounters [24]. Generally, adolescents who have frequent contacts with the police in a supportive context are found to have more positive attitudes toward the police [13, 17]. Negative experiences with police appear prominently in the literature describing attitudes toward the police. Hurst *et al*. [21] find that the most powerful predictor of negative attitudes toward the police, for girls, is vicarious police misconduct. That is, knowledge of police misconduct was a more powerful predictor of negative attitudes toward the police than were age, race, school type or victimization experience. Furthermore, Cox and Falkenberg [20] conclude that negative interactions with police by substance abusing youth result in more negative attitudes toward the police. In contrast to this trend, Esbensen and Osgood [25] in their evaluation of the Gang

police that typically occur in other law enforcement activities. Besides, with the view that the police are not well understood by adolescents [22] and are thus likely to be perceived negatively by adolescents, it is possible that students who encountered the police in the classroom tended to understand the police better and evaluate them positively.

The positive attitudes toward police instructors held by students were not uniform across subgroups of students. The negative relationships between attitudes toward police instructors and students' drug use and involvement in deviant behaviors appear to suggest that students involved in 'illegal' activities hold negative evaluations of police instructors, relative to their peers not involved in 'illegal' activities. It is probably because this category of students fears being arrested by the police or has experienced negative encounters with the police.

This study also highlights the importance of contextual factors in understanding students' attitudes toward police instructors. Due possibly to positive interactions between students and police officer instructors, past studies have demonstrated that the D.A.R.E. program has improved the image of police officers among adolescents. However, these effects may vary in different contexts and for different subgroups of students. As a result, in drawing such a conclusion one has to take into consideration students' characteristics and the context within which they interact with the police.

## Limitations

The findings from this study must be interpreted with caution due to some limitations. The effect of the D.A.R.E. program on attitudes toward police officers is based on the assumption that students who have had prior exposure to the D.A.R.E. program have encountered police (D.A.R.E.) officers in a supportive context and thus are more likely to evaluate police officers favorably. Though students might have had several encounters with the police in diverse settings and conditions, the data set used for this study did not include these measures, and students' encounters with the police were measured in the narrow context of prior exposure to D.A.R.E. program. It seems unlikely, however, that these unmeasured encounters would bias students toward more positive opinions of police instructors. It seems more plausible that these unmeasured experiences are negative and would suppress rather than explain the correlations we found in this project.

Second, though students in this study who had police instructors tended to evaluate program instructors more positively than students who had non-police instructors, this study does not claim that the positive evaluation translates into positive program effect. That is, this study is not suggesting that students who had police officers as instructors of prevention program had better outcomes on substance use than their counterparts who had non-police instructors. This issue must be addressed by further research.

Further, while the individual characteristics of the instructor such as race and gender are likely to impact students' evaluation of the instructors, this information was available for only police instructors who delivered the Take Charge of Your Life program and could not be included in the analyses. It is suggested that future studies gather information on individual characteristics of instructors and consider the possible effect of these characteristics on students' evaluation of the instructors.

## Implications

Notwithstanding these limitations, the findings have provided insight into the developmental and sequential nature of attitudes toward police officers and instructors. The study has also provided findings with important implications for prevention programming, policy makers and agencies concerned with improving the public image of the police and police functions.

Given the possibility that program outcomes are related to attitudes toward program instructors [1, 2], the more positive evaluation of police instructors by students in this study suggests that programs delivered by police officers are more likely to have a positive impact. Consequently, we suggest that police officers may be appropriate deliverers of

prevention programs for the majority of adolescents. The use of police officers as instructors of prevention programs has the potential of not only helping improve the effectiveness of prevention programs but would also help create and sustain a more positive image of the police or at least abate the negative image held by adolescents.

The positive image of the police developed among students may create a situation where the students could relate cordially to the police, report crime voluntarily and cooperate in curbing crime in schools. With schools being a microcosm of the wider community, it is expected that the cordial relationship developed between the police and students in schools would be transferred to the community. This might engender more positive community engagement and meaningful police–community partnerships toward effective and efficient policing.

This is particularly important considering that community policing has become a dominant approach to policing in the United States of America in recent years. With effective community policing centering on meaningful police–public cooperation and the observation that adolescents form a disproportionately large segment of the population the police encounter in their duties [16], the successful maintenance of law and order, especially community policing will require, among others, promoting trust and positive image of the police among adolescents. Against this backdrop and the findings from the study, it will not be out of place to argue for a mechanism such as the D.A.R.E. delivery system that creates an opportunity for adolescents to encounter the police in a more friendly and supportive context.

However, the differential evaluation of police instructors among students indicates that the effectiveness of prevention programs delivered by police instructors might not be equal for all students. For instance, prevention programs delivered by police instructors might be more effective for students not involved in 'illegal' activities than for students involved in some form of 'illegal' activity. In fact any prevention program may not have credibility for this group of students who may warrant other, more intensive interventions. While these characteristics pertain to a smaller proportion of adolescents, it is proposed that decisions concerning the use of police officers as instructors of prevention programs must take into consideration students' unique characteristics and social context.

## Future research

The factors influencing students' attitudes toward instructors of prevention programs are complex. A complete understanding of students' attitudes toward police instructors, therefore, would require further studies. First, it is suggested that this study be replicated in other contexts with efforts made in addressing the limitations highlighted above. Particularly, researchers replicating this study should measure students' contacts with the police both within and outside the school as well as the nature, frequency and intensity of such contacts.

Researchers designing future studies should also include a diverse array of instructors of school-based substance abuse prevention programs including, but not limited to, police officers, peer groups, teachers and counselors. They should also consider a broader age range of students and consider the developmental changes in attitudes overtime.

It is possible that adolescents' attitudes toward police instructors might differ across geographic areas. To address these possible differences, it is suggested that future research considers regional analysis of students' attitudes toward police instructors. Researchers designing such study should determine whether students' attitudes toward police instructors differ across cities/areas and the possible cause for any observed difference. The importance of such study is illuminated by the view from this study that context matters in understanding attitudes toward police instructors.

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None declared

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# Lesson 8: Big Idea 4: Synthesize Ideas

## *Definitions, Assumptions, and Hypotheses*

### Directions

1. Read the story below and indicate next to each statement whether the statements about the story are *true*, *false*, or whether there is *not enough information* to determine the truth of the statement. Do not engage in dialogue with your group as you evaluate each statement.

#### The Story

A businessman had just turned off the lights in the store when a man appeared and demanded money. The owner opened a cash register. The contents of the cash register were scooped up, and the man sped away. A member of the police force was notified promptly.

#### Statements about the Story

- True (T)
- False (F)
- Not enough information (NI)

a. A man appeared after the owner had turned off his store lights.

b. The robber was a man.

c. The man did not demand money.

d. The man who opened the cash register was the owner.

e. The store owner scooped up the contents of the cash register and ran away.

f. Someone opened a cash register.

g. After the man who demanded the money scooped up the contents of the cash register, he ran away.

h. While the cash register contained money, the story does not state how much.

i. The robber demanded money of the owner.

j. It was broad daylight when the man appeared.

k. The story concerns a series of events in which only three persons are referred to: the owner of the store, a man who demanded money, and a member of the police force.

l. The following events in the story are true: someone demanded money; a cash register was opened, its contents were scooped up, and a man dashed out of the store.

2. When all group members have evaluated each of the story statements, work with your group to determine whether or not you came to a consensus on each of the statements. Be prepared to report your findings to the whole class. Consider the following questions while working with your group:
   a. What do you think helped your group members indicate the truthfulness of each statement in the same way?
   b. What do you believe prevented your group members from agreeing on the truthfulness of each statement?
   c. What needed to be defined in the story for everyone in your group to come to the same understanding?
   d. What assumptions were made by the different members in your group that led to different understandings of the story?
   e. What do your findings tell you about the importance of assumptions and definitions in interpreting or understanding information?

## Delineating the Differences Between Assumptions and Hypotheses

### Directions

Work with your group to formulate responses to the following questions. Be prepared to share your responses when prompted.

a. What hypothesis is a researcher making when choosing to perform interviews to determine the effects of smoking on a person instead of performing or gathering data from a medical examination?

b. What assumptions is a researcher making when defining the word *effective* in a research question that queries the effectiveness of one treatment over another?

c. What assumptions is a researcher making when postulating a hypothesis to a research question about the effectiveness of one treatment over another?

d. From your responses to a, b, and c, delineate the similarities and differences among an assumption, a hypothesis, and a definition in research. Discuss your rationale with your group.

## The Importance of Definitions in Research

### Directions

1. Pick a partner from another group. Engage in the following dialogue with that partner. (Decide who will ask the questions and who will answer them.)
   a. How would you define the words *intelligence* and *excessive* as a variable in your research question if you were studying the effects of excessive video game playing on intelligence?

      i. How might others define the terms *intelligence* and *excessive*?

      ii. How would your conclusions be interpreted if you did not provide a definition of these terms?

      iii. You and the readers of your academic paper might have discrepancies in definitions of terms. How would these discrepancies affect how your conclusions are interpreted?

      iv. When should you define the terms (before, during, or after you conduct your research)? Provide rationale.

   b. Who creates your definitions (you, a dictionary, etc.)?

   c. How do you determine the strength of your definitions?

d. What words should you define? (Provide rationale).

2. Return to your group and report your findings.

### Reflect

- What are the ramifications of not articulating or acknowledging definitions, assumptions, and hypotheses in your research?

- When should you acknowledge an assumption, hypothesis, or definition in your research (prior to, in the middle, or after collecting data and making a conclusion)?

- In what ways does acknowledging assumptions, hypotheses, and definitions get reflected in the academic paper for the AP Research course?

# Lesson 9: Big Idea 2: Understand and Analyze

## *Contextualizing Your QUEST with the Literature Review*

Once you have collected enough information pertaining to what is already known about your topic of inquiry and supporting information or multiple perspectives pertaining to your inquiry choices, you should begin to synthesize such information. This information is part of the required component of the introduction of the academic paper and must achieve the following tasks:

- Provides background and contextualizes the research question/project goal and your initial assumptions and/or hypotheses;
- Introduces and reviews previous work in the field, synthesizing information and a range of perspectives related to the research question/project goal; and
- Identifies the gap in the current field of knowledge to be addressed.
- Demonstrates to the reader that you have literature in the field to support the choices you will be making during your inquiry process.

You must be aware of general organization schemes to synthesize the information you have collected to situate your topic of inquiry and show the significance of that topic to the broader field of understanding.

In November of this year, consider how you will respond to this question:

- What do you think is meant by the term *literature review*, and what purpose does it serve in academic research?

## Building My House So You Know Exactly Where I Stand

A literature review must do these things:

- Be organized around and related directly to the thesis or research question you are developing
- Synthesize results into a summary of what is and is not known
- Identify areas of controversy in the literature
- Formulate questions that need further research
- Suggest fresh insights into the topic

When determining how to organize your literature review or introduction of your academic paper, ask yourself these types of questions:

- What is the specific thesis, problem, or research question that my literature review helps to define?
- What type of literature review am I conducting? Am I looking at issues of theory? Methodology? Policy? Quantitative research (e.g., on the effectiveness of a new procedure)? Qualitative research (e.g., studies)?
- What is the scope of my literature review? What types of publications am I using (e.g., journals, books, government documents, popular media)? What discipline am I working in (e.g., nursing, psychology, sociology, medicine)?

Adapted from Connor's Writing Center (2010). *Literature Reviews*. Retrieved from **www.unh.edu/writing/cwc/handouts/other/Lit%20Review%20FINAL.pdf**

Once you have thought about what overarching message you need to convey (through the tasks the literature review must achieve), you can start to look at how the discipline associated with your topic of inquiry handles the introduction or literature review of academic papers.

### Directions

1. Spend 10–15 minutes reading the literature review/introduction of the academic paper assigned to your group.
2. Record a brief explanation of the organization or structure of this component of your assigned academic paper.
3. Be prepared to share how the structure of this component of the paper meets the need for the literature review to define, contextualize, analyze, and synthesize what is known in the field so that the student's topic of inquiry and associated choices about their inquiry process are clearly conveyed.
4. As you listen to the other groups' descriptions, record the differences in structure and organizing principles for these three papers in the table.

| Academic Paper Title | Discipline Associated with Academic Paper | Brief Description of Organizing Principles of the Literature Review or Introduction |
|---|---|---|
| **Cultivation, Resistance, & Beauty:** A Case Study on the Defiant Gardens of the Manzanar Internment Camp during World War II | History/Humanities | |
| The Modification of Buildings Based on the Mounds of Macrotermes for the Purposes of Thermoregulation and the Elimination of the Need for Modern Air Conditioning | Science/Engineering | |
| To what extent do Swiss filmmakers' perspectives on Hollywood's media imperialism and the cultural discount theory hinder their potential for producing international box office successes? | Social Science | |

**Histories/Humanities-Based Academic Paper**

# Cultivation, Resistance, & Beauty:

## A Case Study on the Defiant Gardens of the Manzanar Internment Camp during World War II

AP Research
Word Count: 4736

**"The Foundation" by Mitsuye Yamada[1]**

*This could be the land*
*where everything grows.*
*Bulldozers had sifted up*
*large piece of parched woods and*
*worthless rocks.*
*Bilateral builds to be are not yet.*

*Meanwhile on this dust*
*I counted seven shapes*
*of sturdy grey and greens*
*some small and slender*
*vertical parallels.*
*No one planted them here with squared T's.*
*Some weblike tentacles reaching out*
*Toward rounded rotundas.*

*Molded by no one.*

*Here*
*starshaped with tiny speckles,*
*are these the intruder in my garden*
*of new seedlings?*
*My garden carefully fed and fettered?*
*Of course.*
*I pronounced their execution*
*with a pinch of my fingers.*

*But here*
*among a myriad of friends*
*they flourished in weedly wilderness,*
*boldly gracing several acres*
*of untended land.*
*Tomorrow they shall be banished from their home.*

*And watered by many droplets*
*of human sweat*
*will sprout another college where*
*disciplined minds finely honed*
*will grow*
*in carefully*
*planted rows.*

*No room for random weeds.*

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[1] Yamada, Mitsuye. Camp Notes and Other Poems. San Lorenzo, California: Shameless Hussy Press, 1976 149.

## Abstract

Following the bombing of Pearl Harbor, US President Franklin D. Roosevelt signed Executive Order 9066, authorizing the incarceration of 110,000 Japanese Americans into internment camps. By 1943, agriculture dominated camp life, especially at the Manzanar Internment Camp in Owens Valley, California. During their internment, the Japanese Americans, unbeknownst to each other, raised a variety of gardens, including traditional Japanese ornamental gardens. The ornamental gardens ranged greatly in size and consisted of raked gravel dry gardens, cactus gardens, showy flower gardens, and ornate rock gardens. In an effort to preserve the history of the near-extinct generation of Japanese Americans, this study seeks to understand the purposes and implications of the ornamental gardens, with a focus on the Manzanar camp. In this qualitative retrospective ethnographic case study, I examine the overarching themes arising from ten interviews with WWII internees who lived at the Manzanar internment camp using the thematic analysis approach. This study found that the Japanese Americans initially raised the ornamental gardens to resist and combat their desolate, harsh environment, but these gardens had unforeseen consequences for the Manzanar community. While the gardens functioned as a pastime, a means to preserve and revive Japanese culture, and, paradoxically, an avenue to strengthen relationships with the War Relocation Authority officials, they also ultimately helped the inmates to conceptualize their highly complex experiences during WWII. This study's findings, with a deep examination of the Manzanar camp, are aligned with broader environmental studies on the Japanese Americans during WWII, specifically with regard to the gardens functioning as acts of resistance. Looking towards the future, I recommend that further research should examine how defiant gardens throughout history compare with one another and drive the narratives of those involved.

## Historical Context

On December 7, 1941, the Japanese bombed Pearl Harbor, catalyzing mass fear and mistrust of Japanese American citizens across the United States.[2] Thus, on February 19th, 1942, President Franklin D. Roosevelt signed Executive Order 9066 which authorized the removal and incarceration of 110,000 Japanese Americans (two-thirds of whom were American citizens) living on the West Coast into temporary internment camps.[3] The executive order also called for the establishment of the War Relocation Authority (WRA), the federal government agency responsible for the relocation of all Japanese people and the creation and regulation of relocation centers (internment camps). [4] Beginning in August 1942, the Japanese Americans were moved into the internment camps and deprived of their civil liberties. On March 20, 1946, nearly six months after the official end of WWII, all internment camps were retired and the Japanese Americans were left to rebuild their American lives.[5]

As Japanese Americans relocated into the internment camps, they were forced to leave their homes and occupations behind. In contrast to their pre-WII lives, the Japanese Americans in the camps were assigned occupations designed to aid the war effort, such as teaching, cooking, and farming.[6] From the perspective of the WRA, the conditions in the internment camps generally provided the "the bare subsistence level".[7] In camp, the Japanese Americans were relegated to "simple construction barracks," in the place of homes and provided with a few facilities and

[2] Oguzhan, Mehmet. "The Relocation and Internment of People of Japanese Descent in the US during WWII". *Uluslararasi Suçlar ve Tarih* 15, (2014): 135-171.
[3] Ibid, 135.
[4] Chiang, Connie. "Imprisoned nature: Toward an environmental history of the world war II Japanese American incarceration." *Environmental History* 15. No 2 (2010): 236-267.
[5] Ibid, 240
[6] Oguzhan, 150.
[7] "Relocation of Japanese Americans". War Relocation Authority. Washington D.C., May 1943.

services including food courts, minimal medical care, and education for their children.[8] Despite their job assignments and their access to meager resources, the Japanese Americans found themselves with an abundance of time. After living in the camps for a few months, the internees longed to enrich camp life. They began organizing activities such as painting, pottery, baseball, fishing, farming, and gardening.[9] Prior to WWII, Japanese Americans dominated agricultural businesses in the US. Ten years before the war, one-third of Japanese Americans in Los Angeles were gardeners. By 1940, on the West Coast more than forty-six percent of Japanese Americans were employed in agriculture, with an additional twenty-six percent employed in "agriculture-related activities such as produce businesses."[10] However, these pursuits had to be suspended at the start of WWII.

Adams, Ansel. *View of barracks with mountains in the background*. 1943. Shinjo Nagatomi Collection, Manzanar National Historic Site Collection. Manzanar Relocation Center.

By 1943, agriculture came to dominate camp life. Camp community groups, led by former farmers and gardeners, and schools typically maintained the gardens and crops.[11] Most of the internment camps had victory gardens — gardens initiated by the US government to aid the war effort. The victory gardens enriched the inmates' government-issued diet with an increased

[8] "Relocation of Japanese Americans". War Relocation Authority. Washington D.C., May 1943.
[9] Obler, Bibiana. "The Art of Gaman: Arts and Crafts from the Japanese American Internment Camps, 1942–1946" *The Journal of Modern Craft* 4, no. 1 (2011). 93-98.
[10] Tamura, Anna. "Gardens in Camp," *Densho Encyclopedia*. Last modified July 18, 2016. Accessed September 3, 2017. http://encyclopedia.densho.org/Gardens%20in%20camp/
[11] Ibid.

Lange, Dorothea. *Japanese American working in victory garden*. 1942. Dorothea Lange Collection, National Archives. Manzanar Relocation Center.

variety of produce; the internees took this opportunity to plant Japanese vegetables. The Japanese Americans also constructed thousands of ornamental gardens, ranging in size from parks for all inmates to enjoy, block gardens (a set of barracks were called a block), to small personal gardens.[12] Among these ornamental gardens were traditional raked gravel dry gardens, cactus gardens, showy flower gardens, and ornate rock gardens. The Manzanar internment camp in Owens Valley, CA became famous for the creation of Merritt Park, the most elaborate and sophisticated garden in all in of the camps. The project, featuring ponds, boulders, tea houses, and a waterfall, illustrated the complexity and magnitude of a wartime garden.[13]

## Literature Review

In this literature review, four major works consider the environmental conditions and agriculture across Japanese internment camps during WWII. Bowdoin College Professor Connie Chiang sets the framework for the current literature on the topic. Chiang not only provides an overview of environmental theory and history, but also examines how agriculture influenced the interactions between WRA officials and inmates. Examining specifically environmental injustice theories, Chiang claims that, "WRA officials tried to use nature as an instrument for social

[12]Tamura, Anna. "Gardens in Camp," *Densho Encyclopedia*. Last modified July 18, 2016. Accessed September 3, 2017. http://encyclopedia.densho.org/Gardens%20in%20camp/
[13]Ibid.

control by locating the camps in places where they could isolate Japanese Americans and procure their labor in the name of assimilation and patriotism."[14] As she explores both the perspectives of the WRA and of Japanese Americans, she asserts that in an effort, "to resist and endure their incarceration, Japanese Americans both established intimate connections to nature and sometimes refused to work when demanded."[15] In short, Chiang argues that, "the natural world" became a platform that upset "power relations" between the WRA and Japanese Americans, "ensuring that WRA control over the detainees was not absolute."[16]

Kenneth Helphand finds a similar theme in his book on defiant gardens. According to Helphand, defiant gardens are, "gardens created in extreme or difficult environmental, social, political, economic, or cultural conditions".[17] In his chapter on Japanese internment, Helphand claims that, "At the relocation camps, garden-making was literally the domestication of an inhospitable environment, creating a cultural setting which was a semblance of normalcy."[18] He further adds that the gardens were mechanisms to maintain "cultural integrity" and "self-respect"; they were "an enterprise of survival, a defense of sanity and a demonstration of psychological, and here political, defiance."[19] Helphand's book claims that the gardens served as acts of resistance, a tool to defy the WRA and their living conditions, and a means to emotionally survive the wartime experience. Ultimately, Helphand and Chiang's analyses demonstrate how the Japanese Americans' relationship with nature across the camps became a tool for defiance against their incarceration and the WRA.

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[14] Chiang, Connie. "Imprisoned nature: Toward an environmental history of the world war II Japanese American incarceration." *Environmental History* 15. No 2 (2010): 239.
[15] Ibid, 236.
[16]Ibid, 236.
[17]Helphand, Kenneth I, *Defiant Gardens: Making Gardens in Wartime*. EDRA/Places Awards Research 19, 2007.
[18] Ibid, 117.
[19] Ibid, 117.

Anna Tamura offers a similar perspective as she focuses on agriculture at two internment camps: Manzanar and Minidoka. Similar to Helphand and Chiang, she reports that the gardens functioned as acts of resistance — "political symbols of sedition and non-compliance as well as loyalty and patriotism."[20] Arguing that the gardens were "restorative agents that fostered communal healing, and [were] the results of cultural cohesion and community competition," she too highlights how these gardens served as techniques of daily survival.[21] Monica Embrey's dissertation speaks to Tamura's claims. In her case study on the environmental justice history of the Manzanar internment camp, Embrey examines the Japanese Americans' relationship with the Owens Valley land, with a focus on their use and conservation of water. When addressing gardening and farming in the camp, she brings two important Japanese concepts into the literature discussion: "Gaman" and "Shikata ga nai". In her book *The Art of Gaman*, Delphine Hirasuna defines gaman as, "enduring what seems unbearable with dignity and grace"[22] while Professor Jane Iwamura defines Shikata ga nai as the belief that, "one should not concentrate on the things one cannot change."[23] With these two concepts in mind, Embrey argues that they are fundamental in understanding the motives of Japanese Americans' relationships with the land surrounding them. With sources such as Tamura and Embrey, the Japanese Americans' quest to ease routine adversity shines through; it is apparent that agriculture in the camps fostered emotional survival.

[20] Tamura, Anna. "Gardens Below the Watchtower: Gardens and Meaning in World War II Japanese American Incarceration Camps," *Landscape Journal* 23, (2004): 1.
[21] Ibid, 1.
[22] Hirasuna, Delphine, and Kit Hinrichs. *The Art of Gaman: Arts and Crafts from the Japanese American Internment Camps*. Ten Speed Press, 2005.
[23] Iwamura, Jane Naomi. "Critical Faith: Japanese Americans and the Birth of a New Civil Religion." *Critical Faith The American Studies Association* (1997): 994

While Helphand, Chiang, Tamura, and Embrey's analyses contextualize the Japanese Americans' relationships with the environment and agriculture, no study focuses solely on the Japanese ornamental gardens. Furthermore, with the exception of Embrey, this literature lacks comprehensive research on one particular internment camp. While these articles analyze the importance and implications of these gardens, the current gap in research allows for generalizations when understanding the Japanese American experience and their relationship with ornamental gardens. A qualitative ethnographic case study examining the purposes of the gardens in the Manzanar internment camp may shed light on this gap. Furthermore, it will provide deeper insight into the everyday acts of resistance and the grit that enhanced camp life.

## Method

The method of my study addresses the question: *Through a qualitative retrospective ethnographic case study, what purposes did the Japanese ornamental gardens in the Manzanar internment camp serve for the Japanese Americans during World War II?* I hypothesized that the Japanese Americans built the gardens as a pastime, a means to resist the WRA, and a method of healing as a community. It is important to recognize that I made a significant assumption within the research question. Asking, "what purposes did the… gardens… serve" implies that I believe that there is/are purpose(s) behind these gardens. But gardens do not, in general, spring out of deserts without good cause.

### Qualitative Retrospective Ethnographic Case Study

With these questions in mind, it is important to break down and define the different components of the method. Qualitative methods "rely on text and image data, have unique steps

**Science/Engineering-Based Academic Paper**

The Modification of Buildings Based on the Mounds of Macrotermes for the Purposes of Thermoregulation and the Elimination of the Need for Modern Air Conditioning

Word Count: 4069

**Abstract**

The current way that the air conditioning of buildings is conducted is both overly expensive and harmful to the environment. Alternatives to modern air conditioning are not common, but one potential solution lies in the deserts of Zimbabwe. Macrotermes, a genus of termites found in this region, produce mounds that thermoregulate independently. The Eastgate Centre, a building in Zimbabwe, was designed to imitate this process and function without modern AC. The goal of this research is to find a way apply the same techniques to buildings that already exist. To test the potential of this, a scale model building with an added chimney and fans (similar to the Eastgate Centre) was compared to a similar model without modifications when exposed to a heat lamp that was representative of the sun. The temperatures at each level of each building were recorded over a number of trials with the light facing eight different sides of the building for five minutes. The differences in temperature between room temperature and the temperature after the light exposure were calculated and showed that, on average, the modified building resulted in a smaller difference than the control building. The mean for the modified building was 4.2583°C, while the mean for the modified building was 5.075°C. An ANOVA was run on the data that verified the design's promise and, therefore, suggested that it deserves further investigation, perhaps on a larger scale.

**Introduction**

There is a genus of the family Termitidae native to Africa and Southeast Asia called *Macrotermes*. Within this genus are numerous different species. For the purposes of this study, the focus will be on *Macrotermes natalensis*, *Macrotermes subhyalinus*, *Macrotermes vintrialatus*, *and Macrotermes michaelseni*. These four species are found throughout northern Namibia which is in southern Africa. The leading researcher in these termites is Dr. J. Scott Turner, a professor of biology at the University of New York College of Environmental Science and Forestry. In his study "Architecture and morphogenesis in the mound of Macrotermes michaelseni (Sjöstedt) (Isoptera: Termitidae,Macrotermitinae) in northern Namibia", Turner details his research in Namibia relating to the four termite species previously mentioned (Turner, 2000). He discovered that the mounds of these Macrotermitinae are found at a density of one to four per hectare throughout southern Africa.

Within the genus of *Macrotermes*, Turner found particular interest in the mounds of the *Macrotermes michaelseni*. These mounds have unique features, distinguishing them from those of the other species. The features worth noting include the spherical space below the mound, reserved for the queen, workers, and fungus garden, and the tunnel network in the mound, responsible for promoting the circular flow of air. As a whole, these mounds behave as if they were constructed for the regulation of the colony environment, conditions such as temperature, humidity, and concentration of gases, rather than for the habitation of the termite colonies themselves. Differing from *Macrotermes michaelseni*, the mounds of the species *Macrotermes natalensis*, *Macrotermes subhyalinus*, and *Macrotermes vintrialatus* contain large circular openings at the top connected to vertical chimneys. These chimneys are the basis of the induced flow model.

In a separate study, "On the Mound of *Macrotermes michaelseni* as an Organ of Respiratory Gas Exchange", Turner further develops the idea of this species' mounds being designed to regulate the internal environment. The research conducted for this article focused primarily on the interaction between the termite mounds and the internal and external gases rather than the physical characteristics and internal structural mappings. He claims that the mound is "simply the most visible component of a structure that extends well below the ground" (Turner, 2001). Prior to this study, there was an incorrect understanding of the means of gas exchange within the mounds of the *Macrotermes michaelseni*. It was believed that the mound could be classified by the thermosiphon model. Within this model, buoyant forces are deemed responsible for the circulation of air through the nest and surface tunnels. The colonies supposedly have a high metabolic rate, capable of producing hundreds of watts, and, therefore, heat. Resultingly, air would be heated and humidified, causing it to lose density and rise to the surface.

This thermosiphon style ventilation is actually found to be completely unsubstantial, based on the data Turner collected using tracer gases to analyze the rates and patterns of gas movement within the mounds. In reality, the gas exchange of the mounds is induced by the complex interaction between the kinetic energy in the wind, the metabolic convection in the nest, and the overall architecture of the mound, tunnels, and nest within. The ventilation movements of the mound are more tidal than they are circulatory, meaning they are driven by wind speeds and directions.

According to Jeremy Smith, an editor of *The Ecologist* with a Ph.D. in geography, these termites require "a constant temperature of 30.5°C" in order to survive (2007). But the temperatures of the region in which they inhabit can vary from 1.7°C to 40°C, so the mounds the termites construct are capable of both diffusing and restoring significant quantities of heat (2007). This need for precise temperature has been studied by Judith Korb, a professor of evolutionary biology & ecology at the University of Freiburg. She determined that the need is derived from many species of Macrotermes' "ectosymbiotic relationship with basidiomycete fungi of the genus Termitomyces" (Korb, 2003). This symbiosis is maintained through the termites' capabilities to thermoregulate their mounds and produce the optimal temperature for fungus growth. Korb's research also revealed that the mounds only fluctuate less 2°C on average, despite any outside temperature fluctuations (2003).

It is the regulatory complexities within the termite mounds that inspired architect Mick Pearce while designing the Eastgate Centre, a shopping center in Harare, Zimbabwe. Pearce found particular interest in the "termites' use of the thermal capacity of the ground and the mound, and their labyrinths of ventilation tunnels", according to Environmental Health Perspectives and Massachusetts Institute of Technology writer, Richard Dahl, in his article "Cooling Concepts: Alternatives to Air Conditioning for a Warm World" (Dahl, 2013). Using the model of the termite mound as a guide, Pearce was able to design the Eastgate Centre in such a way that it operates without the usage of traditional air conditioning.

This building relies on the concept of night flushing. At night, cool air is driven through tunnels in the concrete structure, so that it can cool the concrete ceiling that absorbs heat all throughout the day. The heat absorbed during the day travels through the same tunnels by

means of fans and convection forces in the numerous chimneys found in the center of the building.

Dr. Turner, along which fellow researcher Rupert C. Soar, the Director of Freeform Construction Ltd and the Termes Trust in Namibia, and a lecturer at the University of Greenwich School of architecture and construction, argue that the Eastgate Centre is not as much like a termite mound as Pearce had perhaps thought. In their article "Beyond biomimicry: What termites can tell us about realizing the living building", the two claim that Pearce based his building on a dated conception of the inner workings of *Macrotermes* mounds (Soar and Turner, 2008). The only comparable feature between that the Eastgate Centre contains is the large stacks, resembling the large vents atop termite mounds of *Macrotermes natalensis*, *Macrotermes subhyalinus*, and *Macrotermes vintrialatus*. This portion of the building is based on the induced flow model. According to Turner and Soar, Pearce failed in his attempt to recreate the thermosiphon model, which is now rejected by most scientists in the field. In his attempt, Pearce had to turn to low capacity fans during the day and high capacity fans at night for ventilation.

But despite the difference from the original structure of termite mounds, Pearce's method proved to be ultimately successful. He was able to design the Eastgate Centre in a way that allows it to now function using merely "10% of the energy of comparably sized air-conditioned buildings in Harare" (Dahl, 2013). However, the process of dialing in on the exact thermoregulation requirements for the building took three years to reach their most optimized and efficient point. This had to do with the conditions and preferences of the occupants and the machinery within. And all that time spent and information gathered is only applicable to this specific building. Turner and Dahl speculate that some sort of living building will become the future for sustainable architecture, but, ultimately, this will also have to be something that is specific to singular buildings, and must be designed into them.

The purpose of this research is to find a simpler means to transform buildings that already exist into something that functions in a way similar to the Eastgate Centre and be capable of thermoregulation at a small fraction of the energy that it used prior. The complex elements of design worked into the Eastgate Centre make it nearly impossible to replicate the termite mound thermoregulation system in the same way for preexisting buildings. That is why an easily adaptable methodology is required in order to create an effective, yet inexpensive modification that can be applied to essentially any standing skyscraper. The new design will evaluated on the following categories: effectivity compared to Eastgate Centre and complexity of application.

Note. The extent of research conducted on termites of this genus and their mounds, while extremely thorough, is limited by a small number of researchers. This has resulted in a relatively minimal sampling of perspectives on the inner functioning of such mounds. This paper has attempted to maximize available information and include all seemingly substantiated viewpoints to construct a synthesized conception of these termites and their mounds.

**Method**

For the purposes of this research, it is necessary to construct a scaled down model of the proposed modified building to run sufficient tests to determine its effectivity. Although preferable, the utilization of a full sized building is completely impractical given the scope of this project. So instead, a small scale model will suffice as a basis to conclude upon whether or not the design is deserving of further testing or if it requires modifications.

The tests being conducted are comprised of temperature recording and analysis of the scaled modified building. This is one of the methods used by Turner in his study of termite mounds in the article "On the Mound of Macrotermes michaelseni as an Organ of Respiratory Gas Exchange". By utilizing similar methods to those conducted in mound research, the successful application of the techniques of termites can be better measured, as they have been proven to be the most successful. The temperature data from the experimental building model must be compared to that of a similarly constructed control building without any modifications. In order to accurately predict the effects of the modifications in a full sized building, the models must be exposed to directed heat, simulating the sun.

It was believed that by imitating the induced flow technique of termite mounds, a similar cooling effect could be established in preexisting buildings without any majorly intrusive renovations. The induced flow model makes use of a chimney that runs through the center of the mound, connecting to the inner tunnels, to channel hot air out. The Eastgate Centre relies on similar chimneys, serving the same purpose. This leads to the conclusion that the role of a chimney is crucial to the operation of a termite-styled thermoregulation system. Since the creation of a central chimney in buildings that have already been constructed would require a great amount of demolition and remove a major portion of the space in the building, having the chimney attached to the side of the building is a more productive alternative. Another seemingly essential component of the induced flow model in termite mounds is the ability to harness wind to force hot air to be vented out of the chimney. On a larger scale, wind becomes relatively insignificant compared to the massive size of a building. That is why the Eastgate Centre made use of fans to simulate wind and drive air through the chimney, to be expelled out the top. Fans must also be utilized for the modification of a preexisting building for the same reason. These two elements together, should be able to produce a lower internal temperature for a scaled building when compared to an equally scaled building without the modifications.

Acrylic glass, one-eighth of an inch in thickness, has been used to fabricate the models. This plastic, made out of polymethyl methacrylate acid, is beneficial as it has "exceptional weatherability, strength, clarity and versatility" (Plaskolite, 2017). This material was most fitting for this project because it allows for easy viewing of the thermometers and is relatively easy to cut. Both the experimental and control are 30cm in height and 15cm in width (with the exception of the chimney on the experimental model which adds an additional 5cm to one side) and comprised of three stories. Having three stories will provide a sufficient base of understanding of how the temperature differ from an upper to a middle to a lower level. The individual pieces of cut acrylic glass have been sealed together using

## Social Science-Based Academic Paper

1

**The Swiss Film Industry**

To what extent do Swiss filmmakers' perspectives on Hollywood's media imperialism and the cultural discount theory hinder their potential for producing international box office successes?

Word Count: 4996

**Introduction**

Despite Europe's innovative history with cinema, inspiring, and even shaping the present day Hollywood studio system, Europe's extraordinary fall from filmic grace continues to be witnessed throughout the continent. It is therefore no surprise that Switzerland, a country with a relatively young film industry, has yet to make a name for itself internationally. The prevailing literature suggests that this anomaly can be traced back to the origins of European cinema, effectively proving how a flourishing industry can transition from "economic dominance to insignificance" (Bakker 310). Economic historian Dr. Gerben Bakker accredits this transformation specifically to the period between 1890-1927, before the great influx of Hollywood films screening in Europe, and thus before Hollywood controlled the global motion picture market. Due to rising sunk costs and "suboptimal market growth", Bakker argues, it became clear that the once revolutionary European feature film and newsreel sectors had a new competitor vying for an international audience: the Hollywood studio system (Bakker 343). The subsequent "quality race" that occured (the incentive by film studios to improve production quality to increase audience size) essentially left Europe in the dark, enabling Hollywood to dismantle small national film industries, including Switzerland's, before the Swiss even had the opportunity to compete (Bakker 311). Historically, market size is key to box office gross, therefore Europe's smaller populace was handicapped from the start. In addition to market size, however, it is thought that European cinema also suffered during this quality race due to "cultural hybridization" (Bergfelder 329). Sharing a similar perspective to that of Bakker, Tim Bergfelder challenges conventional academic theory by entirely redefining European film studies, essentially questioning whether film historians should continue to describe European cinema as

one separate "supranational" entity, or instead be defined as a group of separate "national" industries (315). It becomes obvious, when investigating the plethora of individualized cinema cultures, that European productions are not a mix of many different film styles that create one distinct European style, but in fact are a "cultural hybridization" of many divided filmic voices. This realization insinuates that unlike the United States, Europe does not have a single large homogeneous market, but the exact opposite through "economic diversification" (Bergfelder 329).

Simultaneously, the classical Hollywood studio system, initially considered a "wildcat proposition", quickly rid its undesired nickname with the creation of the exhibition contract (Maltby 144). Providing a powerful symbiotic stability between distributors and exhibitors, the exhibition contract was critical in enabling American productions to reach a wider national audience by "imposing a 'play and pay' regime on exhibitors" (Maltby 144). This agreement between content creators and theaters led to Hollywood's later international success, thus initiating the 'quality race'. Marco Cucco (PhD and professor at the University of Lugano) believes that in conjunction with the exhibition contract, Hollywood's complex release process and "maximization of the theatres on the opening weekend" enables the big budget pictures to thrive ("The Promise" 228). Contrary to popular belief, it's not the Hollywood blockbuster effects that drive international box office revenue, but the opening weekend theater run. After conducting an in depth analysis on high grossing feature films (starting with Steven Spielberg's *Jaws*), Cucco concludes that "the opening weekend has become the central moment of the [film's] life-cycle" ("The Promise" 228). Unlike European distribution methods, Hollywood's theatrical release process has become distilled to a replicable methodology that, more often than

not, gains international attention. To understand this phenomenon, it is imperative to illustrate how Hollywood has historically reached global audiences to comprehend why Europe (and more specifically Switzerland) remains dismally handicapped in filmic creation.

Today, Hollywood has undoubtedly achieved unprecedented "economic dominance" as audience sizes have increased exponentially due to online media distribution platforms like Amazon, Google, and Netflix (Garon 1). With the advent of digital distribution methods, the exhibition contract has been further bolstered as the viewing experience is no longer limited to movie theaters. As living rooms become a second venue for newly released films, the result is extraordinary with "the seven largest U.S. motion picture distributors control[ing] as much as ninety percent of the U.S. domestic (and the majority of the global) box office" (Garon 1). This domination of the entertainment industry is typically described by experts like John Garon as 'media imperialism'. Media imperialism is the idea that the "content of the media in any one country [is] subject to substantial pressure from the media interests of any other [larger] country", thus resulting in a lessened national identity within smaller countries due to media homogeneity (Gasher 101). The over-concentration of media from Hollywood is thought to fall in direct line with this phenomena, and Garon believes that it could be affecting smaller countries' abilities, like Switzerland's, to produce box office successes. Professors Colin Hoskins and Rolf Mirus, however, refute the media imperialism theory and believe "cultural discount" is what makes smaller nations suffer and Hollywood thrive (500). Cultural discount is when a "feature film - rooted in one culture will have less of an appeal in other countries as viewers find it difficult to identify with it culturally" (Hoskins and Mirus 500). Paradoxically, because of Hollywood's established economic dominance, international viewers have acclimated to

"American shows and stars", thus rendering Hollywood studios unaffected by cultural discount (Hoskins and Mirus 504). Contrastly, smaller countries are very much affected by cultural discount's negative ramifications. While their domestic markets may craft films that thrive internally (as the majority of audience members identify with the cultural themes), expecting these films to thrive internationally is a completely different story. Thus, it's no wonder international distribution highly favors U.S. productions while drastically minimizing the viewership possibilities for European filmmakers (Prince 3).

When analyzing Switzerland's unique film industry, its unparalleled circumstance becomes evident. Unlike other European countries such as France and Germany (each having single homogeneous domestic markets similar to Hollywood's), Switzerland's own cultural diversity further hinders its ability to create mainstream content. Specifically, Switzerland's domestic market and populace of eight million is divided into three linguistic regions (German, French, and Italian) which, in turn, maintains a "heterogeneous composition" (Cucco, "The Borders" 154). Despite this market divide, when comparing Swiss annual film production to that of neighboring countries, researchers like Marco Cucco have found that Switzerland produces the same amount of pictures, and sometimes even more than its competitors ("The Borders" 160). That being said, Switzerland maintains low domestic box office returns and international play even with its high production rate (Cucco, "The Borders" 161). From an internal perspective, this notion is thought to be due to Swiss audiences preferring to watch films from neighboring countries (that align themselves via language) even though there is "perfect harmony in terms of the [Swiss] audiences' preferences" and its Swiss filmmaking community producing pictures (Cucco, "The Borders" 165). Cucco's research leaves one to question: does

the reason Swiss productions fail both domestically and internationally also have to do with circumstance, or is it the quality of the films themselves? Board member of the Solothurn Film Festival, Christoph Graber is unsure, however he believes, holistically, that Europe views film as the "seventh art" (874). He expands, explaining that European filmmakers, including those in Switzerland, utilize state funding to satisfy domestic audiences, and are, in fact, "trying to defend the diversity of [its] film culture" (Graber 875).

Though some scholars have analyzed the Swiss film industry from an internal perspective utilizing quantitative box office statistics, no work has been published on how external factors affect Swiss filmmakers' abilities to produce high grossing content. This paper will identify the significant reasons for the country's failure to reach international audiences by addressing Swiss filmmakers' perspectives. More personally, as a Los Angeles-born Swiss-American filmmaker currently producing content within Switzerland, I am interested in further investigating the unique opportunities for U.S. productions that utilize Swiss actors and Swiss locations. Might there be an untapped market here, both domestically and internationally, that has yet to be leveraged? Whatever the case, the lack of research in this field begs the question: to what extent do Swiss filmmakers' perspectives on Hollywood's media imperialism and the cultural discount theory hinder their potential, and perhaps their motivation, for producing international box office successes?

## Reflect

What strategy will you use to understand how to organize the literature review/ introduction of your academic paper?

How will you organize your literature review/introduction to include all the sources and evidence that you need to contextualize your inquiry in a broader context/academic conversation AND to provide effective rationale for all the choices you will have made during the inquiry process?

# Lesson 10: Big Idea 5: Team, Transform, Transmit

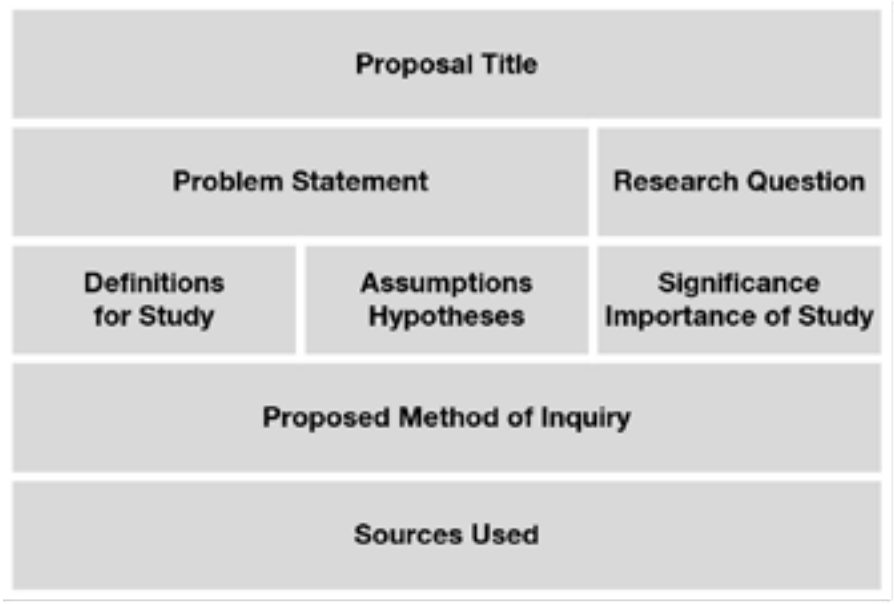
## *Presenting Where You Are on Your QUEST*

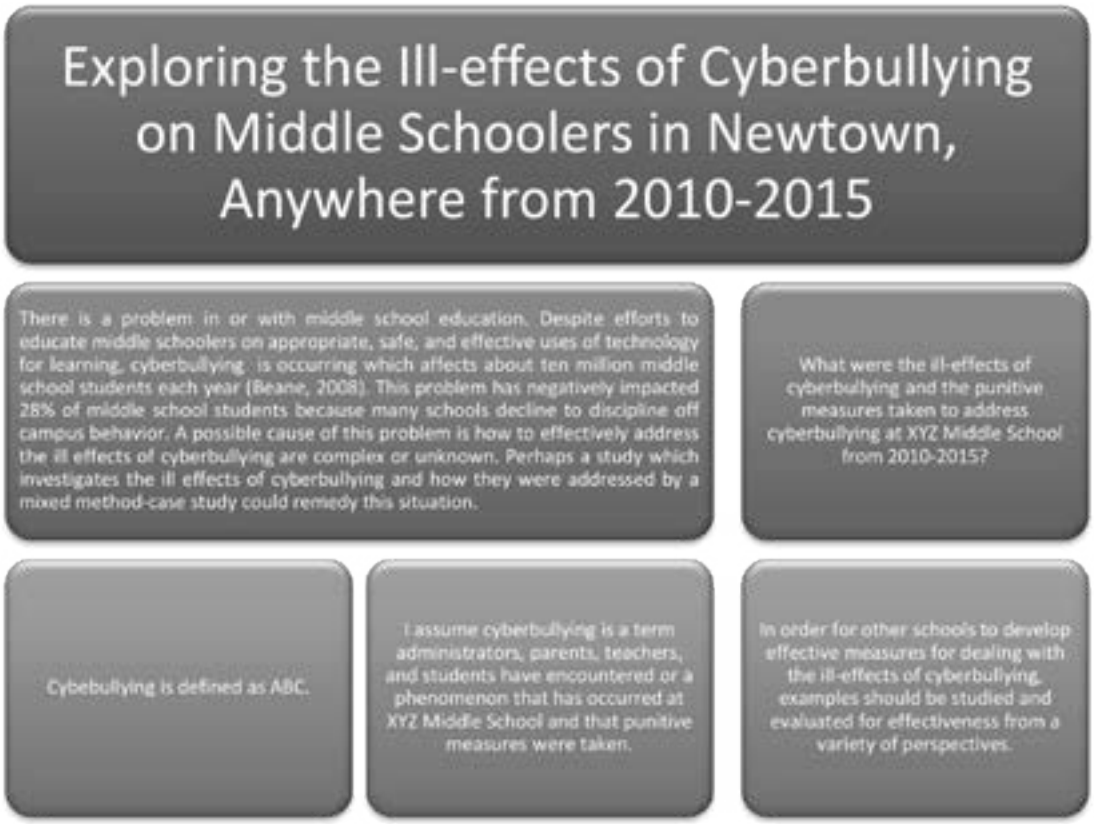
Since the presentation and oral defense comprises 25 percent of the AP Research Performance Assessment Task, it is imperative that you have multiple opportunities to strengthen your skills of distilling your research proposals to distinct, key elements throughout the year. Good ways of distilling the components of your research proposal and academic paper is through a short elevator speech and a poster presentation.

### Poster Presentation

If you only had two minutes to describe your research proposal to your teacher, administrator, or expert advisor, what would you include in your description? What would you exclude? Why?

After discussing the response to the question above, Review the poster presentation example.






I propose to do a series of in-depth interviews with administrators, teachers, parents, and students on their perspectives and attitudes on the ill-effects of cyberbullying and their understanding of the punitive measures used or put in place at XYZ Middle School to combat such effects.

Last, F. (2009). Cyberbullying effects. *Journal of Technology*, 1 (21), 45-48.

Mast, A. (2014). Don't bully me. *Journal of Middle School Teaching*, 21 (5), 105-109.

Past, B. (2012). Why are they so mean. *Journal of Educational Technology*, *3* (5), 1030-1045.

Zast, C. (2013). What to do about cyberbullying. *Edu-tech Research*, *40* (2), 123-145.

## Developing Your Poster Presentation

### Directions

1. Work with your group to transform one of your homework research questions into a poster presentation. Only include poster components that you are required to have completed by now (via the Inquiry Proposal Form).
2. The poster presentation should include any number of the components below, depending on where you are in the research process:
   a. Title of proposed research project
   b. Background/context or problem statement (if one was developed)
   c. Research question
   d. Definitions of important terms in the research question/overall project
   e. Assumptions/hypotheses
   f. Significance/importance of the study (how the study is new, valuable, fills a gap in the field of knowledge)
   g. Proposed method of inquiry (and development of associated scholarly work if anticipated)
   h. Results/findings
   i. Sources used thus far to develop the proposal/presentation
3. Be prepared to share your poster presentation with the entire group (and provide feedback) when prompted.

## Succinctly Articulating Your Proposed Inquiry: The Elevator Speech

### Directions

1. Upon completion of your poster proposal, you will have three minutes to present your poster presentation to the class using the elevator speech format adapted from Kate L. Turabian, Student's Guide to Writing College Papers, 4th ed. (Chicago: University of Chicago Press, 2010, 43).

   Imagine that you step into an elevator and find your teacher, who asks, "So, how's your research going?" What do you expect to say? You have only a couple of floors to sum up where you are. Early on, you can use this plan:

   - I am working on the problem of [state your question].
   - I think I can show that [state your hypothesis] because [state your reasons].
   - My best evidence is [summarize your evidence].

   As you learn more and your argument develops, refine your elevator story and tell it again. The more you summarize your argument in an elevator story, the sooner your paper will come together.

2. Develop the components of your elevator speech using the above description as a guideline. Determine what elements of your poster you will emphasize in your speech. Be prepared to share your poster and speech with the class.
3. When prompted, give your elevator speech while displaying your presentation. Solicit feedback from group members.

**Reflect**

How will presenting and adding to your poster presentation throughout the year strengthen your skills in developing effective research/inquiry processes and presentation skills?

# Thinking Ahead: Annotated Bibliography for Research Methods

## *Annotated Bibliography for Research Methods*

1. Review the research question you developed for homework in the previous Thinking Ahead activity. Revise if necessary according to the criteria you learned pertaining to effective research questions.
2. In preparation for your next lesson, identify three to five sources of scholarly, peer-reviewed research articles related to your research question.
3. Identify the method used to collect data and information within the three to five sources you chose.
4. Develop an annotated bibliography of these three to five sources, making sure that each annotation includes the following:
   a. Citation in format associated with the discipline of your field of study
   b. Annotation discussing the method used
   c. A statement of how feasible it would be for you to mirror or modify such a method for gathering data/information for your own research question
5. Remember that you have free access to EBSCOhost (via the Digital Portfolio) to find scholarly, peer-reviewed journals.

**Did You Know?**

There is a student website where students can search the credit and placement policies of any higher education institution. This search engine is updated routinely:
**https://apstudent.collegeboard.org/creditandplacement/search-credit-policies**

# Lesson 11: Big Idea 1: Question and Explore

## *Aligning the Inquiry Approach, Design, and Method*

Leedy and Ormrod (2010) identified articulating a distinct goal or purpose as a requirement of formal research. If a researcher is unclear as to the general purpose of the research, the researcher will be unable to identify and align a method to such a purpose. Furthermore, Willis (2007) attested to describing a study purpose as a critical component of the research process, as a researcher must be aware of whether his or her research will be inductive or deductive in nature, explain a phenomenon, or use a theory to predict the same phenomena along a different context.

*References*

Leedy, P. D., and J. E. Ormrod (2010). *Practical Research: Planning and Design*, 9th ed.

Willis, J. W. (2007). *Foundations of Qualitative Research: Interpretive and Critical Approaches*. Thousand Oaks, CA: Sage Publications.

Describe what you think is meant by the following terms as they pertain to an AP Research inquiry:

- Approach

- Design

- Method

Revise your definitions after the lesson if necessary.

**Research Methods-Quick Notes**

Overall, a research method should be communicated so that someone trying to reproduce your study would have no problem doing so. The following summarizes some thoughts on research method choice, philosophy, and communication of that method:

1. **Inductive or deductive?** Are you looking for an answer to an open-ended question? If yes, then use inductive reasoning and organization tools for your overall inquiry process. If you're looking to "test" or "prove" a hypothesis then that's more deductive. STEM papers tend to be more deductive (this doesn't mean that you can't use some induction in science, just that it tends to lean deductive).
2. **Positivism or phenomenology as your overall paradigm or philosophy?** Are you analyzing numbers and "hard" data? That's *positivism*. Are you analyzing feelings, thoughts, and emotions? Those things are harder to quantify. That's *phenomenology*. Phenomenological research is harder to communicate to scholars who tend to think in terms of numbers. It doesn't mean that phenomenological research is wrong or unnecessary, just more challenging to convince people who are looking for "proof".
3. **Exploratory or conclusive (explanatory)?** Is this research designed to open up more and more questions or affirmatively answer old ones? Both approaches are valid and needed. However, if research is exploratory, that should be communicated!
4. **Primary or secondary data?** When data is collected whether it's brand new (primary) or gathered from already-published sources (secondary), both types of data are important. A paper's method/results element doesn't have to be based on the collection and interpretation of primary data, but if it does not, it needs to really come up with a new outlook that is not found in any individual secondary source.
5. **Qualitative or quantitative?** Quantitative research analyzes the relationship between variables, hopefully using statistics to convince the reader of validity. Qualitative research looks for patterns in narratives or themes. When using quantitative data (like a survey) be careful not to avoid the thoughts and feelings of survey participants. When using qualitative data, numbers cannot help prove generalization. Be aware of that limitation.
6. **Advantages and Disadvantages?** A good research method realizes and communicates the advantages and disadvantages of the approach used. A good way to ensure validity of the method is to adapt or follow a method that has already been proven as valid by authorities in the field. Even proven methods have inherent disadvantages. An honest researcher does their best to communicate this to the audience.
7. **Sampling Choices?** If samples are taken (polls, materials, etc.) then the method needs to include a discussion of how the samples were chosen.
8. **Ethics?** No method description is done until the ethical choices of the method are communicated. Were there human subjects? If so, was IRB consulted? Is there any possibility for danger for someone attempting to reproduce the method? If so, this must be communicated for safety.

# Aligning Approach, Design, and Method in Inquiry

## Directions

1. After reviewing the different types of research approaches, designs, and general methods with your instructor, look at the Research Methods in a Nutshell table below.

Adapted from "Choosing Your Research Method in a Nutshell" (Rice & Simon, 2010)

| Research Method | Brief Description |
|---|---|
| **Action research** | Participatory - problem identification, solution, solution review |
| **Case Study research** | Observation of a specific group to determine how and why a situation exists within that group |
| **Causal-comparative research** | Identify causal relationship among variables that can't be controlled |
| **Content analysis** | Analyze text and make inferences |
| **Correlational research** | Collect data and determine level of correlation between variables |
| **Critical Incident technique** | Identification of determining incident of a critical event |
| **Delphi research** | Analysis of expert knowledge to forecast future events |
| **Descriptive research** | Study of "as is" phenomena |
| **Ethnographic** | Observation of a specific cultural group to identify patterns and trends |
| **Evaluation research** | Study the effectiveness of an intervention or program |
| **Experimental research** | Study the effect of manipulating a variable or variables |
| **Grounded Theory** | Produce a theory that explains a process based on observation |
| **Hermeneutic research** | Study the meaning of subjects/texts by concentrating on the historical meaning of the experience and its developmental and cumulative effects on the individual and society |
| **Historical research** | Historical data collection and analysis of person or organization |
| **Meta-analysis research** | Seek patterns in data collected by many existing studies and formulate principals |
| **Narrative research** | Study of a single person's experiences |
| **Needs assessment** | Systematic process of determine the needs of a defined demographic population |
| **Phenomenology** | Make sense of lived experiences of participants regarding a specified phenomenon |
| **Quasi-experimental** | Manipulation of variables in populations without benefit of random assignment or control group. |
| **Repertory grid analysis** | Interview process to determine how a person interprets the meaning of an experience |
| **Trend Analysis research** | Formulate a forecast based on regression analysis of data |
| **True Experimental research** | Structured research with isolated variables and controls |

2. After reviewing the different types of approaches, designs, methods, and data types with your teacher, use the description of the various methods from the previous page to complete the data table below by indicating the approach, design, method, and type of data typically associated with each type of inquiry process.

| Inquiry Process | Approach | Design | Method | Primary/ Secondary Data |
|---|---|---|---|---|
| | **Explore/ Explain/ Create** | **Exp/ non-exp** | **Qnt., Qlt., Mxd.** | **1, 2, both** |
| Case Study research | | | | |
| Causal-comparative research | | | | |
| Content analysis | Explore | Non-experimental | Usually qualitative | Secondary |
| Correlational research | | | | |
| Descriptive research | | | | |
| Ethnographic | | | | |
| Experimental research | | | | |
| Grounded Theory | | | | |
| Hermeneutic research | | | | |
| Historical research | | | | |
| Meta-analysis research | Explain | Experimental | Statistical, Quantitative | Secondary |
| Narrative research | | | | |
| Phenomenology | | | | |
| Quasi-experimental | | | | |
| True Experimental research | | | | |

## Check Your Alignment

### Directions

Your instructor will assign you one of the excerpts on the following pages. Use your assigned excerpt (1–4) to identify the research question, approach, design, and method. Evaluate the extent to which the excerpt presents an aligned research question, approach, design, and method. Use the questions below to guide your evaluation:

**Excerpt assigned**

1. Is the method clearly articulated? (Provide evidence.)

2. Is the method congruent/aligned with the approach inherent in the research question? (Provide rationale.)

3. Is the design aligned to the research question, approach, and method? (Provide evidence.)

4. What if any components are not clear or are missing from the excerpt in reference to:
   a. a well-formed, focused research question;
   b. a clearly articulated method for collecting data/information to answer the research question; and
   c. an aligned approach, design, and method to the research question/purpose of the study.

**Excerpt 1**

To investigate what is the most effective way of treating ADHD in children I will compare various secondary sources of data supporting three perspectives: those who believe medication is the most effective treatment, those who think that various forms of therapy are the most effective treatment, and those who believe that the child's diet can be altered to treat the ADHD. Examples of secondary sources I will use include the National Health Service, the Child Mind Institute, and *ADDitude Magazine*. I will take into account the writer's reputation, ability to see, vested interest or bias, and his or her expertise on the subject of ADHD. I will also analyze data from scientific studies that have been carried out by psychologists or other experts. I am going to compare the soundness and validity of the arguments and the credibility of the evidence, and then reach a conclusion based on this assessment. Secondary sources will be used for practical reasons; they will save time and money and could provide access to information that would be impossible for school students to generate themselves through primary research.

**Excerpt 2**

I will be discussing the debate that exists between science and psychology against religion in terms of dream interpretation and aim to bridge the debate. For a psychological basis, I will be explaining some of the most well-known theories to get an overview of the key beliefs in dream interpretation. The report will start with the beliefs of Sigmund Freud and his theory that "dreams are disguised fulfillments of repressed wishes." I will then compare his view with Carl Jung, and finally I will discuss the view given by Dr. Allan Hobson that dreams are simply a result of signals reaching the brain during rapid eye movement sleep.

I will then contrast these psychological views against the prehistoric Shamanic view of dream interpretation and follow with the Christian belief. After looking at dreams with a traditional religious view, I hope to find links between the traditional beliefs and more contemporary beliefs. When looking at each argument, I aim to critically analyze them to see if their argument and evidence is more or less valid than the psychological beliefs. I hope that this research will help me find a common base for dream interpretation.

**Excerpt 3**

The term *success* is defined in the Collins English Dictionary (2009) as "the attainment of wealth, position, honours, or the like." I want to determine how women in the workplace define success in terms of salary and position.

I have adopted a mixed methods approach to my study. I have used official and nonofficial statistical data on gender-related pay and status as quantitative data. When interpreting these data I have to remember that the researcher has no control over how the figures were reached. I can interpret what they mean, but as the figures were created by other agencies I cannot be sure of the process through which they were created.

As my qualitative data I used autobiographical evidence from two books by two highly successful UK-based female entrepreneurs: Karren Brady and Hilary Devey. I decided to use qualitative data so I could access some views from women themselves. This is important as it strengthens the female voice within my work.

**Excerpt 4**

The story of Helen of Troy, whose ambiguous departure from Sparta with the Trojan prince Paris that led to a 10-year war and the destruction of Troy, has transcended millennia. Helen's legacy has inspired centuries' worth of works of literature, art, and film, and is repeatedly drawn upon by artists; however, despite the vast amounts of material available on Helen, the more one looks, the more variants on her story can be found. I want to examine the literary depictions of Helen's life and investigate how this Spartan queen has been represented throughout the ages, with the goal of considering Helen's role as either a victim who suffered because of the Trojan War or as the villainess who caused it, within the patriarchal society of her time.

### Reflect

- What criteria or rules will you use to determine whether or not the method you designed or chose for your research is aligned with the purpose of your question?

- Where can you look to get ideas about aligned research methods to help you choose or develop your own?

# Lesson 12: Big Idea 1: Question and Explore

## *Choosing an Inquiry Method*

Morse (2006) believed that a researcher must choose a research method that is directly aligned to the research purpose and to the nature of the constructs being observed or measured. Researchers who do not choose the appropriate research method or design may be making finite, immovable inferences when they should be using "planned insight" or adjustable inferences to obtain the necessary data (Morse, 2006, 4). Equally important, Willis (2007) highlighted that researchers should know whether to generate and test hypotheses in a controlled situation to test a theory or to gather data for the purpose of presenting a comprehensive picture of a phenomenon.

### References

Morse, J. M. (2006). Insight, inference, evidence, and verification: Creating a legitimate discipline. *International Journal of Qualitative Methods*, *5*(1), 1–7.

Willis, J. W.(2007) *Foundations of Qualitative Research: Interpretive and Critical Approaches*. Thousand Oaks, CA: Sage Publications.

Work in your table groups to engage in dialogue to form responses to the following questions:

1. What assumption or paradigm is a researcher making when they choose to engage in either qualitative or quantitative methods?

2. What are the differences in the approach to inquiry (induction versus deduction) in qualitative versus quantitative methods?

3. How is the data/information used in qualitative versus quantitative methods (testing hypotheses and theories or generating hypotheses and building theory)?

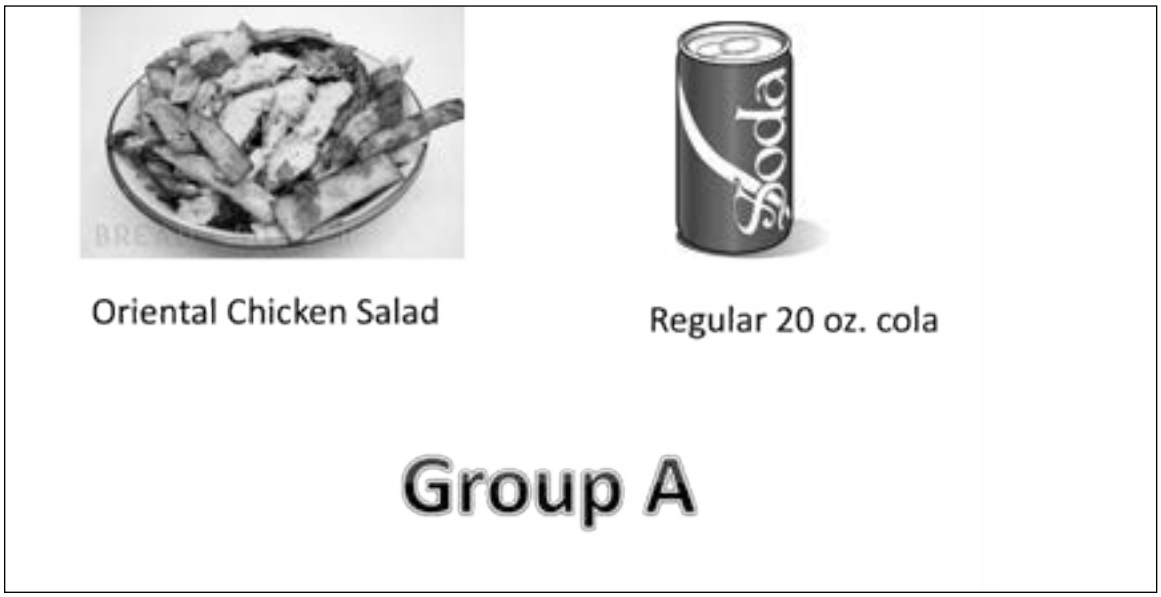
4. Why would a scholar want to implement a mixed methods (both qualitative and quantitative) approach?

## Engage in Quantitative Methods — Health Halos Experiment

### Directions

1. Your instructor will assign either picture A or picture B to you (see below):

**Health Halos Image A**



**Health Halos Image B**

Trans Fat Free package of 6 crackers

Oriental Chicken Salad


Regular 20 oz. cola

**Group B**

2. You will determine (without going online and looking it up) and write down the total calories in the meal depicted in your assigned picture.
3. Your instructor will collect the calories from each individual and determine the average calories assigned to picture A versus picture B.
4. Have a discussion with your table group to generate responses to these questions:
   a. What was the conclusion of this experiment?

   b. After reviewing the article on the actual Health Halos experiment, what do you think was the implied hypothesis of the researcher who designed this experiment (see article below for explanation of experiment)?

   c. What were the variables? How were they controlled?

d. Could the experiment be improved in anyway? (For example, should the group without the "health halo'" have had a picture of crackers without the label to make sure the label was the only variable that had the impact?)

## Health Halo Can Hide Calories

December 2, 2008

FINDINGS

Health Halo Can Hide the Calories

By John Tierney

If you're a well-informed, health-conscious New Yorker who has put on some unwanted pounds in the past year, it might not be entirely your fault. Here's a possible alibi: the health halo made you do it.

I offer this alibi after an experiment on New Yorkers that I conducted with Pierre Chandon, a Frenchman who has been studying what researchers call the American obesity paradox. Why, as Americans have paid more and more attention to eating healthily, have we kept getting fatter and fatter?

Dr. Chandon's answer, derived from laboratory experiments as well as field work at Subway and McDonald's restaurants, is that Americans have been seduced into overeating by the so-called health halo associated with certain foods and restaurants. His research made me wonder if New Yorkers were particularly vulnerable to this problem, and I asked him to help me investigate.

Our collaboration began in a nutritionally correct neighborhood, Brooklyn's Park Slope, whose celebrated food co-op has a mission statement to sell "organic, minimally processed and healthful foods." I hit the streets with two questionnaires designed by Dr. Chandon, a professor of marketing at the Insead business school in Fontainebleau, France, and Alexander Chernev, a professor of marketing at Northwestern University.

Half of the 40 people surveyed were shown pictures of a meal consisting of an Applebee's Oriental Chicken Salad and a 20-ounce cup of regular Pepsi. (You can see it for yourself at TierneyLab.) On average, they estimated that the meal contained 1,011 calories, which was a little high. The meal actually contained 934 calories — 714 from the salad and 220 from the drink.

The other half of the Park Slopers were shown the same salad and drink plus two Fortt's crackers prominently labeled "Trans Fat Free." The crackers added 100 calories to the meal, bringing it to 1,034 calories, but their presence skewed people's estimates in the opposite direction. The average estimate for the whole meal was only 835 calories — 199 calories less than the actual calorie count, and 176 calories less than the average estimate by the other group for the same meal without crackers.

Just as Dr. Chandon had predicted, the trans-fat-free label on the crackers seemed to imbue them with a health halo that magically subtracted calories from the rest of the meal. And we got an idea of the source of this halo after I tried the same experiment with tourists in Times Square.

These tourists, many of them foreigners (they kept apologizing for not knowing what Applebee's was), correctly estimated that the meal with crackers had more calories than the meal without crackers. They didn't see the crackers' health halo, Dr. Chandon said, presumably because they hadn't been exposed to the public debate that accompanied New York City's decision last year to ban trans fat from restaurants.

"It makes sense that New Yorkers would be more biased because of all the fuss in the city about trans fat," Dr. Chandon told me. "It hasn't been a big issue in most other places. Here in Europe there's been virtually no discussion of banning trans fats."

So might New York's pioneering ban on trans fats have done more harm than good? Did it encourage people to eat more calories (and other fats that some scientists argue are no less harmful)? Did people start eating French fries — hey, they're trans-fat free now! — and reward themselves with dessert? I can't pretend to know the answers after our little experiment, which hardly constitutes peer-reviewed research. But the results were statistically significant and certainly jibe with other findings by Dr. Chandon and his frequent collaborator, Brian Wansink, the director of the Cornell Food and Brand Lab.

They've found that all of us, even professional dieticians, make systematic mistakes when estimating how many calories are on a plate. Experiments showed that putting a "low fat" label on food caused everyone, especially overweight people, to underestimate its calories, to eat bigger helpings and to indulge in other foods.

The researchers found that customers at McDonald's were more accurate at estimating the calories in their meal than were customers at Subway, apparently because of the health halo created by advertisements like one showing that a Subway sandwich had a third the fat of a Big Mac. The health halo from Subway also affected what else people chose to eat, Dr. Chandon and Dr. Wansink reported last year after giving people a chance to order either a Big Mac or a 12-inch Italian sandwich from Subway. Even though the Subway sandwich had more calories than the Big Mac, the people ordering it were more likely to add a large nondiet soda and cookies to the order. So while they may have felt virtuous, they ended up with meals averaging 56 percent more calories than the meals ordered from McDonald's.

"People who eat at McDonald's know their sins," Dr. Chandon said, "but people at Subway think that a 1,000-calorie sandwich has only 500 calories." His advice is not for people to avoid Subway or low-fat snacks, but to take health halos into account.

"People need to look up calorie information, and this information needs to be clearly available on the menu or on the front of packages," Dr. Chandon said. "If no information is available, people should say to themselves: 'This restaurant or this brand claims to be healthy in general. Let's see if I can come up with two reasons why this claim would not apply to this particular food.' When we asked people to follow this 'consider the opposite' strategy, it completely eliminated health halos."

More generally, Dr. Chandon advises American consumers, food companies and public officials to spend less time obsessing about "good" versus "bad" food.

"Being French, I don't have any problem with people enjoying lots of foods," he said. "Europeans obsess less about nutrition but know what a reasonable portion size is and when they have had too much food, so they're not as biased by food and diet fads and are healthier. Too many Americans believe that to lose weight, what you eat matters more than how much you eat. It's the country where people are the best informed about food and enjoy it the least."

# Engage in Qualitative Methods: Field Observations and Interviews

## Directions

### Field Observations

1. Go to the window and make observations for five minutes (your instructor may assign a different place for you to make observations).
2. While you are making observations, think about why you are choosing to observe what you are observing and determine the question you are trying to answer with the observations you are making.
3. Record your question, observations, and rationale for observations made.

### Interviews

1. After your field observations, pair up with another participant (not at your table) and interview each other about the questions you formulated while making your observations.
2. Ask each other why you formulated that specific question.
3. Ask each other what you think the question you chose and observations you made reveal about your biases and situatedness.
4. Ask each other to what extent you are uncomfortable with the interview process and questions (as both the interviewee and the interviewer).
5. Be prepared to share the challenges and benefits to doing field observations versus interviews when prompted.

## Engaging in Mixed Methods

### Directions

1. In your table group, combine all the data you collected in the interview.
2. Determine a quantitative way to analyze the interview data from the entire group according to the following research question: What does this data reveal about the lived experiences of AP Research students engaging in field observations and interviews? Record your conclusions according to your analysis.

3. Determine a qualitative way to code and identify common themes with the interview data from the entire group according to the following research question: What does this data reveal about the lived experiences of AP Research students engaging in field observations and interviews? Record your conclusions according to your analysis.

4. Combine the qualitative and quantitative data to develop a theory about the lived experiences of AP Research students engaging in qualitative research methods.

5. Describe the limitations to your theory if you only used the qualitative interview data.

6. Describe the limitations to your theory if you only used the quantitative interview data.

## Engaging in Survey Research Methods

One of the most commonly used methods in AP Research is the survey method. You might think developing surveys is easy and can get you a large amounts of reliable data in a short period of time. However, the use of the survey is not always easily aligned with a research question. Further, many students fail to craft surveys in a way to get a good response rate and to even gather the right data to address their inquiry. Before deciding to engage in survey research, you must understand the importance of sampling, validity, and analysis that can transfer to other research models. This lesson gives you a protocol for asking yourself key questions to guide you toward writing an effective, basic survey.

### Directions

1. On the following pages, read over the Quick Guide to Deciding Which Survey Is Right for You and the Survey Decision Guide on your own.
2. With a partner, discuss what you understand about the two documents. Note which areas might be challenging when trying to decide whether or not to use a survey in one's research.

3. Without looking at the guides, spend 1-3 minutes writing down 3 things you learned after reading the guides. Then, work with a partner for 2 minutes to share your learnings and add to your own list any learnings your partner had that you did not have.

4. There are three student/teacher conversation scenarios on the following pages. Work in pairs, with one person playing the part of the "teacher" and one playing the part of the "student", take about 7-10 minutes to go through the assigned scenario, using the guides to help with decision making. Given the type of survey suggested for each scenario, continue the conversation through guiding questions to steer the student in that direction.
5. Once your pair has finished, get together with others from like scenarios to work in larger groups, sharing insights from their experiences using the Survey Decision Guide. Write down examples of guiding questions that could be used to help you and your fellow classmates to determine which type of survey you should use, if your research calls for such.

6. In the whole group, share insights and questions. Were there similar questions for the different scenarios? Why or why not? What issues are specific to a certain type of survey? What issues are common across surveys?

So You Wanna Use a Survey…
A Quick Guide to Deciding Which Survey Is Right For You

| Issue | Public Opinion Survey | Correlational Survey | Inventory |
|---|---|---|---|
| What is the purpose of this kind of survey? | • To measure frequency of something | • To measure how related two variables are | • To measure whether a construct exists or how the construct works |
| When should I use this survey? | • When you want to know about one broad topic (e.g., politics) that has lots of smaller issues within it.<br>• Questions are all related to the big topic.<br>• "How many?" is the main question. | • When you want to know if two variables are related.<br>• Questions will focus on both variables of interest.<br>• "How is this related to that?" is the main question. | • When you want to know whether people exhibit something (e.g., burnout) that has more than one factor to it (e.g., burnout can happen because of overwork or lack of purpose)<br>• Questions are designed to measure each aspect/factor you think makes up the bigger construct.<br>• "What is this?" is the main question. |
| What are some examples? | • Political opinion surveys<br>• Market research surveys | • Any survey that relates one item asked to another or relating responses from two surveys on different topics<br>• EX: Correlating whether people who like ice cream also believe in aliens | • Personality inventories<br>• Mental health inventories<br>• The Sorting Hat |
| How do I make sure I word my questions well? | • Avoid double-barreled questions – ask about only one issue per question.<br>• Avoid social desirability – answers about controversial or personally embarrassing issues could be inaccurate because people want to think well of themselves.<br>• Avoid jargon or "big words" – make sure people understand what you are asking.<br>• Always do pilot testing – get others to try out your questions and give you feedback. | | |
| How do I deal with sampling? | • Define your population (e.g., high school students, people who live in nursing homes, millennials, Fortnite players)<br>• Determine your sampling method (e.g., choosing every 5th person on a list, drawing names out of hats, posting to social media)<br>• Determine your acceptable response rate (more = better) | | |
| How do I know my survey is valid? | • Face validity (are my questions suitable for the topic?) – ask for expert opinions<br>• Construct Validity (do my questions capture everything about this topic?) – ask for expert opinions and/or model after other surveys<br>• Content validity (are my questions relevant?) – base the questions on a lit review | | • Criterion validity (does my survey get similar results to an established test on the same topic?) – conduct a statistical analysis for this (advanced) |
| What statistics might I perform? (list not exhaustive) | • Frequencies/percentages<br>• Margin of error | • Correlation coefficient (e.g., Pearson's r)<br>• Chi square (for categorical data)<br>• T-test (for interval data) | • Factor analysis |

Scenario 1:
Student: I think I want to use a survey for my research project this year.
Teacher: OK, what are you wanting your survey to be about?
Student: I'm thinking I want to know what people think about climate change. I'm planning on majoring in ecology, and I think we have to do something about our planet.
Teacher: Glad to hear you are choosing a topic that is interesting to you and connected to your future plans. Tell me, whose opinions are you interested in?
"People" is really general, so I'd like you to get more specific on that part.
Student: Good question…I want to know what kids my age think about some of the ideas I have to reverse climate change.
Teacher: So, it sounds like you want to know what high school students think about climate change ideas. Am I hearing you correctly?
Student: Yes, that sounds right to me!
Teacher: It also sounds like you want to survey people about what they think about your ideas instead of what they already know about climate change. Am I hearing you right?
Student: Well, kinda. I do want to know whether they know about the science, but I'm also interested in why they might have a negative attitude toward it. Teacher: Ok, that helps. You can ask questions about both in a survey – just not in the same question! You'll need separate questions about what they know about the science and what they believe or how they feel about it.

Stepping Out: At this point, what type of survey does the student want to do?
ANS: Public opinion survey

Continue the scene in a pair with one person playing the Teacher and one person playing the Student. Use the Survey Decision Guide to guide your conversation.

Scenario 2:
Student: I think I want to use a survey for my research project this year.
Teacher: OK, what are you wanting your survey to be about?
Student: I'm thinking I want to know what people think about climate change. I'm planning on majoring in ecology, and I think we have to do something about our planet.
Teacher: Glad to hear you are choosing a topic that is interesting to you and connected to your future plans. Tell me, whose opinions are you interested in?
"People" is really general, so I'd like you to get more specific on that part.
Student: Good question…I really think that kids my own age are more knowledgeable about climate change than our parents. They are just clueless!
Teacher: It would be a good idea to find out if your theories are supported by research. So, it sounds to me like you want to survey both your peers and their parents. Am I hearing you correctly?
Student: Yes, that sounds right to me!
Teacher: It also sounds like you want to survey people about what they know instead of what they believe or their attitudes about climate change. Am I hearing you right?
Student: Well, kinda. I do want to know whether they know about the science, but I'm also interested in why they might have a negative attitude toward it. Teacher: Ok, that helps. You can ask questions about both in a survey – just not in the same question! You'll need separate questions about what they know about the science and what they believe or how they feel about it.

Stepping Out: At this point, what type of survey does the student want to do?
ANS: Correlational survey. The student should be able to compare the opinions/knowledge of one group with another, making this a correlational study using a survey.

Continue the scene in a pair with one person playing the Teacher and one person playing the Student. Use the Survey Decision Guide to guide your conversation.

Scenario 3:
Student: I think I want to use a survey for my research project this year.
Teacher: OK, what are you wanting your survey to be about?
Student: I'm thinking I want to know what people think about climate change. I'm planning on majoring in ecology, and I think we have to do something about our planet.
Teacher: Glad to hear you are choosing a topic that is interesting to you and connected to your future plans. Tell me, whose opinions are you interested in?
"People" is really general, so I'd like you to get more specific on that part.
Student: Good question…I really think that people who are liberal politically care more about climate change.
Teacher: It would be a good idea to find out if your theories are supported by research. So, it sounds like you need to identify what people's political values are as well as what they think about climate change. Am I hearing you correctly?
Student: Yes, that sounds right to me!
Teacher: Ok, that helps! Sounds like you need to do some research about how to measure people's political values and what they think about climate change.

Stepping Out: At this point, what type of survey does the student want to do? ANS: Inventory survey. The student needs to be able to measure some quality of their respondents – in this case, political values. Then, they need to measure what those people think about climate change.
TIP: Doing a literature review to find publicly available published surveys can help save several steps in the research process for this type of survey. For instance, there may be a political values survey the student can use. The student could then create survey questions about climate change to add to the survey to see if a relationship exists between political values and climate change.

Continue the scene in a pair with one person playing the Teacher and one person playing the Student. Use the Survey Decision Guide to guide your conversation.

# Lesson 13: Big Idea 1: Question and Explore

## *Defending an Inquiry Method*

### Rationale and Limitations for a Chosen Method

Explaining the limitations of your research and justifying the choices you made during the inquiry process demonstrates the command you had over your research. But how do you justify why you chose a particular method (alignment, purpose, approach, design)? What challenges do you think you will have in articulating the limitations to the conclusions you can make by choosing one method over another? Whatever strategies you choose to articulate the rationale for and limitations of your choices, those strategies should result in you providing the following level of detail about your inquiry processes:

- Elaboration of rationale for proposed research design appropriateness to your study (not simply a listing and description of research designs)
- Discussion of why the selected method was chosen instead of another (why quantitative method selected instead of qualitative).
- Elaboration of why the proposed design will accomplish the study goals and why that design is the optimum choice for this specific research
- Rationale should point toward limitations of the chosen study as to what conclusions can be made.

## Articulating Reasons for Using a Method and Acknowledging the Limitations

### Directions

1. With your group, discuss and develop responses to the following questions and report your findings to the entire class:
   a. How do you justify/rationalize why you chose a particular method (alignment, purpose, approach, design)?
      i. What do rationale for choosing methods look like?
   b. What do explanations of limitations for using a particular method look like?
   c. What challenges do you think you will have in articulating the limitations to the conclusions you can make by choosing one method over another?
2. Develop a short research proposal using the required elements below. This could be made up or could come from your own work so far:

#### Inquiry Proposal

Research Question

Approach

Design

Proposed Method

Rationale for Chosen Method

Limitations of Chosen Method

3. Engage in peer review with a partner on the alignment of the above components of your inquiry process as well as the clarity of your rationale for choosing your method and limitations to choosing that method.

**Peer Review Feedback**

Provide feedback on the alignment of your partner's inquiry proposal components and effectiveness of rationale and articulation of limitations.

### Reflect

- What sources have you already found to help you develop effective rationale for the inquiry method you are choosing/developing?

- Where in your Academic Paper will you include the rationale for the method you chose as well as the limitations of using just that method over another?

# Lesson 14: Big Idea 4: Synthesize Ideas

## *Organizing and Discussing the Results of Your Method*

The results and discussion components of your academic paper must include the following information:

*Results, Product, or Findings*

- Presents the findings, evidence, results, or product.

*Discussion, Analysis, and/or Evaluation*

- Interprets the significance of the results, product, or findings;
- Explores connections to original research question/project goal.
- Discusses the implications and limitations of the research or creative work.

Remember, these academic paper components are not sections; they are components of the paper that can either be organized into sections or found throughout the paper. Each discipline is different in how such components or elements are organized in scholarly research papers. Regardless of the organization, you should evaluate the strength of these components using the academic paper rubric. As a reminder, the use of an abstract to summarize one's inquiry process and over arching conclusion is a good organizational tool, if used appropriately. Please note, the use of an abstract is not a required component of the paper nor will it be scored during the reading. If your abstract contains components that do not show up in the paper, the reader will not be able to consider such components when scoring the Academic Paper.

## Directions

As your instructor models the strategy of identifying the organizing principles of the results and discussion components of academic papers, review your assigned paper in the table below. Be prepared to fill out the Venn Diagram on the following page with the information from the other groups.

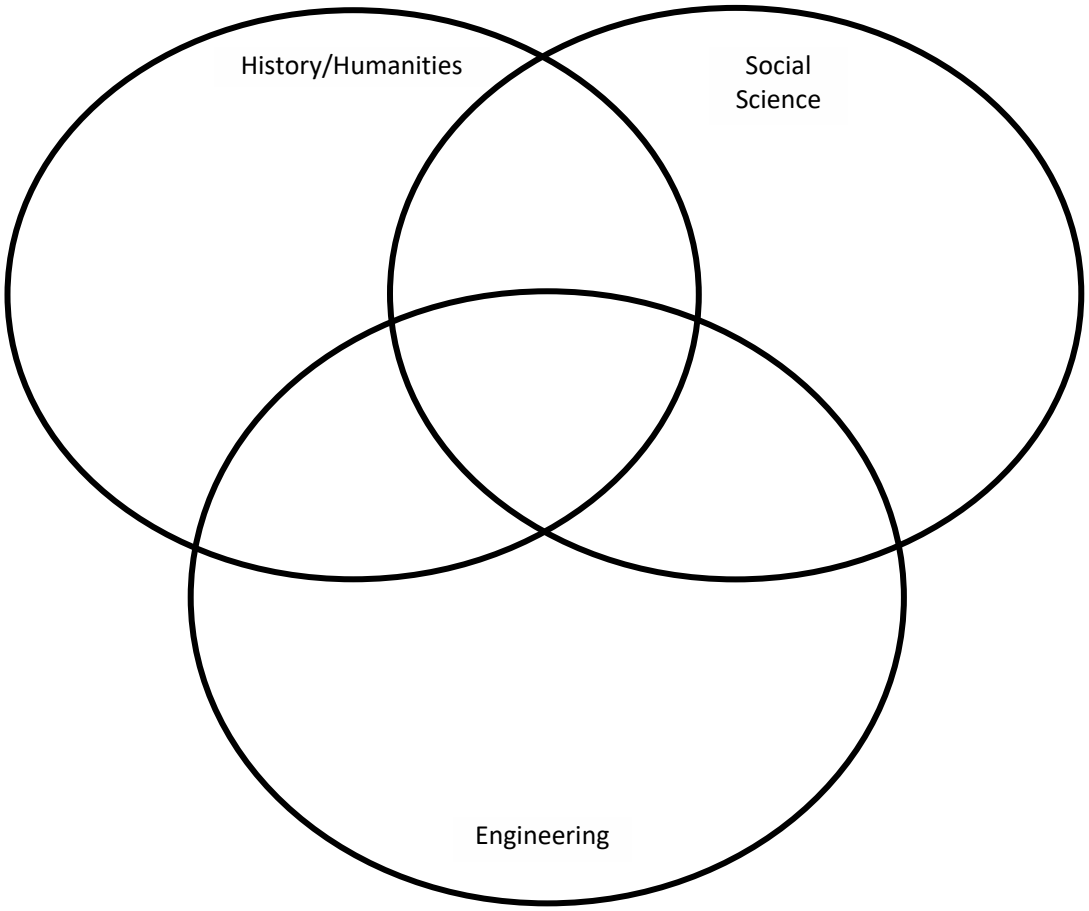
| Academic Paper Title | Discipline Associated with Academic Paper |
|---|---|
| **Cultivation, Resistance, & Beauty:** A Case Study on the Defiant Gardens of the Manzanar Internment Camp during World War II | History/Humanities |
| The Modification of Buildings Based on the Mounds of Macrotermes for the Purposes of Thermoregulation and the Elimination of the Need for Modern Air Conditioning | Science/Engineering |
| To what extent do Swiss filmmakers' perspectives on Hollywood's media imperialism and the cultural discount theory hinder their potential for producing international box office successes? | Social Science |

1. In your table group, spend 10–15 minutes reading the results and discussion components of the academic paper assigned to your group. Note the ways in which the paper is organized on the part of the Venn diagram that is designated for your assigned discipline
2. In your group, be prepared to report on how the structure of the results and discussion components of the paper meets the requirement for students to:
   - Present the findings, evidence, results, or product;
   - Interpret the significance of the results, product, or findings;
   - Explore connections to the original research question or project goal.
   - Discuss the implications and limitations of the research or creative work.
3. Record in your Venn diagram the structures of the results/findings elements of the remaining papers presented by the other groups. Discuss how the required components of the results/findings element of the academic paper appears similar and different among the other discipline-specific papers from the other groups.

**Organizing the Results & Conclusion Components of the Academic Paper**

*Comparing & Contrasting Different Reporting Approaches*

In the diagram below, identify the ways the results and discussion sections are organized. Identify the ways in which each discipline's paper is distinct from other papers where the circles do not cross and ways that are shared between or among papers where the circles cross.



**Histories/Humanities-Based Academic Paper**



including Densho Encyclopedia, museum collections, and other literature on the gardens. The primary sources underwent the same process of thematic analysis as the interviews.

**Limitations**

Before moving on to the findings discussion of the study, it is important to address the limitations in my research process and findings. The first and most significant limitation lies within my cohort. Because most of my desired cohort is over 80+ years old or already deceased, conducting the interviews myself was unfeasible. Owing to the nature of historical retrospective inquiry, I chose instead to use the ten pre-recorded interviews found on Densho. Therefore, I was unable to write the questions myself. Perhaps if I was able to conduct the interviews in person, my findings would have been free of the innate subjectivity of some of the questions asked. Another limitation regarding my cohort was the sample size. Considering the number of interviews and the average length of each segment directly speaking to the ornamental gardens (two minutes), the amount of data I was able to analyze was not lengthy. Given this limitation, I may have missed opportunities for a wider analysis. However, since very few individuals who lived in the Manzanar Camp and were connected to the gardens are still alive today, the perspectives in the interviews still offer crucial insight into the purposes of the Manzanar gardens. Lastly, there was room for human error from both the interviewees and researcher. Because the interviewees were looking back on their experiences, it is possible that they did not accurately depict camp life in the gardens. Similarly, it is possible that I transcribed part of an interview incorrectly or misinterpreted the meaning in these testimonies which could have potentially skewed my data.

## Findings

After I applied the thematic analysis to the interviews and primary sources, seven different themes emerged regarding the purposes of Japanese ornamental gardens in the Manzanar internment camp; however, five themes were repeated consistently. These five themes are: (1) Community Building and Enrichment, (2) Defiance of Environment, (3) Gaman, (4) Shikata ga nai, and (5) Boredom. Below, these five themes are defined.

Table 1: Definitions

| Theme | Definition | Number of interviews with this theme |
|---|---|---|
| Community Building and Enrichment | The effort to improve or enhance the quality of life through communal activities | 5 |
| Defiance of Environment | The attempt to beautify the camp in contrast to the barren environment | 4 |
| Gaman | Enduring what seems unbearable with dignity and grace[31] | 4 |
| Shikata ga nai | One should not concentrate on the things one cannot change[32] | 4 |
| Boredom | The abundance of unstructured time leaving the inmates to feel restless and in need of a pastime | 3 |

[31] Hirasuna, Delphine, and Kit Hinrichs. *The Art of Gaman: Arts and Crafts from the Japanese American Internment Camps*. Ten Speed Press, 2005.
[32] Iwamura, Jane Naomi. "Critical Faith: Japanese Americans and the Birth of a New Civil Religion." *Critical Faith The American Studies Association* (1997): 994

For the purposes of a robust, clear analysis and line of reasoning, these themes will not be discussed in isolation and will rather be analyzed in the context of the larger narrative of the Manzanar internment camp during WWII.

## Discussion

When the Japanese Americans were relocated to the internment camps, the community immediately faced a problem: the hazardous and poor environmental conditions. Located in the Owens Valley, California, the Manzanar land was notorious for its extreme temperatures, ruthless sun, and strong winds. When the WRA built the camps, they erased any trace of vegetation and leveled the land, "to build roads, prepare building sites, and establish agricultural fields."[33] This excavation exacerbated the conditions of Manzanar as the newly churned dust coated the lives of the internees, including their skin, food and barracks. Henry Fukuhara remembered, the "wind would come and, and it would be so bad that you could hardly walk outside, and then... the sand would come up through the cracks in the floor and would come in through the sills of the window, and it was terrible."[34] Hikoji Takeuchi added, "let's face it, Manzanar was a barren

Tamura, Anna. *Block 14 garden*. 2001. Anna Tamura Collection, Anna Tamura Collection. Manzanar Relocation Center.

[33] National Park Service. Cultural Landscape Report: Manzanar National Historic Site. Washington DC: U.S. Government Printing Office, 2006.
[34]Fukuhara, Henry, interview by John Allen, Densho Digital Repository, November 6, 2002.

desert."[35] In fact, four internees used the word "barren" to describe the initial conditions of Manzanar, emphasizing the harsh conditions they endured in their desolate, dust-coated camp.

In effort to resolve the environmental issues of the camp, the WRA launched a camp landscaping program. This advancement set the framework for all future agricultural projects to be developed over the next four years, including victory gardens, cattle ranches, block gardens, and ornamental gardens.[36] While the WRA facilitated many of the these landscaping projects, the Japanese Americans initiated the construction of ornamental gardens as a defense against the environment. Sue Kunitomi recalled that internee Henry Uenu raised a little ornamental garden outside of the mess hall, "because everybody lined up for their meals outside the mess hall and there was no shade and no place to sit, so he talked to the mess hall people… and the men in the block …." including Uenu and his friends, "decided they would build …this garden."[37] Uenu's project ultimately sought to mitigate the hot, uncomfortable conditions near the mess hall. His story, along with others, sparked a grander purpose in raising the gardens: beautifying the camp. Henry Fukuhara recalled that before the Japanese Americans began to build these gardens, "everything was just barren because there

*Adams, Adams. Mrs. Nakamura and family in park, Manzanar Relocation Center, California. Others: George Nakano, Keiko Kamahara, Fumi Tashim.* 1943. Adam Ansel Collection, Library of Congress Collection. Manzanar Relocation Center.

[35]Takeuchi, Hikoji, interview by John Allen, Densho Digital Repository, November 7, 2002.
[36] National Park Service. Cultural Landscape Report: Manzanar National Historic Site. Washington DC: U.S. Government Printing Office, 2006. 59
[37] Embrey, Sue Kunitomi, interview by John Allen, Densho Digital Repository, November 6, 2002.

were no trees there at all because, with the exception of an apple tree ... [the WRA] bulldozed everything... [the gardens] made the appearance [of the camp] more appealing and more comfortable."[38] Willie Ito added, "They tried to make it look homey. Rather than seeing nothing but sand, it [was] so nice to see greenery."[39] Most of the youth, however, had become accustomed to the barren environment. Eiichi Sakauye remembered that, "Because of the gardens [the] bumble bees and butterflies came in." He further added that he would have to explain to the kids, "*Watch out, there's a bumblebee, it'll sting you.* And then they wondered why I said that to them. And the butterfly comes along, the butterfly comes to suck the sugar from this pollen and so forth. We [told] them how the butterfly lays its egg and it pupates to a worm, and from the worm, it comes to a butterfly. And these kids were quite interested. So the kids come from all parts of the camp and come to see us... I don't think they'd been exposed to nature."[40] Essentially, Fukuhara, Ito, and Sakauye's testimonies describe the stark contrast in environment after the Japanese began building the gardens: with the garden came comfort, beauty and biodiversity. With this juxtaposition, the ornamental gardens defied the barren setup of the Manzanar internment camp. The small but highly significant changes to the landscape altered the Japanese

*Adams, Adams. Nurse Aiko Hamaguchi and patient Tom Kano. Others: George Nakano, Keiko Kamahara, Fumi Tashim. 1943.* Adam Ansel Collection, Library of Congress Collection. Manzanar Relocation Center.

[38] Fukuhara, Henry, interview by John Allen, Densho Digital Repository, November 6, 2002.
[39] Ito, Willie K. interview by Kristen Luetkemeier, Densho Digital Repository, December 5, 2013.
[40] Sakauye, Eiichi Edward, interview by Wendy Hanamura, Densho Digital Repository, May 14, 2005.

Americans perceptions toward their internment experience; they came to see beauty can be nurtured even in dust.

Even with this environmental enrichment, Japanese Americans faced an internal struggle. In the camps, the inmates sought to preserve their Japanese culture and identity, yet needed to pledge their allegiance to the WRA and, more broadly, the US. When the Japanese Americans initially settled into the internment camps, their relationships with the WRA were tense and formal. The WRA was responsible for logging the inmates' daily interactions ranging from meal plans to medical examinations. They also regulated the internees' activities and prohibited them from displaying and teaching Japanese culture (including speaking and writing in Japanese and celebrating Japanese cultural events and recreation).[41] Despite these rules, the Japanese Americans silently protested their confinment through the ornamental gardens.

In advancing their agricultural projects, the inmates defied camp regulations but unexpectedly strengthened relationships with the WRA. The nature of these formal interactions with the WRA changed as Pleasure Park, also known as Merritt Park, was built. Brothers Kuichiro and Akira Nishi along with Henry Uenu initiated the project, gathering their fellow inmates to raise the sophisticated, beautiful Japanese ornamental garden. As they embarked on their project however, they faced a problem in the planning of the garden: they did not have the resources

Adams, Adams. *Pool in Pleasure Park*. 1943. Adam Ansel Collection, Library of Congress Collection. Manzanar Relocation Center.

[41]Mizuno, Takeya. "Government Suppression of the Japanese Language in World War II Assembly Camps." *Journalism and Mass Communication Quarterly*. (2003).

needed to grow the garden, including machinery, plants, and shrubs. And so the debates and deliberation with the WRA began. Eventually, the Nishi brothers convinced the WRA to not only move forward with the project, but also fund supplies and further loosen camp rules. Henry Nishi, son of Kuichiro, recalled that when his father needed locust trees for Pleasure Park, "[the WRA] must have been given permission to go out of camp… to get locust trees because there [were] no locusts… on the property."[42] Similarly, Arthur Ogami remembered his father, "…had a crew and [the WRA] provided [a] truck for him. And he'd go out to the foothills of the mountain to pick up rocks and trees, shrubs to use in the garden".[43] As the Japanese Americans pushed the limits of their incarceration to build gardens, they found themselves rewarded with opportunities to venture out of the camp, allowing them short reprieves from their highly regulated lives. Eventually, the brothers renamed Pleasure Park to Merritt Park after WRA project director Ralph Merritt in gratitude for his help. Though the WRA still recorded and charted every aspect of the inmates lives (including the gardens), the innate nature of the interactions between the two groups changed course. As the two parties worked together, the WRA learned to trust the Japanese Americans and came to empathize with the Japanese American perspective. Though the gardens initially symbolized defiance, they ultimately functioned as an agent to soften the interactions between the WRA and internees.

While the gardens became a pathway for communication between the WRA and internees, they also forged closer relationships among the Japanese Americans. In Manzanar, sixty-percent of the Issei generation (the first generation of Japanese Americans) had worked in agriculture and landscaping businesses prior to WWII.[44] By raising the gardens, the Japanese Americans were

[42] Nishi, Henry, interview by Richard Potashin, Densho Digital Repository, January 8, 2009 .
[43] Ogami, Arthur, interview by Richard Potashin, Densho Digital Repository, March 10, 2004.
[44] National Park Service. Cultural Landscape Report: Manzanar National Historic Site. Washington DC: U.S. Government Printing Office, 2006. 46

able to reconnect with their lives before WWII as a community. Madelon Arai Yamamoto remembered that as her father dug a large ornamental pond in 1943, "he had many friends that helped, that were interested in building the pond… before I knew it they were in front of the house digging it out. And then before I knew it they arrived with the concrete, and then before I knew it there was boulders all around there."[45] Yamamoto's testimony demonstrates how the initiative of one person had a multiplier effect on the participation of those around him. George Izumi further described how the gardens were a mechanism for Japanese Americans to collectively reunite with their heritage. He recalled, "there was a fellow named… Mr. Kato, who was a rock garden specialist. He built that garden. He brought all the stone, big rocks down there, and they built a beautiful rock garden up near the hospital."[46] Similarity, Henry Fukuhara added that, "there were gardeners that knew how to make the real Japanese gardens," and taught the younger generations the practices of the Issei.[47] Henry Nishi added, "none of us had too much experience [with ornamental gardens]. We were pretty…. young. But most of our… dads were not around either because they were interned elsewhere… [we were] exposed to a lot of agriculture, ornamental agriculture."[48] Perhaps the gardens acted as a liaison between the generations so the Issei were able to pass down their expertise in traditional Japanese gardening. Yamamoto

Lange, Dorothea. *Japanese American working in garden*. 1942. Dorothea Lange Collection, National Archives. Manzanar Relocation Center.

[45] Yamamoto, Madelon Arai, interview by Richard Potashin, Densho Digital Repository, May 6, 2011.
[46] Izumi, George, interview by John Allen, Densho Digital Repository, November 6, 2002.
[47] Fukuhara, Henry, interview by John Allen, Densho Digital Repository, November 6, 2002.
[48] Nishi, Henry, interview by Richard Potashin, Densho Digital Repository, January 8, 2009 .

added, "it was a way to develop a little community."[49]

The efforts to beautify the Manzanar environment, build community, and pass down Japanese gardening techniques, however, would not have been possible without the abundance of unstructured time. In the majority of the interviews, the Japanese Americans recalled how bored they were in the camps. Madeline Yamamoto also remembered, "...even though all adults had some sort of responsibility or, quote, job, in camp, they had lots of time. No one had cars, no one could go to the movies... We had a lot of time on our hands."[50] Perhaps this is to say that without the free time in the camps, the gardens would never have been raised. Jun Ogimachi added, "Well... the people within the block were just doing them. They just... need[ed] something to do." [51] Yamamoto and Ogimachi's testimonies bring to light two important Japanese beliefs: gaman (enduring what seems unbearable with dignity and grace)[52] and shikata ga nai (not concentrating on the things one cannot change)[53]. Perhaps the gardens allowed the internees to focus on an aspect of their life which they could change, rather than dwelling on the ways their lives were regulated. George Izumi added, "So, you know, it goes to show you that if... any individual... set[s] their mind to do what they want to do, they can do it. It doesn't matter ... what it is in life."[54] Looking back on his father's garden next to the camp hospital, Arthur Ogami added, "I think the gardens expressed that just because we're here, we have to do something to refresh our feelings. I think that the gardens... express[ed] that there is hope for peace and

[49] Madelon Arai Yamamoto, Densho Digital Repository, 2011.
[50] Yamamoto, Madelon Arai, interview by Richard Potashin, Densho Digital Repository, May 6, 2011.
[51] Ogimachi, Jun, interview by Richard Potashin, Densho Digital Repository, June 3, 2010.
[52] Hirasuna, Delphine, and Kit Hinrichs. *The Art of Gaman: Arts and Crafts from the Japanese American Internment Camps*. Ten Speed Press, 2005.
[53] Iwamura, Jane Naomi. "Critical Faith: Japanese Americans and the Birth of a New Civil Religion." *Critical Faith The American Studies Association* (1997): 944
[54] Izumi, George, interview by John Allen, Densho Digital Repository, November 6, 2002.

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a hot adhesive to ensure that the system is airtight in the manner outlined in a computer drafted model made prior to construction (Fig. 1). The dimensions and specifications for the cut pieces are as follows: Seven 30cm x 15cm rectangles, eight 15cm x 15cm rectangles, three 5cm x 5cm rectangles, one 15cm x 5cm rectangle, three 10cm x 1cm rectangles, one 35cm x 15cm rectangle with two 30cm x 5cm rectangles cut from inside (forming the largest wall of the chimney), one 30cm x 15cm rectangle with three 1cm x 5cm rectangles cut from inside (forming the wall flush to the chimney).

*Figure 1. Computer-aided drawing developed using Autodesk Fusion 360 software*

Glass thermometers were placed on the inside of each level. The building models were subject to a heat lamp 35cm away, angled down at 45° below horizontal, and with the bottom of the bulb at the same height as and facing the model. After five minutes of constant exposure, the temperature was recorded from each thermometer. This was then repeated twice for a total of three trials. Then the building was rotated 45° clockwise (Fig. 2) and the temperature was recorded three times. This was repeated for a total of eight distinct positions and an overall total of 24 trials for each building.

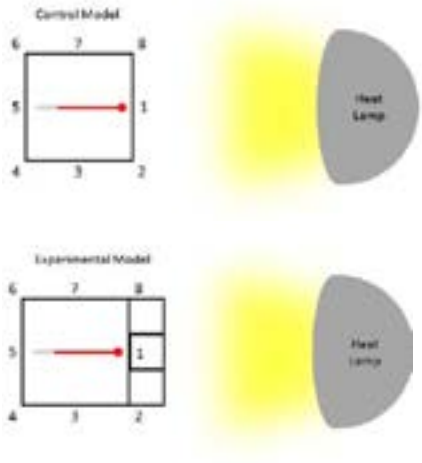


*Figure 2. Diagram showing numbering used throughout tests to identify which side is facing the heat lamp for a specific trial.*

**Results**

*Table 1. Temperature per thermometer at varying positions for control building, after five minutes of light exposure*

| | Trial 1 | | | Trial 2 | | | Trial 3 | | |
|---|---|---|---|---|---|---|---|---|---|
| Position | Thermometer A (°C) | Thermometer B (°C) | Thermometer C (°C) | Thermometer A (°C) | Thermometer B (°C) | Thermometer C (°C) | Thermometer A (°C) | Thermometer B (°C) | Thermometer C (°C) |
| 1 | 25.8 | 23.9 | 26.1 | 26.2 | 25.4 | 25.7 | 26.1 | 25.8 | 27.8 |
| 2 | 26 | 24.2 | 25.9 | 24.7 | 23.8 | 26 | 25.2 | 23.7 | 23.3 |
| 3 | 25 | 24.1 | 26.1 | 23.9 | 23.1 | 24.5 | 26 | 24.9 | 27.5 |
| 4 | 23.4 | 22.2 | 24.2 | 23.1 | 22 | 23.9 | 24.7 | 23.1 | 25.4 |
| 5 | 23.9 | 22.7 | 24 | 23.6 | 22.4 | 23.8 | 24.1 | 23.5 | 24.9 |
| 6 | 23.1 | 22.3 | 24.2 | 24 | 23.3 | 24.7 | 24.1 | 23.6 | 25.7 |
| 7 | 24 | 24 | 25.5 | 24.1 | 24.2 | 26.4 | 24.2 | 23.8 | 26.5 |
| 8 | 24.4 | 23.8 | 26.4 | 25.3 | 24.9 | 25 | 25 | 24.6 | 26.7 |

*Table 2. Temperature per thermometer at varying positions for modified building, after five minutes of light exposure*

| | Trial 1 | | | Trial 2 | | | Trial 3 | | |
|---|---|---|---|---|---|---|---|---|---|
| Position | Thermometer A (°C) | Thermometer B (°C) | Thermometer C (°C) | Thermometer A (°C) | Thermometer B (°C) | Thermometer C (°C) | Thermometer A (°C) | Thermometer B (°C) | Thermometer C (°C) |
| 1 | 26.1 | 24.5 | 25.8 | 26.5 | 26 | 26.1 | 24.9 | 25.2 | 26.2 |
| 2 | 26 | 24.5 | 24.3 | 26 | 25.5 | 25.5 | 25.5 | 25.6 | 25.7 |
| 3 | 25.5 | 25.2 | 25.6 | 26.2 | 26.3 | 26.5 | 25 | 25.7 | 26.6 |
| 4 | 24.8 | 23.9 | 24.1 | 23.9 | 23.1 | 24 | 24.4 | 23.7 | 25.1 |
| 5 | 23.9 | 23.7 | 23.5 | 24.2 | 24 | 25.3 | 23.5 | 22.8 | 22 |
| 6 | 23.8 | 23.8 | 24 | 24.3 | 24.2 | 25.1 | 23.6 | 23.5 | 25.1 |
| 7 | 24.1 | 24.1 | 24.2 | 25 | 25.5 | 26.1 | 23 | 23.1 | 24.9 |
| 8 | 25.5 | 24.3 | 24.1 | 24.3 | 25 | 24.7 | 24.1 | 23.9 | 24.5 |

Note. Thermometer lettering corresponds to the level of the building the thermometer is on with A being on the top floor, B being on the middle floor, and C being on the bottom floor.

The raw data collected from the thermometers showed no clear trends or correlations. The temperature seemed to vary relatively significantly but randomly based on the two variables shown here. During testing however, it was noticed some of the thermometers were displaying different temperatures than the 20°C when they were supposed to be at room temperature. To fix this calibration error, the actual temperatures displayed at room temperature for each thermometer were subtracted from the temperatures after the exposure, resulting in the adjusted data set.

*Table 3. Adjusted change in temperature per thermometer at varying positions for control building, after five minutes of light exposure*

| | Trial 1 | | | Trial 2 | | | Trial 3 | | |
|---|---|---|---|---|---|---|---|---|---|
| Position | Thermometer A (°C) | Thermometer B (°C) | Thermometer C (°C) | Thermometer A (°C) | Thermometer B (°C) | Thermometer C (°C) | Thermometer A (°C) | Thermometer B (°C) | Thermometer C (°C) |
| 1 | 5.966666667 | 6.466666667 | 5.466666667 | 6.366666667 | 7.966666667 | 5.766666667 | 4.766666667 | 7.166666667 | 5.866666667 |
| 2 | 5.866666667 | 6.466666667 | 3.966666667 | 5.866666667 | 7.466666667 | 5.166666667 | 5.366666667 | 7.566666667 | 5.366666667 |
| 3 | 5.366666667 | 7.166666667 | 5.266666667 | 6.066666667 | 8.266666667 | 6.166666667 | 4.866666667 | 7.666666667 | 6.266666667 |
| 4 | 4.666666667 | 5.866666667 | 3.766666667 | 3.766666667 | 5.066666667 | 3.666666667 | 4.266666667 | 5.666666667 | 4.766666667 |
| 5 | 3.766666667 | 5.666666667 | 3.166666667 | 4.066666667 | 5.966666667 | 4.966666667 | 3.366666667 | 4.766666667 | 1.666666667 |
| 6 | 3.666666667 | 5.766666667 | 3.666666667 | 4.166666667 | 6.166666667 | 4.766666667 | 3.466666667 | 5.466666667 | 4.766666667 |
| 7 | 3.966666667 | 6.066666667 | 3.866666667 | 4.866666667 | 7.466666667 | 5.766666667 | 2.866666667 | 5.066666667 | 4.566666667 |
| 8 | 5.366666667 | 6.266666667 | 3.766666667 | 4.166666667 | 6.966666667 | 4.366666667 | 3.966666667 | 5.866666667 | 4.166666667 |

*Table 4. Adjusted change in temperature per thermometer at varying positions for modified building, after five minutes of light exposure*

| | Trial 1 | | | Trial 2 | | | Trial 3 | | |
|---|---|---|---|---|---|---|---|---|---|
| Position | Thermometer A (°C) | Thermometer B (°C) | Thermometer C (°C) | Thermometer A (°C) | Thermometer B (°C) | Thermometer C (°C) | Thermometer A (°C) | Thermometer B (°C) | Thermometer C (°C) |
| 1 | 5.066666667 | 4.766666667 | 4.866666667 | 5.466666667 | 6.266666667 | 5.166666667 | 3.866666667 | 5.466666667 | 5.266666667 |
| 2 | 4.966666667 | 4.766666667 | 3.366666667 | 4.966666667 | 5.766666667 | 4.566666667 | 4.466666667 | 5.866666667 | 4.766666667 |
| 3 | 4.466666667 | 5.466666667 | 4.666666667 | 5.166666667 | 6.566666667 | 5.566666667 | 3.966666667 | 5.966666667 | 5.666666667 |
| 4 | 3.766666667 | 4.166666667 | 3.166666667 | 2.866666667 | 3.366666667 | 3.066666667 | 3.366666667 | 3.966666667 | 4.166666667 |
| 5 | 2.866666667 | 3.966666667 | 2.566666667 | 3.166666667 | 4.266666667 | 4.366666667 | 2.466666667 | 3.066666667 | 1.066666667 |
| 6 | 2.766666667 | 4.066666667 | 3.066666667 | 3.266666667 | 4.466666667 | 4.166666667 | 2.566666667 | 3.766666667 | 4.166666667 |
| 7 | 3.066666667 | 4.366666667 | 3.266666667 | 3.966666667 | 5.766666667 | 5.166666667 | 1.966666667 | 3.366666667 | 3.966666667 |
| 8 | 4.466666667 | 4.566666667 | 3.166666667 | 3.266666667 | 5.266666667 | 3.766666667 | 3.066666667 | 4.166666667 | 3.566666667 |

Note. When the measurement bias caused by the thermometers is factored out, the true effect of the modifications to the building can be determined. The data can then be categorized based on the variables of the experiment: position and thermometer location.

*Table 5. Mean change in temperature for control and modified buildings, after five minutes of light exposure, based on building position*

| Position | Control Mean (°C) | Modified Mean (°C) |
|---|---|---|
| 1 | 5.659259259 | 5.133333333 |
| 2 | 5.525925926 | 4.833333333 |
| 3 | 5.981481481 | 5.277777778 |
| 4 | 4.525925926 | 3.544444444 |
| 5 | 4.525925926 | 3.088888889 |
| 6 | 4.792592593 | 3.588888889 |
| 7 | 5.214814815 | 3.877777778 |
| 8 | 5.414814815 | 3.922222222 |

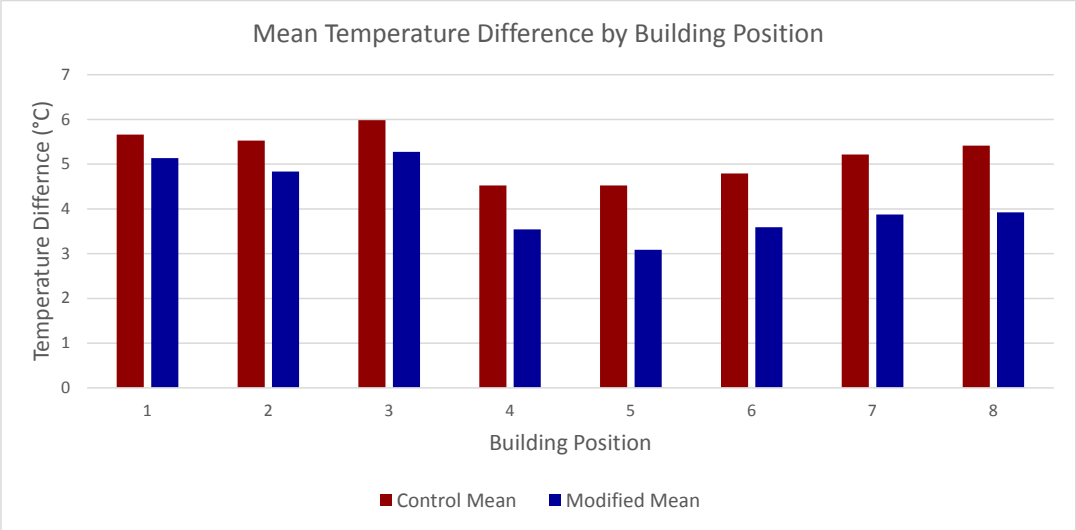


*Figure 3. Mean change in temperature for control and modified buildings, after five minutes of light exposure, based on building position*

With the exception of the statistics from position 3, the graph shows a decrease in the value of the mean temperature difference for both the control and experimental buildings from position 1 to position 5, and then an increase from position 5 to position 8. This observation is expected based on the nature of the thermometers being used to test. The relative distance between the light and the bulb of the thermometer has a noticeable effect on the temperature after light exposure. The mean temperatures at position 5 were the lowest, as the bulb was furthest away from the heat lamp at this position. The mean temperatures at position 1 were the highest (again excluding position 3), as the bulb was closest to the heat lamp at this position. The means at position 3, while not qualifying as statistical outliers, are most likely due to testing variability. It does seem out of the ordinary that both the control mean and modified mean would both be higher than expected on the same position, but there were no observable outside factors that could have led to this abnormality, so it must be due to uncontrollable variation within the testing.

*Table 6. Mean change in temperature for control and modified buildings, after five minutes of light exposure, based on thermometer location*

| Thermometer | Control Mean (°C) | Modified Mean (°C) |
|---|---|---|
| A | 4.62083333 | 3.72083333 |
| B | 6.42916667 | 4.7292 |
| C | 4.56527778 | 4.025 |

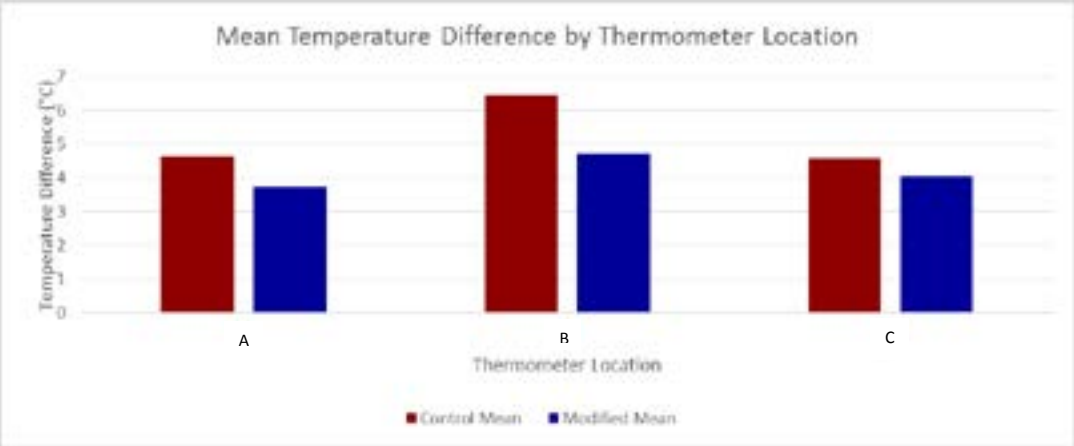


*Figure 4. Mean change in temperature for control and modified buildings, after five minutes of light exposure, based on building position*

It is clear, based on the graph of mean temperature difference and thermometer location (Fig. 4), that the thermometers in the middle of the model buildings experienced higher temperatures on average. The control building had a mean of roughly 6.429°C for temperatures recorded at thermometer B, while having significantly lower means of roughly 4.621°C and 4.565°C for thermometers A and C respectively. The modified building displayed a similar trend, just with a smaller discrepancy between the means. For thermometer B, the mean was roughly 4.729°C, while for thermometers A and C, the means were only roughly 3.721°C and 4.025°C respectively. This trend is most likely due to the height and angle of the heat lamp relative to the models. The lamp was angled such that the center of the bulb is pointing directly at the center of the middle floor of the building. This caused the thermometers in location B to receive be most affected by the lamp, explaining the previously stated trend. It would seem logical that the data from thermometer A would be consistently higher than that of thermometer C, as thermometer A, although not directly aligned with the center of the bulb like thermometer B, is the closest thermometer to the heat lamp. But this is only the case for the control mean. The modified mean for thermometer C proved to be unexpectedly higher than that of thermometer A. This result is speculatively due to the nearly undetectable heat produced by the fans. Although quantity of heat is miniscule, the close proximity between the fans and the wall of the lowest floor might have resulted in the discontinuity between the control and the modified model's trends.

*Figure 5. Photograph of control model testing apparatus with indication of light bulb direction*

*Table 7. Mean and standard deviation change in temperature for unadjusted and adjusted data of control and modified building models, after five minutes of light exposure*

| Data Set | Mean (°C) | | Standard Deviation (°C) | |
|---|---|---|---|---|
| | Control | Modified | Control | Modified |
| Unadjusted Data | 24.575 | 24.725 | 1.249873233 | 1.020321684 |
| Adjusted Data | 5.075 | 4.258333333 | 1.175518319 | 0.987805836 |

The unadjusted data set means for the entirety of the data collected showed a very slight difference between the control and modified building models, with the modified being higher. This means that the thermometers in the modified building recorded higher temperatures on average than those of the control building after being exposed to the heat lamp. The difference between these values was only 0.15°C. However, with the improper calibration of the thermometers factored out in the adjusted data set, there is a seemingly more significant difference between the means of the two models. The control model had a mean temperature difference of 5.075°C, while the modified had a mean temperature difference of 4.2583°C. The difference between these two means is much larger and more significant than that of the unadjusted data set, at 0.8167°C. The modified model also had a lower standard deviation of 1.0862°C than that of the control model, which was 1.1541°C.

*Table 8. Results of 8x2x3 factorial ANOVA to determine statistical significance*

| **Tests of Between-Subjects Effects** | | | | | |
|---|---|---|---|---|---|
| Dependent Variable: | Result | | | | |
| **Source** | **Type III Sum of Squares** | **df** | **Mean Square** | **F** | **Sig.** |
| **Corrected Model** | 154.420a | 47 | 3.286 | 5.822 | 0.000 |
| **Intercept** | 3069.164 | 1 | 3069.164 | 5438.165 | 0.000 |
| **Condition** | 30.250 | 1 | 30.250 | 53.599 | 0.000 |
| **Position** | 74.693 | 7 | 10.670 | 18.907 | 0.000 |
| **Thermometer** | 30.620 | 2 | 15.310 | 27.127 | 0.000 |
| **Condition * Position** | 8.228 | 7 | 1.175 | 2.083 | 0.053 |
| **Condition * Thermometer** | 0.732 | 2 | 0.366 | 0.648 | 0.525 |
| **Position * Thermometer** | 8.860 | 14 | 0.633 | 1.121 | 0.350 |
| **Condition * Position * Thermometer** | 1.037 | 14 | 0.074 | 0.131 | 1.000 |
| **Error** | 54.180 | 96 | 0.564 | | |
| **Total** | 3277.764 | 144 | | | |
| **Corrected Total** | 208.600 | 143 | | | |
| a. R Squared = .740 (Adjusted R Squared = .613) | | | | | |

An 8x2x3 factorial analysis of variance was run on the adjusted data set to determine if the modified building showed statistically significant differentiation from the control building. The ANOVA results showed statistically significant main effects of condition, position, and thermometer as p≤.0005 for all of these variables. However, there were no significant interaction effects.

**Conclusion**

Based on the results of the ANOVA, it can be stated that the modified building's temperature was lower than the control building's temperature and this difference was statistically significant. This means that the attempt to design a model that reduced the need for modern air conditioning in a building was successful and the original design criteria were met. The design was also relatively simple, as only minimal construction would be required to remove small portions of the outer walls and to add a chimney and fans. So based on the scope of this research, the design was successful. The extent to which the design is successful in a real-world scenario is uncertain however, as a less than one degree Celsius difference was obtained, which is not enough from a practical perspective. Modern air conditionings allow for major temperature reduction from outside conditions, so the

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recurring themes. These commonalities were subsequently broken down into their constituent anecdotes, and finally examined to determine how an individual's experience within Switzerland influenced their unique point of view. Lastly, I investigated each interviewee's anecdote as its own separate data point. This allowed me to determine why each believes that the Swiss film industry will continue to lack international box office returns and theatrical play.

With a primary focus on evaluating Swiss filmmakers' perspectives, my thematic analysis was vital in conveying and translating the narrative interviews. Because of my utilization of thematic analysis, the unfiltered anecdotes from my stratified target group was thoroughly synthesized. The end result - the impassioned belief that both media imperialism and cultural discount affect Swiss cinema - was overwhelmingly apparent.

**Results**

My interview questions focused on three main concepts: media imperialism, cultural discount and the Swiss creative mentality. My narrative interviews were divided into six underlying themes. Each theme, as well as its definition, is exhibited in the table below.

**Table 1: Defining Underlying Themes**

| Theme | Definition |
|---|---|
| Hollywood's Theatrical Presence | The perspective that Hollywood's international theatrical dominance directly results in a lack of Swiss films in Swiss theaters. Thus Swiss productions are often relegated to domestic television, never making it to the big screen. |
| Maintaining Cultural Identity | In response to Hollywood's media imperialism, many industry professionals attribute Swiss cinema's inability to reach international audiences to the notion that filmmakers wish to maintain a deeply rooted Swiss cultural identity at the heart of their pictures. This is the producing of locally |

| | |
|---|---|
| | relevant stories in an attempt to preserve Swiss culture and history. |
| Inferior Content | The films created within Switzerland lack originality, imaginative story concepts, and substantive quality. This is the belief that inferior content will never compete with superior content. |
| Lack of Risk Taking | The idea that Swiss filmmakers continuously doubt their ability to produce content that will be appreciated internationally. Thus, no creative risks are taken. Instead, uninspired, domestic films are made to appeal to multi-generational Swiss audiences. |
| Conservative Funding Agencies | The perspective that Swiss filmmakers are not at fault for creating derivative, nationally relevant, and internationally irrelevant stories. What's literally a very small and appointed group of Swiss individuals at conservative funding agencies (at the local and national level) are what stifle creative content. |
| Generational Divide | The perspective that the omnipresent division in Switzerland between young, ambitious digital native filmmakers and the older, more conservative Swiss filmmaking population, is what divides the entire Swiss film industry. |

The Swiss filmmakers' perspectives, summarized below, highlight the extent media imperialism and cultural discount hinder Switzerland's ability to produce international box office hits. Each interview has been divided into three sections (reflecting the three question types mentioned in the methodology) and the specific themes in responses are noted in the 'themes present' column.

**Table 2: A Summary of the Narrative Interviews**

| **Industry Professional** | **Perspectives on (1) Hollywood Media Imperialism, (2) Cultural Discount, and (3) the Swiss Mentality** | **Themes Present** |
|---|---|---|
| Director | Hollywood is disliked by conservative members of the Swiss film industry and thus older Swiss filmmakers push to maintain a Swiss style that is not similar to Hollywood pictures.<br>Swiss funding agencies are demanding and want films to be tailored to Swiss audiences by only telling Swiss stories. | Maintaining Cultural Identity<br>Conservative Funding Agencies |

| | | |
|---|---|---|
| | Younger Swiss filmmakers want to create content for a global market, but perhaps due to Hollywood's intimidation, a lack of innovative stories and imagination makes this impossible. | Inferior Content |
| Producer | Hollywood's overarching influence negatively affects Swiss cinema, making it harder for local filmmakers to get their films screened in Swiss theaters, let alone international theaters. | Hollywood's Theatrical Presence |
| | Swiss filmmakers address topics that are locally relevant, typically only screening films in the linguistic region of Switzerland it was created for. | Maintaining Cultural Identity |
| | There is no motivation for Swiss filmmakers to produce international box office successes due to a complete lack of confidence and courage. | Lack of Risk Taking |
| Writer | To differentiate from Hollywood, Swiss funding agencies have the final edit on all screenplays and push to preserve a 'Swissness' in all film projects. | Maintaining Cultural Identity |
| | It is extremely hard to secure funding from Swiss agencies while maintaining one's initial creative vision. | Conservative Funding Agencies |
| | Due to the points above, as well as a personal, creative insecurity, this writer has never contemplated writing for the international market. | Lack of Risk Taking |
| Cinematographer | Hollywood's excessive marketing techniques online (and dominance in Swiss theaters) pushes Swiss audiences away from local productions, thus making it difficult to even succeed within Switzerland. | Hollywood's Theatrical Presence |
| | Cultural discount is not relevant to young Swiss filmmakers as quality films will undoubtedly be seen. The problem is quality content isn't being produced in Switzerland. | Inferior Content |
| | Though this Cinematographer has not contemplated making an English speaking film for the global market, he believes that his younger Swiss generation is more ambitious than the older generation. | Generational Divide |
| Editor | Hollywood does not have a large influence on Swiss filmmakers in that Switzerland continues to produce its own | Maintaining Cultural Identity |

| | | |
|---|---|---|
| | individualized content.<br>Swiss films seem stagnant from a content standpoint (lack of VFX heavy productions and genre films) due to funding agencies demand for Swiss culture and history.<br>Most Swiss filmmakers are not looking internationally due to the fact that the Swiss industry is already a difficult market to succeed in. | Conservative Funding Agencies<br>Inferior Content |
| Actor | Switzerland is influenced by Hollywood because its theatrical dominance pushes Swiss filmmakers to preserve cultural identity by creating pictures specifically for a Swiss audience on Swiss topics.<br>Swiss filmmakers make and remake iconic Swiss films (like Heidi) which are only relevant to a domestic market.<br>In attempt to preserve deep rooted traditions and a fear of risk taking, inauthentic content is produced. | Hollywood's Theatrical Presence<br>Maintaining Cultural Identity<br>Maintaining Cultural Identity |

**External Perspective**

| | | |
|---|---|---|
| Actress | Small Swiss films don't land in theaters due to overbearing Hollywood influence. This is also witnessed by other European countries that shy away from producing mainstream content.<br>The divided domestic market within Switzerland defines the creativity of projects and the amount of cultural identity in films.<br>Though Swiss risk takers can actually be found, there is no goal of going abroad due to the lack of financing. | Hollywood's Theatrical Presence<br>Maintaining Cultural Identity<br>Conservative Funding Agencies |

In sum, the table above compresses the narrative interviews into the main perspectives held by the Swiss industry professionals. By noting the three most prevalent themes, I was able to evaluate the extent in which external Hollywood's media imperialism and cultural discount hinder the industry professional's ability to produce international box office successes.

**Analysis**

**Recurring Theme 1: Maintaining Cultural Identity**

The recurring theme that had most prevalence amongst the Swiss industry professionals' perspectives was the idea of maintaining a sense of cultural identity in Swiss productions. This theme, as illustrated in Table 1, encapsulates the interviewees' beliefs that Swiss cinema is unable to produce international box office successes due the filmmakers' desire to maintain Swiss cultural identity at the heart of each picture. Of the seven interviews, six industry professionals believed this notion significantly stifled their ability to create high grossing content for an international market.

Truly highlighting this point of view, the Swiss producer stated that "people here believe that they are more likely to be funded by local and national authorities if they address topics that are locally relevant, and this local relevance is often internationally irrelevant". Because Swiss filmmakers are pressured by financial circumstance, they feel forced to tell Swiss stories that are only appreciated by Swiss audiences, hence maintaining cultural identity. Because the vast majority of international audiences do not identify with Swiss culture, the vast majority of Swiss productions receive little, if any, international play. This concept underscores the very essence of the cultural discount theory. The Swiss actor also shared a similar perspective, and he accredits his thoughts to Hollywood's overbearing influence and control of the European market. The actor explained that Hollywood's theatrical presence in Switzerland pushes filmmakers to preserve cultural identity by creating pictures specifically for Swiss audiences on Swiss topics. Described as a "focus on the Swissness" in film, the actor further explained that this perspective makes Swiss filmmakers create content that is only watched by the Swiss. Lastly, underscoring

cultural discount's profound effect on Swiss filmmakers, the director explained that because the older Swiss filmmakers and funders have a "hostile [attitude] towards Hollywood", they condemn people who replicate an American filmic style. Calling from past experience, the director (whose dream is to create Hollywood-inspired content) furthered his point by stating that the derogatory term "Hollywoodie" is used by traditional Swiss filmmakers when describing those who veer away from conventional Swiss storytelling. As a by-product of this antagonization, traditional Swiss filmmakers overcompensate, creating films with themes that are only locally relevant. Once again, this anecdotal evidence provides further proof that cultural discount is a significant factor in hindering Swiss filmmakers' abilities to produce international box office successes.

**Recurring Theme 2: Hollywood's Negative Swiss Theatrical Presence**

Another recurring theme that was significant in my thematic analysis was Hollywood's presence in Switzerland: how its dominance in Swiss theaters literally results in a lack of screens for Swiss films to be seen. It is this perspective that emphasizes Hollywood's control over the domestic market, that makes it exceedingly difficult for Swiss productions to see the light of day. However, it is not just Hollywood's physical presence, it's the audience demand that drives it. Simply, Swiss audiences prefer Hollywood pictures. Of the seven interviewees, five thought Hollywood's media imperialism was a major factor in thwarting Switzerland's desire and drive to reach international audiences.

The Swiss cinematographer believed that it's Hollywood's excessive marketing techniques online that push audiences away from local productions. He explained that he has to

"force [himself] to search out and watch films from Europe" because they are simply hard to find. The cinematographer furthered his perspective by describing how "the American movies are everywhere", both online and in theaters, and how its dominance over the Swiss market allows international pictures to thrive and local productions to fail. Reiterating this shared perspective and highlighting media imperialism's prominence, the Swiss producer explained that Hollywood's influence makes it harder for local filmmakers to get their films in Swiss theaters, let alone international theaters. It's this dilemma, the producer stated, that motivates Swiss filmmakers to create films with strong cultural themes. He further illustrated his point by describing a time when he went to several high profile Zurich theaters with his original, self-funded feature film. Quite bluntly, theater manager after theater manager refused to screen his picture since it was considered a local release. The producer expressed his frustration stating, "I'm from Zurich, I grew up here, and I know I can fill the room". It's because of Hollywood's draw, its all encompassing aura of ever-present media, that makes it nearly impossible for Swiss filmmakers to succeed even within their own city walls. The actress wholeheartedly agreed. Providing a wider context, she explained that it's not only the Swiss films that fold to overbearing Hollywood influence, other European countries are also forced to make self-serving, culturally relevant content. Understandably, these domestic pictures fail in the global market. Without an audience and without revenue, there's absolutely no way to compete with Hollywood's sustained theatrical presence - a presence that claims its dominance every single week, in every single major European theater.

**Recurring Theme 3: Conservative Funding Agencies**

Lastly, the perspective that Swiss funding agencies are crucial in hindering filmmakers' abilities to produce international box office successes was a prominent and unexpected theme in my analysis. Again, this is the belief that Swiss filmmakers are not at fault for creating internationally irrelevant stories, but instead, it's the work of a select group of appointed individuals at conservative funding agencies. Four of the seven interviewees believed this was a critical factor, and the astonishing anecdotes these professionals utilized to support their views were pointed.

Vocalized with deep emotion, the Swiss writer explained how tricky it is to receive funding from agencies while maintaining one's initial creative vision because they "always have the last word". When funding is received, it is typically after many screenplay rewrites and creative 'fixes' by the agency. These required changes are often made to instill cultural identity in projects in an effort to make films more 'digestible' for Swiss audiences. As illustrated by cultural discount, this precondition renders the picture insignificant in the global market. The writer described an anecdote about a screenplay she had written, which addressed controversial and "taboo" topics including sexual assault and abortion. The script, she dryly stated, was "deemed not interesting for Switzerland" by the funding agencies because "it was too original".

From a funding standpoint, because Switzerland has a small domestic market, it is nearly impossible to independently fund projects as it would be a doomed opportunity for any would-be investor. Thus filmmakers are either forced to compromise their initial creative vision, or do what the writer did and bring the script to the theater stage instead of the screen. Sharing the same point of view, the editor expanded upon this, clarifying how funding agencies continue to

propagate questionally salable content due to cultural discount. He believes it's this blatant 'dumbing-down' of original concepts by "the same 5 people [on the board of funding agencies]" with "the same opinion" that makes Swiss cinema uninspired and inferior. He concludes that because the stories become inauthentic, they do not resonate with a wide audience. This point unabashedly accentuates cultural discount's influence on Swiss filmmakers' abilities to produce for international box offices.

**Limitations**

After analyzing these themes, but before presenting my conclusion, it is imperative to address potential variables that may have skewed my results. Though my stratified sampling methodology was effective in proportionally representing a cross section of the Swiss film industry, it is important to note that a small group of individuals could not possibly characterize the entire Swiss filmmaking population. In addition, though snowball sampling was also utilized, several of my interviewees were filmmakers who I had directed in past projects. One of my short films received a significant amount of international attention, so it's possible that an interviewee's response was biased due to this personal connection. Lastly, as a director who has attempted to pitch projects to Swiss funding agencies in the past, my own unconscious bias may have led to human error in accurately depicting certain perspectives.

**Conclusion**

In direct response to my research question, a variety of internal and external factors undeniably play divisive roles in hindering Swiss filmmakers' abilities to produce international

## Reflect

What strategy will you use to determine the organizing principles of the results and discussion components of your academic paper?

Page 160 has intentionally been left blank.

# Lesson 15: Big Idea 1: Question and Explore

## *Engaging in Ethical and Safe Research Practices*

### Directions

Read the excerpt below and consider your understanding of ethical research.

> Excerpt from Maschke, 2008
>
> "Ever greater numbers of us will be asked at some point in our lives to participate in a research study. We might be invited to participate in surveys and focus groups, asked to let researchers conduct studies with our tissue or medical information, or recruited for clinical trials that test whether drugs, medical devices, or biologics — like vaccines and genetic materials — are safe or effective. One company involved in recruiting human subjects estimated that the number of participants needed to fill industry-sponsored trials grew from 2.8 million in 1999 to 19.8 million in 2005. There is also a growing need for children, the elderly, and people with certain diseases to enroll in studies that test interventions targeted to those populations. The very fact that record numbers of people are being recruited for research makes thoughtful attention to how we safeguard human subjects of the utmost importance" (p. 19).

### Reference

Maschke, K. J. (2008, March/April). Human research protections: Time for regulatory reform? *The Hastings Center Report*, *38*(2), 19–22.

## Institutional Review Board (IRB)

An Institutional Review Board (IRB) is a committee of specific composition at an affiliated fair, high school or institution that reviews research plans involving human subjects to determine potential physical and/or psychological risk. The IRB reviews and approves ALL research involving human subjects before experimentation begins (including surveys, professional tests, questionnaires, and studies in which the researcher is the subject of his/her own research).

If students are performing research as a class assignment (such is the case for the AP Research course) and are engaged in interviewing, surveying, or observing human subjects, this is not classified as human research so long as it is NOT PUBLISHED. This type of research is exempt from IRB approval. However, students must still include safety measures in their method. This is nonnegotiable. If students plan on publishing their research, (involving human subjects) they must submit their proposal to an IRB for approval. See the AP Research Course and Exam Description for more information.

## What Is Ethical Research?

### Directions

As your instructor reviews the guidelines for ethical research practice, work with your groups to define the following information:

1. Ethical research practices as it pertains to the use of human subjects

2. The United States Department for Health and Human Services guidelines for ethical research practices

3. The need for IRB approval for certain inquiry methods involving human subjects

4. Inquiry methods that use human subjects, but are exempt from IRB approval and those that are not exempt

5. The need for Institutional Animal Care and Use Committee (IACUC) for research involving animals

6. What constitutes an IRB and how to engage with one or form one if necessary

7. Documents an IRB would need to approve

8. Safe research practices and risk assessment

## Checking for Ethical and Safe Research Practices

### Directions

1. Review the sample inquiry proposals on the following pages. Follow along as your instructor demonstrates how to evaluate if the ethical and safe research practices are *implied, made explicit,* or *missing* using one of the following proposals and places the information on the table.

| Proposal Title | Explicit | Implied | Missing | Should Safe/ Ethical Practices be Made Explicit (Y/N) and why | How could this proposal be IRB Exempt? |
|---|---|---|---|---|---|
| Sample 1 (Student Protests) | | | | | |
| Sample 2 (Student Athletes) | | | | | |
| Sample 3 (Ugly Food) | | | | | |

2. Complete the table above using the two additional proposals, paying attention to the guidelines below:

- Determine if the proposals should have explicit ethical and safe research practices listed in the proposal.
- Complete the table by evaluating if the ethical research practices are *implied, made explicit*, or *missing.*
- Indicate how the inquiry proposal can be made IRB exempt per the rules and guidelines provided in the lesson.
- Provide a rationale for why you believe the proposal should or should not explicitly state ethical and safe research practices.

## Inquiry Proposal: Sample 1 (Student Protests)

### Inquiry Proposal Form 1

**1. State your research question and/or project goal.**

What is the high school student perception of protesting amid global protests?

**2. Describe three key studies that have informed your understanding of the scholarly conversation surrounding your topic.**

Lugo-Ocando, J. (2015). Social media and virality in the 2014 student protests in Venezuela: Rethinking engagement and dialogue in times of imitation.

This article discusses the relationship between protests and social media in the 2014 student protests in Venezuela. It dives into whether people used it to trigger more problems or to spread awareness. The author focuses on social media as a platform for political engagement towards emotions, while also clearing up any false statements and misunderstanding in regards to rationality and irrationality among the crowd. This article is of importance because it collects a student perception of protesting amid social media and how that in itself communicates differently in the protesting community.

Jason Anastasopoulos, L. (2019). A scalable machine learning approach for measuring violent and peaceful forms of political protest participation with social media data.

This article discusses the bases of "violent protests" and how although they are rare, they do shape how political and social media movements are perceived by the public. The article states that this is likely due to the fact that violent protests receive far more media coverage than peaceful protests addressing similar causes. The purpose of this paper is to develop a practical methodology, allowing researchers and the public to build databases that can identify and measure participation in peaceful and violent political protest events from social media data. This would contribute to my research paper because I can reference this to my method section.

Brownlee, K. (2013). Civil Disobedience (Stanford Encyclopedia of Philosophy).

This article answers any questions you might've ever wondered about the act of civil disobedience and whether it is justifiable, or rather in what situation it is proposed to be. It focuses on 4 different sections. The first one being definition issues people might misunderstand and contrasts between civil disobedience and ordinary offenses and other types of dissent. Second being the analysation of two factors between the justification of civil disobedience and why they acted the way they did to why the particular choice of action. The third section examines whether people have a right to engage in civil disobedience. The fourth considers what kind of legal response to civil disobedience is appropriate.

**3. Identify the gap addressed by your proposed research, and explain how the gap is situated into the scholarly conversation. Provide sources to justify the gap your proposed research is addressing.**

High school student perception of protesting amid global protests has not been studied specifically. There have been studies delving into student activism and why they do it, but to their general understanding of a global aspect has not yet been covered and my research would contribute to that new understanding or gap.

**4. Describe your chosen or developed research method and defend its alignment with your research question.**

The chosen research method to collect the above information is a survey. A survey would allow the students to share their opinions, beliefs, etc. and more specifically their perception on protesting and if they themselves would ever participate in it.

**5. Identify additional approval processes (check all that apply):**

□ Human subjects [requires additional IRB review and approval if student wants to publish and/or publicly present]

□ Animal subjects [requires additional review or approval by school or district processes]

□ Harmful microorganisms [requires additional review or approval by school or district processes]

□ Hazardous materials [requires additional review or approval by school or district processes]

□ No additional review or approvals required.

**6. Explain how your proposed method complies with ethical research practices.**

My proposed method complies with ethical research practices because I will be asking for the students consent as well as their consent to permit me to use their answers via my research paper.

**7. Describe the data or additional scholarly work that will be generated to answer your proposed research question or achieve your project goal.**

The data that I will need to collect to generate the answer for my proposed research question will be the students perception on protesting and their views and opinions on it as well as if they'd ever participate in it and if not why. To achieve my project goal I will need sources supporting information that the students will provide for me.

**8. Describe the way you will analyze the data or additional scholarly work generated by your method and justify its alignment with your research question or project goal.**

I will analyze the data generated by my method with the results of the students. Within the multiple choice answers they choose, I will average their answers from who picked what and analyze with supporting research why they might've picked that.

**9. List any equipment, resources, and permissions needed to collect data or information. Attach the initial drafts that apply to your proposal if engaged in human subject research: informed consent forms; surveys, interview questions, questionnaires, or other data gathering forms; or letters/flyers that will be distributed to study subjects.**

I will need consent forms to collect my data from the participants. Consent forms for both participant and parent or guardian.

**10. Describe the anticipated logistical and personnel challenges for your research project (to collect and analyze data or to pursue research methods appropriate to a paper that supports performance/exhibit/product).**

The anticipated personnel challenges I might face during my research project is the student honesty and how willing they are to cooperate with answering truthfully. Logically, I might run into challenges such as not knowing how to provide enough insight or how to connect my sources so that they are able to converse.

**11. Provide a brief timeline that outlines your process from now through project completion.**

As of now, I will look into creating questions to have on my survey. Given my ability to connect their data to my research, I will have the survey be both open-ended and close-ended; allowing the student to answer freely and wholeheartedly.

**12. Discuss the anticipated value and/or broader implications of your research project.**

The anticipated value my research project holds is the importance of student perception which would rather be a new contributing factor to the whole concept of protesting. Not only that, in other countries of the world there are students protesting for their education and unjust treatment. As both are students, they share somewhat of the same mindset and thought process. This will not only be educational to the students and participants, but to anybody who might be clueless to the concept of protesting and how it's not just a form for people to express their disapproval of situation or decision made among the place they live.

**Teacher's feedback:**

**Teacher's Approval (signature):**

## Inquiry Proposal: Sample 2 (Student Athletes)

### Inquiry Proposal Form 2

**1. State your research question and/or project goal.**

To what extent are Miami Dade County high school athletes aware of the wear and tear phenomenon among their designated sport?

**2. Describe three key studies that have informed your understanding of the scholarly conversation surrounding your topic.**

Adirim, T., & Cheng, T. (2003). Overview of Injuries in the Young Athlete. Drexel University College of Medicine. Retrieved from Research Gate. Web.

This article discusses about how young athletes are exposed to early exercise, which from a standpoint, may seem like a smart idea; however, most of the professional athletes are more prone to sustain a career ending injury at an early age into their professional careers. The article also explains that the purpose of the study is to show an overview on the most common injuries present in emergency departments and doctor's offices. Most ER visits usually rise from team sports or "elite" sports (i.e. football, soccer, basketball). The article furthers into discussing how factors contribute to the stress fractures, proper coaching, proper equipment, and how to prevent further damage by managing them.

Post, E. G., Trigsted, S. M., Bell, D. R., Riekena, J. W., McGuine, T. A., Brooks, M. A., & Hetzel, S. (2017). The Association of Sport Specialization and Training Volume With Injury History in Youth Athletes. American Journal of Sports Medicine. Web.

This article discusses that the recommendations exist to encourage safe youth participation in sport. These recommendations include not specializing in 1 sport, limiting participation to less than 8 months per year, and limiting participation to fewer hours per week than a child's age. However, limited evidence exists to support or refute these recommendations. The hypothesis behind the study is the high levels of specialization will be associated with a history of injuries and especially overuse injuries, independent of age, sex, or weekly sport training hours. The results conclude that parents and youth athletes should be aware of the risks of specialization and excessive **sport** volume to maximize safe **sport** participation.

Williams, J. (1979). Wear and tear injuries in athletes--an overview. US National Library Medicine & National Institutes of Health. Web. PDF.

This article discusses about how wear and tear is applied to an athlete's body after a period past their "prime". The article furthers into the topic by analyzing the breakdown of the muscles that are in overstress because of the gaining vigorous exercise most athletes may not be aware of. In fact, most runners, athletes, or players in a professional sport may not be conscious enough to be alert as to how their body may be breaking down. After years of working and exercising, the body may start to break down due to the stress fractures that occurred during a timespan of the sport played and the time frame between the early stages in the beginning and after retirement.

**3. Identify the gap addressed by your proposed research, and explain how the gap is situated into the scholarly conversation. Provide sources to justify the gap your proposed research is addressing.**

A comprehensive database search completed for Williams and Hawkins evaluation (2001), identified only "two relevant studies involving the wear and tear in athletes" (Basen, 2016; Pell, 2019). After systematically reviewing in depth research, it was evident that there was deficient evidence persisted for the effects on the wear and tear among high school athletes in their designated sport in Miami-Dade County. Based on previous research done, this sparked a question: To what extent are Miami Dade County high school athletes aware of the wear and tear phenomenon among their designated sport? The overall

phenomenology of the wear and tear phenomenon, along with its relationship to the designated sport among high school athletes and their perception on this topic, have yet to be fully assessed. This topic is in dire need of further study and clarification, as athletes often develop season ending SRI and mental health issues due to the wear and tear phenomenon from early sports specialization and parental pressure, thus being the drive for athletes to discontinue playing sports.

**4. Describe your chosen or developed research method and defend its alignment with your research question.**

A focus group will be implemented to evaluate the awareness among high school athletes in Miami Dade County on the basis of the wear and tear phenomenon. The steps to achieving this is by: (a) a consent form will be typed and printed with the approval of the administration before distributing the forms to random participants; (b) the form will be selective on the basis of the requirements to ensure that the participant is an athlete and meets the standards to be implemented into the research; (c) the participants which qualify will be in the focus group based on the topic of inquiry.

**5. Identify additional approval processes (check all that apply):**

□ Human subjects [requires additional IRB review and approval if student wants to publish and/or publicly present]
□ Animal subjects [requires additional review or approval by school or district processes]
□ Harmful microorganisms [requires additional review or approval by school or district processes]
□ Hazardous materials [requires additional review or approval by school or district processes]
□ No additional review or approvals required.

**6. Explain how your proposed method complies with ethical research practices.**

The participants will only be assessed in their awareness (or perception) based on the topic of interest and their past experiences among the research. The responses given will be confidential and will not be shared unless given consent from the participant to include their name into the research conducted. However, if the participant(s) decide not to, it will remain anonymous. The focus group allows a selective amount of athletes to share their experiences and gather important responses that will help to strengthen the research.

**7. Describe the data or additional scholarly work that will be generated to answer your proposed research question or achieve your project goal.**

A focus group will be analyzed by a qualitative stance or through the use of transcripts and charts to indicate the new understanding of the research. The questions that will be used for the research are based on previous knowledge on their experiences of doing a sport and the injuries that they have sustained over a period of time. A survey will also take place as it will look for a given demographic(s) needed to achieve this research. The selected demographic, adolescents, is important in this field because they are the primary target for those who play sports to be involved in a team sport.

**8. Describe the way you will analyze the data or additional scholarly work generated by your method and justify its alignment with your research question or project goal.**

The focus group will be analyzed by a qualitative stance or through the use of transcripts and charts to indicate the new understanding of the research. The focus groups will be sessions of no more than 90 minutes and dates for the sessions will vary. There will be questions in which participants will need to analyze and describe their own experiences based on the number of years that they have been playing 1 sport or multiple. The data will be derived from recording devices after each session and then written down into transcripts to formulate codes and correspond them to its respective theme.

**9. List any equipment, resources, and permissions needed to collect data or information. Attach the initial drafts that apply to your proposal if engaged in human subject research: informed consent forms; surveys, interview questions, questionnaires, or other data gathering forms; or letters/flyers that will be distributed to study subjects.**

The instruments that will be used to collect data will be the consent forms and other needed paperwork necessary to conduct the research. Permission will be needed from: school administration, teachers, coaches, participant's parents, and the participant itself.

**10. Describe the anticipated logistical and personnel challenges for your research project (to collect and analyze data or to pursue research methods appropriate to a paper that supports performance/exhibit/product).**

The limitations of the research may be limited due to time constraints, not enough participants, time management, the participants may not be available for a scheduled focus group meeting. The administration may be limited to only certain areas where the focus group may be conducted; teachers from participants may not allow the selected participant to depart from class if the research is conducted during class.

**11. Provide a brief timeline that outlines your process from now through project completion.**

December/January: Begin implementing method study and finish the method section in the academic paper; begin results section and conclude literature review.

February: Gather all the data collected from the focus groups and begin deriving the transcripts into charts and graphs; conclude results and begin discussion section before March.

March: Finish the discussion section and finish the last minute requirements for the Academic Paper. Begin the powerpoint and practice before the given date.

April: FINAL discussions/thoughts/ideas before presenting and finish drafting/editing the Academic Paper before submission.

**12. Discuss the anticipated value and/or broader implications of your research project.**

The implications associated with this topic of inquiry would be if the high school perspective would be that if high school athletes in Miami Dade County are aware of the risks associated with the wear and tear phenomenon from early sports specialization that leads to parental pressure and mental health illness, the future generation can be more opt to creating new solutions to modern problems in the sports realm today.

**Teacher's feedback:**

**Teacher's Approval (signature):**

## Inquiry Proposal: Sample 3 (Ugly Food)

**Inquiry Proposal Form 3**

**1. State your research question and/or project goal.**

What is the perception of "ugly food" among hispanic high school students within Miami-Dade County?

**2. Describe three key studies that have informed your understanding of the scholarly conversation surrounding your topic.**

Gustavsson, J., Cederberg, C., Sonesson, U. (2011). Global food losses and food waste.

- The study highlights the losses occurring along the entire food chain and makes assessments of their magnitude. Further, it identifies causes of food losses and possible ways of preventing them. The results of the study suggest that roughly one-third of food produced for human consumption is lost or wasted globally, which amounts to about 1.3 billion tons per year. I can use this article in the research to support my claim that food loss is a current problem that has not been solved.

Ioniţă, I. (2017). No crumb shall be left behind. Perceptions of food waste across generations. Journal of Comparative Research in Anthropology & Sociology, 8(2), 17–42.

- This paper talks about how childhood experiences affect people's beliefs about the value of food and strategies to avoid food waste. the study is done from two groups of women living in Bucharest (born in/after 1989 vs mature in 1989). Also, that the elder group have more food saving and recycling practices.

Laakso, S. (2017). Creating New Food Practices: A Case Study on Leftover Lunch Service. Food, Culture & Society, 20(4), 631–650.

- This article uses a practice theoretical approach to study a leftover lunch service first tested in Jyväskylä in 2013. The article describes how the experiment was organized, how the service has spread around Finland, and how the leftover lunch has become a routine that outlines the course of the day of the diners. These findings are used to illustrate the insights of the service for both environmental and social sustainability, and to situate the service in the field of food waste prevention and food redistribution in Finland.

**3. Identify the gap addressed by your proposed research and explain how the gap is situated into the scholarly conversation. Provide sources to justify the gap your proposed research is addressing.**

The literature reviews the history of ugly foods, how it wastes food and the hispanic culture in food. The studies by Evans and Edwards explain the problems of ugly foods. The customs and way to view food among hispanics are explained by Paré and Aguirre. However, the literature fails to indicate Hispanic's perception of ugly foods.

**4. Describe your chosen or developed research method and defend its alignment with your research question.**

My chosen research method is the survey. The purpose of my research is to find the perception of ugly food among Hispanics. The most efficient research method therefore would be a survey because I can analyze the perception on a lot of people within a short amount of time.

**5. Identify additional approval processes (check all that apply):**

□ Human subjects [requires additional IRB review and approval if student wants to publish and/or publicly present]
□ Animal subjects [requires additional review or approval by school or district processes]
□ Harmful microorganisms [requires additional review or approval by school or district processes]
□ Hazardous materials [requires additional review or approval by school or district processes]
□ No additional review or approvals required.

**6. Explain how your proposed method complies with ethical research practices.**

My proposed research method complies with ethical research practices as I will get authorization from participants and parents of participants to use their answers in my research.

**7. Describe the data or additional scholarly work that will be generated to answer your proposed research question or achieve your project goal.**

The data that will be generated through the chosen research method will be questions from the respondents that will help in analyzing the participant's perception of ugly foods. The additional scholarly work that will be generated to answer my proposed research question is the hispanic ethnicity and culture in food, the history of ugly foods, and problems with starvation in our community.

**8. Describe the way you will analyze the data or additional scholarly work generated by your method and justify its alignment with your research question or project goal.**

The way I will analyze the data is by asking different questions about situations where it can be concluded their perception of ugly foods. (Example: do you eat bananas if they have dark spots?)

**9. List any equipment, resources, and permissions needed to collect data or information. Attach the initial drafts that apply to your proposal if engaged in human subject research: informed consent forms; surveys, interview questions, questionnaires, or other data gathering forms; or letters/flyers that will be distributed to study subjects.**

I will need to create a survey for other people that live in Miami-Dade to take. I will also need to read scholarly works to understand the history of ugly food and the hispanic culture in food. Finally, I will need the authorization from the participants to use their answers in my research project and if the participants are underage then I would need their parent's permission, too. In order to get this permission, I will need to create a contract.

**10. Describe the anticipated logistical and personnel challenges for your research project (to collect and analyze data or to pursue research methods appropriate to a paper that supports performance/exhibit/product).**

The anticipated challenges to implementing the chosen research method are how will it be possible to know if the answers are free of favorable biases or if the survey respondents are being honest in their answers

**11. Provide a brief timeline that outlines your process from now through project completion.**

December/January: finish literature review, make a survey and get participants to take the survey.
February: gather all information and write about it in the research paper.
March/April: finish paper, make PowerPoint presentation, practice for the oral presentation.

**12. Discuss the anticipated value and/or broader implications of your research project.**

My research project can be used on the area of wasted food and how perceptions change in difficulty kinds of ethnicity in people. This will help set a conversation between Hispanics living in Miami-Dade County and Ugly Foods and be the foundation for future research.

**Teacher's feedback:**

**Teacher's Approval (signature):**

### Reflect

- What additional information do you need to make sure you are acknowledging and applying safe and ethical research practices throughout your research?

- In order to receive approval for your research proposal, what must you include in your proposal form to make sure you are appropriately addressing ethical and safe research practices?

# Lesson 16: Formative Assessment and Feedback

## *The Proposal Form*

In the previous lesson, you saw three examples of the Inquiry Proposal Form (see the course and exam description for the blank form). You were reviewing those proposals for safe and ethical research practices only. In this lesson, you will use the same sample student proposals to evaluate each component for strengths and weaknesses. You will then use your own experience and what you have learned in other lessons to determine the steps you could take to improve the quality of each proposal. Remember, your teacher will be careful and cautious when approving your inquiry proposal. The teacher knows if they approve a bad question or method as a result of approving an overall inquiry proposal, your chance for success on the academic paper diminishes.

First think about some of the pitfalls you could see yourself falling into as you begin the research proposal and project.

## Introducing the Proposal Form

### Directions

1. Follow along as your teacher provides examples of feedback for guiding this student to improve some of the components of the inquiry proposal.
2. Consider what additional suggestions or questions you would have for this student for each of the components below, and provide those suggestions on the lines if warranted.

### Sample Student Proposal

1. State your research question and/or project goal.

   What is the high school student perception of protesting amid global protests?

2. Describe three key studies that have informed your understanding of the scholarly conversation surrounding your topic.

   -Lugo-Ocando, J. (2015). Social media and virality in the 2014 student protests in Venezuela: Rethinking engagement and dialogue in times of imitation.

   -Jason Anastasopoulos, L. (2019). A scalable machine learning approach for measuring violent and peaceful forms of political protest participation with social media data.

   -Brownlee, K. (2013). Civil Disobedience (*Stanford Encyclopedia of Philosophy*).

3. Identify the gap addressed by your proposed research, and explain how the gap is situated into the scholarly conversation. Provide sources to justify the gap your proposed research is addressing.

   High school student perception of protesting amid global protests has not been studied specifically. There have been studies delving into student activism and why they do it, but to their general understanding of a global aspect has not yet been covered and my research would contribute to that new understanding or gap.

4. Describe your chosen or developed research method and defend its alignment with your research question.

   The chosen research method to collect the above information is a survey. A survey would allow the students to share their opinions, beliefs, etc. and more specifically their perception on protesting and if they themselves would ever participate in it.

5. Identify additional approval processes (check all that apply):

   ☑ Human subjects [requires additional IRB review and approval if student wants to publish and/or publicly present]

   ☐ Animal subjects [requires additional review or approval by school or district processes]

   ☐ Harmful microorganisms [requires additional review or approval by school or district processes]

   ☐ Hazardous materials [requires additional review or approval by school or district processes]

   ☐ No additional review or approvals required.

6. Explain how your proposed method complies with ethical research practices.

   My proposed method complies with ethical research practices because I will be asking for the students consent as well as their consent to permit me to use their answers via my research paper.

7. Describe the data or additional scholarly work that will be generated to answer your proposed research question or achieve your project goal.

   The data that I will need to collect to generate the answer for my proposed research question will be the students perception on protesting and their views and opinions on it as well as if they'd ever participate in it and if not why. To achieve my project goal I will need sources supporting information that the students will provide for me.

## Lean on Each Other: Peer Reviewing Proposals

### Directions

1. Now let's take another look at the proposals from the previous lesson.

   Student Protests

   Student Athletes

   Ugly Food

2. For three minutes, you will read individually the proposal you were assigned and determine one of the following:

- Accept the assigned proposal as is (two thumbs up)

- Reject the proposal outright (two thumbs down)

- Conditionally accept the proposal (one thumb up, one thumb down).

- Note what the proposal does well and suggest improvements.

3. After you share your initial feedback, discuss with your group the peer-review feedback that you would provide that would guide students to strengthen their proposal.

   **NOTE:** Even if you would accept the proposal as written (two thumbs up), you can provide feedback to help the student make the proposal stronger. There is good feedback and there is bad feedback. Students should be able to do something or know their next steps based on the feedback given. A smiley face, check mark, or a "good job" is not enough information for a student to make a decision about revisions.

### Reflect

- What types of inquiry proposal form errors do you think would make your teacher completely reject your proposal form? How could you safeguard yourself against making such errors?

- In what ways could you use peer reviews before the submission of the proposal form?

# Thinking Ahead

## *Reviewing Presentations*

### Directions

1. View three or four of the presentations provided by your instructor via a series of links.
2. Identify if the presentations are strong or weak and provide rationale for your evaluation using the Presentation and Oral Defense (POD) rubric provided by your instructor.
3. Use the table below to keep track of the presentations you view. Remember to take notes as you view these presentations.
4. The presentations you watch will serve as examples for the lesson about the Presentation and Oral Defense, and your notes/rankings will be used in this lesson as well.

| Presentation Title | Strong/Weak | Rationale from the POD Rubric |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

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# Lesson 17: Big Idea 4: Synthesize Ideas

## *Moving from a Literature Review to Your Own Research*

Christensen, Johnson, and Turner (2011) described the multidimensional and cyclical nature of research as generating "more questions than it answers … [and] phenomena are multi-determined" (p. 71). If this is true, then it is imperative that researchers base their research questions and hypotheses on gaps and theories in current research as well as providing conclusions that fill such gaps and are grounded by such theories. Furthermore, if a researcher concludes variable A affects variable B, the researcher must explain why the assumption was made about the relationship between the variables based on past research. In addition, Leedy and Ormrod (2010) argue a researcher must answer the question "So what?" (p. 138). A researcher must use foresight to determine the value of performing the research and the effect of potential findings on the associated professional community. Christensen et al. (2011) proposed a researcher must ask "if the study is important enough to justify publication, …would others be interested in it, and, more important, would it influence their work" (p. 466). It's also important to consider the longevity and value of your research within your professional discipline as well as to provide implications for other researchers to build on your research.

### References

Christensen, L. B. and R. B. Johnson, and L. A. Turner (2011). *Research Methods, Design, and Analysis*, 11th ed. Boston, MA: Pearson.

Leedy, P. D., and J. E. Ormrod, (2010). *Practical Research: Planning and Design*, 9th ed. Boston, MA: Pearson.

1. Why will you not perform well on the academic paper if you simply describe, analyze, evaluate, and synthesize the knowledge base of the discipline pertaining to your inquiry topic?

2. How well will you perform on the academic paper if you engage in a debate on the pros and cons of an issue and form your own stance? Is this enough?

3. How will you demonstrate that the question you are asking and the knowledge/new understanding you are creating is new and not already known (at least in a modest way)?

## Bridging the AP Seminar Course to the AP Research Course — Revisited

### Directions

Now that you have engaged in a few lessons pertaining to the inquiry process and choices needed for AP Research, what do you think are the skills and concepts you will need to cross from the end of the AP Seminar course to the end of the AP Research course. Jot down your ideas on the planks of the bridge below:


1. After your instructor reviews with you what the body of the knowledge of the field looks like as a student interacts with it and engages in research, how would you (if at all) revise the tasks or skills it would take for a student to cross over from AP Seminar to AP Research?

2. Share out your revised bridge if called upon.

3. Work with your group to develop a series of guiding questions that you could ask each other to help you revise your work if you are engaging only in debate or a review of the literature instead of situating, gathering evidence to your own question, and creating new knowledge. Share your guiding questions with the rest of the class.

### Reflect

Using the information and choices you have made so far on your inquiry, articulate how your inquiry topic/research question differs, departs from, or builds on the knowledge of the field?

# Lesson 18: Big Idea 5: Team, Transform, Transmit

## *Performance Assessment Task — The Academic Paper*

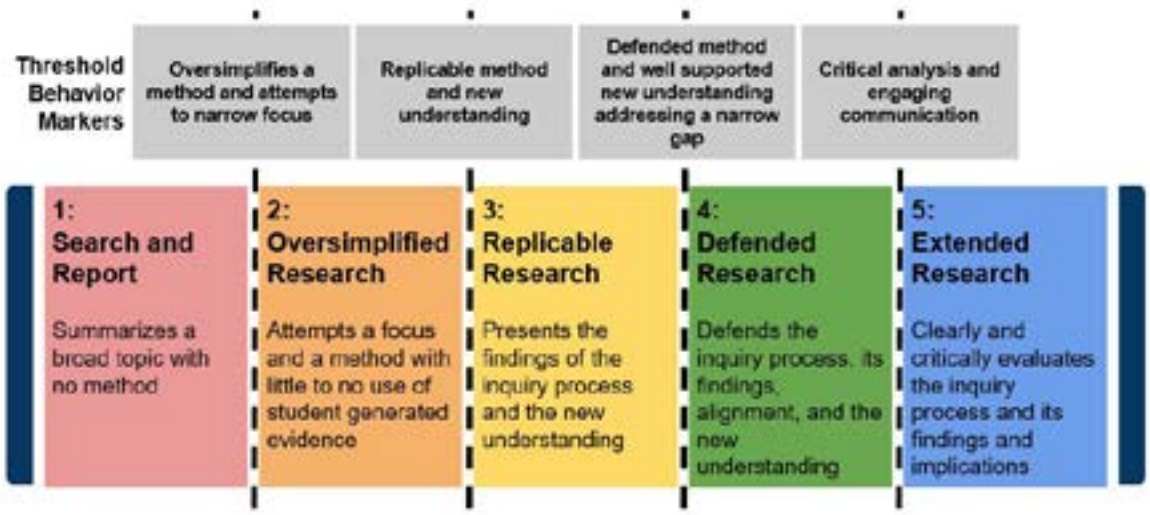
Take a moment to look at the academic paper task description and the rubric that your teacher will provide you. You can also find the academic paper task description at the link below:

**https://secure-media.collegeboard.org/digitalServices/pdf/ap/ap-research-course-and-exam-description.pdf**

Contemplate your strengths and weaknesses as a student researcher/writer and ask yourself these questions:

- How well have I been performing on lessons/tasks throughout the year to be successful on the AP Research Academic Paper?

- For which required elements of the Academic Paper am I still struggling?



## Holistic Scores and the Required Elements

### Directions

1. Review the Academic Paper rubric components that pertain to the student's chosen method or research design. What is the difference (from one column to the next) as it pertains to the student's method? You can use the rubric, the figure on the previous page, or the figure in lesson 1 of this workbook to answer this question.
2. In a student sample chosen for you to review for this lesson (via the AP Research course home page-exam tab), find the pages that contain the student's chosen method or research design.
3. Discuss with your group where the student would be in scoring levels 1-5 pertaining to this element of the rubric.
4. If this were a rough draft of your classmate's paper, what guiding questions could you ask to help this student move up an achievement level (if warranted).

## Preparing Yourself to Cross the Bridge from AP Seminar to AP Research

### Directions

1. Using the Academic Paper rubric, work with your group to read and evaluate the level of overall performance of a sample or samples given to your by your instructor (via AP Research course home page, Exam tab).
2. Using the language of the rubric, highlight evidence in the papers that illustrates what particular score point level students are demonstrating.
3. Discuss (and come to a consensus on) what overall score you think each paper represents.
4. When prompted, your group will join forces with another group to compare notes and assigned scores for each paper.
5. If disagreement persists, remind each other to hold tight to the language of the rubric and not whether or not you like the topic or the style of writing.
6. Once a consensus is reached, discuss what strategies you would use if this was your paper to revise it to move up a score point level.
7. Be prepared to share your decisions and instructional strategies with the whole group, when prompted.

## Reflect

Now that you have had the opportunity to review some sample papers produced by students who took the AP Research course, contemplate your strengths and weaknesses and ask yourself this question:

What necessary skills/tasks have I engaged in throughout the year to be successful on the academic paper?

# Lesson 19: Big Idea 5: Team, Transform, Transmit

## *Performance Assessment Task — The Presentation and Oral Defense*

After viewing the Presentation and Oral Defense (POD) rubric, reflect on the skill level you are showing at this stage of the course. Then take a moment to mentally re-situate yourself (again) in your own context. Contemplate your own strengths and weaknesses and ask yourself this question:

**For which rows of the rubric am I still struggling pertaining to the presentation and oral defense?**

In order to fully answer this question, it is necessary to revisit the task instructions in the course and exam description for the presentation and oral defense:

**https://secure-media.collegeboard.org/digitalServices/pdf/ap/ap-research-course-and-exam-description.pdf**

- Take 10 minutes to read through the task description for the Presentation and Oral Defense in the course and exam description.
- Use sticky notes to keep track of questions, comments, and/or challenges you foresee when preparing for your presentation and oral defense.
- With your group, take five minutes to discuss your questions and concerns.

## Avoiding Good Information Presented Poorly

It is often said that what you know does not matter if you cannot communicate it effectively. The challenge of an effective research presentation is to present the research in an engaging, compelling, and relevant manner to the audience. A poor presentation can quash even the best of research papers. An ability to orally deliver written work in a compelling and engaging way to an audience (who may or may not have expertise on the topic) is an extremely valuable skill set to develop.

Presenting research findings in an oral context is challenging to the most seasoned of speakers. It can be even more challenging when the presentation is based on a written report, often creating confusion as to whether one is giving a speech or giving a paper. Of course, reading the paper aloud will likely lead to an audience's boredom and confusion. Paper presentations should make points in an oral context, not a written one, and do so with precision and with the audience in mind. The three main categories where students have challenges with the POD are as follows: subdivided into three main categories: 1) Selection of presentation content with the audience in mind, 2) Organization of Content in a way that makes the student's work most accessible to the audience, and 3) Delivery of the content to their hopefully captivated audience.

### Directions

1. Reflect on your most recent Thinking Ahead assignment.

   Did the presenters make any of the following errors? Circle all those you noticed when you watched the videos.

- Disqualifying yourself by understating your credentials
- Never making eye-contact
- Not checking equipment set-up beforehand
- "Kind of" knowing your content
- Alienating your audience by communicating "at" them, not "with" them
- Rambling on or going too far off-topic with no reason
- Taking on too large a topic for a short presentation
- Contradicting themselves
- Being unprepared for the questions after the presentation

2. What weaknesses were common in some of the presentations you viewed (according to the presentation and oral defense rubric)?

3. How much practice and what type of feedback could have improved these presentations?

4. Reflect on the times you have practiced the presentation skills in AP Research in front of your peers. Reflect on the times you have already engaged in peer review. What suggestions would you give to your teacher about additional or different opportunities to engage in peer review of your paper presentation, and oral defense to be ready to submit your work as final?

## Coming to Consensus

### Directions

1. With your group, view your assigned videos from the Thinking Ahead homework assignment.
2. Identify the components found in the videos that meet row 3 for the POD rubric.
3. Come to a consensus on the performance level or points you would assign this student for this row of the rubric.
   a. What decision rules or deciding factors did your whole group use to come to a consensus on the score for row 3?
   b. What feedback would you provide use to get that student to move up a performance level with respect to row 3?
4. Next, work with your group to come to a consensus on the remaining presentations that you viewed in the Thinking Ahead activity, pertaining only to row 3.
5. Compare notes with your group about what criteria made a presentation strong versus weak.
6. Be prepared to share your criteria and to check your rankings against that of your teacher.

## Reflect

Now that you have had the opportunity to review PODs produced by students who took the AP Research course, contemplate your own strengths and weaknesses and ask yourself this question:

How have I practiced all the necessary skills throughout the year to be successful on the Presentation and Oral Defense?

# Lesson 20: Big Idea 5: Team, Transform, Transmit

## *Practice and Peer Review Makes Permanent*

It is important for you to build effective presentation skills throughout the year so that you will be ready to engage their audience and present your research work by your teacher's assigned deadline. The AP Research Course and Exam Description provides specific information about these skills:

**EK 5.1E1:** Speakers vary elements of delivery (e.g., volume, tempo, movement, eye contact, vocal variety, energy) to emphasize information, convey tone, and engage their audience.

**EK 5.1E2:** Scholars present, perform, and/or produce their work in multiple ways. This may take discipline specific forms (e.g., portfolios, exhibits, performances, showcases, premieres, posters), but may also cross disciplinary boundaries.

**EK 5.1E3:** Scholars present, perform, and/or produce their completed work after multiple revisions or rehearsals (e.g., responding to audience feedback, self-critique of recorded performance) and polishing.

**Directions**

1. Think about the best and worst presentations you have ever seen. What made them memorably good and/or bad? Be prepared to share your responses.

2. After watching the video, "Worst Presentation Ever," (shown by your teacher or you can easily find this by searching for such via the internet) have a short discussion with your group about the extent to which you anticipate making some of the same presentation errors you saw in the video. Which errors do you think will be the most prevalent?

While you are practicing and peer-reviewing, you could use a chart like the one below to record your observations of the effectiveness of presentation strategies:

| Presentation Strategy/Skill | Enhanced Message (How?) | Detracted from Message (How?) |
|---|---|---|
| Movement to emphasize information | | The presenter moved to the left and clapped their hands when they made their first point and then moved to the right and clapped when they made their second point. This was distracting. |
| Eye contact to engage audience | The presenter made a point to look at several people (even those in the back) during the presentation instead of just looking at one person in the front row. | |
| Vocal variety to convey tone | | |
| Volume to emphasize a point | | |
| Tempo to engage audience | | |

## Peer-Review Personalities

### Directions

1. Watch the video set up by your teacher pertaining to different types of peer reviewers (this can also be found by searching for the YouTube video about Peer-Review Personalities). Fill in the table below.

| Peer-Review Personalities | Major Issue Identified Here | Possible Suggestions to Remedy this Issue |
|---|---|---|
| Picky Patty | | |
| Whatever William | | |
| Social Sammy/ Off-Task Oliver | | |
| Jean the Generalizer | | |
| Mean Margaret/ Defensive Dave | | |
| Loud Larry | | |
| Pushy Paula | | |
| Speedy Sandy | | |

2. Discuss with your group which peer-review personalities you anticipate will be most common in your classroom. Determine what traits would constitute the "right" peer-review personality.

3. Work with your group to create a peer-review acronym or graphic to quickly convey appropriate and effective guidelines or tips for students using the appropriate peer-review personality traits in the classroom. Share your acronym or graphic when prompted.

## Reflect

How often (and during what times of the year) will you need opportunities for practice and peer review of presentations and peer review of papers in your AP Research class? What can you do to ensure you are providing effective feedback to your peers and are also receiving the feedback from your peers appropriately?

# Appendix

## Sample IRB Application

Project Director (Teacher):_____ Phone:_____Email Address:_____

Institution:_____ Department:_____

Project Title:_____

Student Name:_____

Project Status: New Project or Revision _____

Project Start and End Dates:_____

Where will the work be done?_____

**Project Type:** Student research (under faculty direction)

**Class:** AP Research

Does your project involve participants or individuals from any of these special/ vulnerable populations? (Check all that apply.)

❑ Children under 18 years of age

❑ Economically disadvantaged

❑ Individuals with intellectual disabilities

❑ Elderly

❑ Prisoners

❑ Individuals with physical disabilities

Subjects Research Project/Study Checklist (Check YES or NO as appropriate.)

❑ YES ❑ NO 1. Does this project or study involve collection of data that identifies individuals (e.g., cohort databases include SSN# data on individuals, surveys, or interviews identifiable by name or student number etc.)?

❑ YES ❑ NO 2. Will data identifiable by individual be shared with anyone (such as in a performance report for a funding source, conference presentations, published articles and reports, etc.)?

❑ YES ❑ NO 3. Are the participants being offered one or more of the incentives to participate (such as money, extra credit for the class, etc.)? List the incentive(s) here:

❑ YES ❑ NO 4. Is participation in this project or study voluntary for the individuals participating in the program or study?

❑ YES ❑ NO 5. Will participants be fully informed about the benefits and any risks?

❑ YES ❑ NO 6. Will participants be videotaped during the project or study?

❑ YES ❑ NO 7. Will participants' privacy and personal information be protected? Briefly explain how privacy and information will be protected:

❑ YES ❑ NO 8. Will participants be debriefed following completion of the project or study?

❑ YES ❑ NO 9. Will participants, prior to the project, indicate informed consent to participate by completing and signing a written form? Sample is included? Yes No

❑ YES ❑ NO 10. Does the funding source have any potential for financial or professional benefit from the outcome for this study or project? If yes, please explain.

❑ YES ❑ NO 11. Are data sources clearly identified (such as interviews, survey, existing project data such as services received, reports, grades, existing school records, focus group, etc.)?

Check all that apply and estimate total number of individual participants in each relevant category about whom you will be collecting data on for your project or grant:

❑ High school students Number:_____

❑ General public Number:_____

❑ Faculty Number:_____

❑ Children and Youth under 18 Number:_____

1. Abstract Describing Project and Purpose:

   Briefly describe (a) the project or study and (b) what human participants will experience during the proposed study or project. Describe all strategies or experimental methods to be used, design and program activities. Indicate what data, measures, or observations will be collected and used in the study or for the project. If any questionnaires, tests, or other instruments are to be used, include a brief description and one copy of the instruments.

2. Methodology: Specify who the project participants or research subjects will be. Indicate how they will be solicited, recruited, or contacted. Include any recruitment letters and materials with this document. State how much time will be required of each participant or subject. Describe procedures to which individuals will be subjected. Use additional pages if necessary.

3. Voluntary Participation: Specify the steps that will be taken to ensure that each individual's participation is voluntary. State what, if any, inducements will be offered for their participation.

4. Confidentiality of Data and Privacy Protection: Describe the methods to be used to safeguard the privacy of participants and ensure the confidentiality of data obtained, including plans for publication, disposition and destruction of data, including that of computer, print, videotape, and audio materials.
5. Informed Consent: Attach a copy of all consent forms to be signed by the participants and/or any statements to be read to or provided to the participant.
6. Risks to Participants: (a) Describe any potential risks to participating individuals — physical, psychological, social, legal, or other; (b) include all known and anticipated risks to the participants such as side effects, risks of placebo (inert) treatments, etc.; and (c) in research that proposes substantial risk to human participants, list emergency backup procedures that are in place such as medical or counseling interventions.
7. Benefits: (a) Describe the benefits and/or any compensation that the participating individuals can expect and (b) describe the gains in knowledge that may result from the project or research study.

8. Human Subjects Research Protection Exemption Categories: Federal law 45 CFR 46.101(b) identifies the six EXEMPT categories listed below using the language found in the legislation.

   Check all that apply to your project or study and explain why your proposed project or study falls into the category.

   a. Research conducted in established or commonly accepted educational settings, involving normal educational practices, such as (i) research on regular and special education instructional strategies, or (ii) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods. Please provide an explanation as to how your research falls into this category:

   b. Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior, unless: (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; AND (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation. Please provide an explanation as to how your research falls into this category:

c. Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior that is not exempt under paragraph (b)(2) of this section, if: (i) The human subjects are elected or appointed public officials or candidates for public office; or (ii) federal statute(s) require(s) without exception that the confidentiality of the personally identifiable information will be maintained throughout the research and thereafter.

Please provide an explanation as to how your research falls into this category:

d. Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.

Please provide an explanation as to how your research falls into this category:

e. Research and demonstration projects which are conducted by or subject to the approval of department or agency heads, and which are designed to study, evaluate, or otherwise examine: (a) public benefit or service programs; (b) procedures for obtaining benefits or services under those programs; (c) possible changes in or alternatives to those programs or procedures; or (d) possible changes in methods or levels or payment for benefits or services under those programs.

Please provide an explanation as to how your research falls into this category:

f. Taste and food quality evaluation and consumer acceptance studies, (a) if wholesome foods without additives are consumed or (b) if a good is consumed that contains a food ingredient at or below the level and for a use found to be safe, or agricultural chemical or environmental contaminant at or below the level found to be safe, by the Food and Drug Administration or approved by the Environmental Protection Agency or the Food Safety and Inspective Service of the U.S. Department of Agriculture. Please provide an explanation as to how your research falls into this category:

**Attachments:** Attach all that apply to your proposal. (Check the ones you've included with your proposal.)

❑ Informed consent form(s)

❑ Letters of approval from cooperating entities

❑ Research methods (research design, data source, sampling strategy, etc.)

❑ Questionnaires, surveys, or other data-gathering forms

❑ Letters, flyers, questionnaires, etc. that will be distributed to the study subjects

***Certification and Signatures***

In making this application, I certify that:

1. I have read and understand the protocol and method of obtaining informed consent, and will follow them during the period covered by this research project.
2. I agree to comply with federal, state, and local laws regarding the protection of human participants in research.
3. I will submit any future changes to the research project to the institutional review board (IRB) for review and approval before implementation, as these may alter the exempt status of the project.
4. I agree that any new findings that develop during the course of this study that may affect the risks and benefits to participants will be promptly reported to the IRB in writing.
5. I agree that any adverse events that occur in the course of this study will be promptly reported to the IRB in writing.
6. I agree and understand that records of the participants will be kept for at least three years after the completion of the research.
7. I may begin research when the IRB gives notice of its approval.

**Approval by Teacher/Expert Adviser/Sponsor**

I confirm the accuracy of this application. I accept responsibility for the conduct of this research, the supervision of human participants, and the maintenance of informed consent documentation as required by the IRB.

Signature of the Faculty/Sponsor:_____ Date:____/_____/____

Printed Name:_____

**For IRB OFFICE Use Only:**

This application has been reviewed by the IRB as:

❑ Approved, Categories:

❑ Approved, Subject to Restrictions:

❑ Tabled (insufficient information for IRB to make a final decision)

❑ Disapproved:

Authorizing Signature:_____ Date:_____/_____/____

**Sample Risk Assessment Form**

*Required for projects using hazardous chemicals, activities or devices and microorganisms exempt from pre-approval (must be completed before experimentation).*

**Student's Name (printed):**_____

**Title of Project:**_____

To be completed by the Student Researcher(s) in collaboration with Designated Supervisor/Expert Advisor: (All questions must be answered; additional page(s) may be attached.)

1. List/identify microorganisms, hazardous chemicals, activities, or devices that will be used.

2. Identify and assess the risks involved in this project.

3. Describe the safety precautions and procedures that will be used to reduce the risks.

4. Describe the disposal procedures that will be used (when applicable).

5. List the source(s) of safety information.

To be completed and signed by the Designated Supervisor (or Expert Advisor, when applicable):

I agree with the risk assessment and safety precautions and procedures described above. I certify that I have reviewed the Research Plan and will provide direct supervision.

**Designated Supervisor's Printed Name:**_____

**Signature:**_____

**Date of Review (mm/dd/yy):**_____

**Position & Institution:**_____

**Phone or email contact information:**_____

## Human Subjects Research Project/Study Checklist for Submission to IRB

***Exempt Studies***

(Do not require IRB preapproval)

- Testing of a student-designed invention, program, concept, etc. where the feedback received is a direct reference to the product, where personal data is not collected, and where the testing does not pose a health or safety hazard.
- Data/record review studies (e.g., baseball statistics, crime statistics) in which the data are taken from preexisting data sets that are publicly available and/or published and do not involve any interaction with humans or the collection of any data from a human participant for the purpose of the student's research project.
- Behavioral observations of unrestricted, public settings (e.g., shopping mall, public park) in which all of the following apply:
  a. The researcher has no interaction with the individuals being observed.
  b. The researcher does not manipulate the environment in any way.
  c. The researcher does not record any personally identifiable data.
- Projects in which the student receives the data in a de-identified/anonymous format which complies with both of the following conditions:
  a. The professional providing the data certifies in writing that the data have been appropriately de-identified and are in compliance with all privacy and HIPAA laws.
  b. The affiliated IRB ensures that the data were appropriately de-identified by review of the written documentation provided by the supervising adult(s).

Sample Questions asked by IRB

| Question | Yes | No |
|---|---|---|
| 1. Does this project or study involve collection of data that identifies individuals (e.g., cohort databases include SSN# data on individuals, surveys, or interviews identifiable by name or student number etc.)? | | |
| 2. Will data identifiable by individual be shared with anyone (such as in a performance report for a funding source, conference presentations, published articles and reports,etc.)? | | |
| 3. Are the participants being offered one or more of the incentives to participate (such as money, extra credit for the class, etc.)? List the incentive(s) here: | | |
| 4. Is participation in this project or study voluntary for the individuals participating in the program or study? | | |
| 5. Will participants be fully informed about the benefits and any risks? | | |
| 6. Will participants be videotaped during the project or study? | | |
| 7. Will participants' privacy and personal information be protected? Briefly explain how privacy and information will be protected: | | |
| 8. Will participants be debriefed following completion of the project or study? | | |
| 9. Will participants, prior to the project, indicate informed consent to participate by completing and signing a written form? | | |
| 10. Does the funding source have any potential for financial or professional benefit from the outcome for this study or project? If yes, please explain. | | |
| 11. Are data sources clearly identified (such as interviews, survey, existing project data such as services received, reports, grades, existing school records, focus group, etc.)? | | |

## Sample Regulated Research Institutional/Industrial Setting Form

This form must be completed AFTER experimentation by the adult consulting with the student conducting research in a regulated research institution, industrial setting or any work site other than home, school, or field.

Student's Name _____

Title of Project _____

1. The student(s) conducted research at my work site:
   a) ❑ to use the equipment
   b) ❑ to perform experiment(s)/conduct research
2. I certify that the research performed by the student was of the student's own design, associated with the student's own research question and method.
   ❑ Yes ❑ No
3. I certify that I have reviewed the student's research proposal form prior to the start of experimentation and have been trained in the techniques (and associated safety and ethical guidelines) used by this student, and provided direct supervision accordingly.
   ❑ Yes ❑ No
4. Have you reviewed the AP Research Course and Exam Description, rubrics, guidelines relevant to this project? ❑ Yes ❑ No

   Student research projects dealing with human subjects, vertebrate animals or potentially hazardous biological agents require review and approval by an institutional review board (IRB). Copy of approval(s) must be attached, if applicable.

Consultant's Printed Name _____

Signature _____

Title _____

Institution _____

Date Signed _____

Address _____

Email _____

Phone _____