Welcome to…

AP Research

2017 Student Workbook

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Pages 58-60t: "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 99 and 169: 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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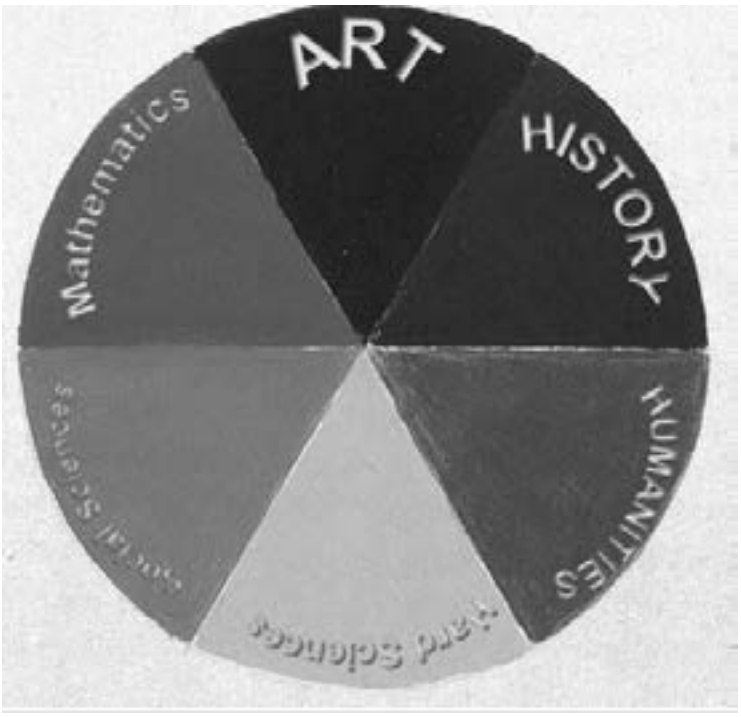
Lesson 1: Situate the Approach for Your QUEST

There are specific disciplines/organizations with long-held paradigms that use your 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 your table, 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

http://evergreen.edu/washingtoncenter/docs/natlproject/dimensionsdisciplinaryunderstanding.pdf

SCIENCE/MATH

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

http://evergreen.edu/washingtoncenter/docs/natlproject/dimensionsdisciplinaryunderstanding.pdf

HUMANITIES

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

http://evergreen.edu/washingtoncenter/docs/natlproject/dimensionsdisciplinaryunderstanding.pdf

ARTS

http://evergreen.edu/washingtoncenter/docs/natlproject/dimensionsdisciplinaryunderstanding.pdf

If some or all of these websites do not work for you, try using a different browser such as Firefox, Safari, GoogleChrome, etc.

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

1. In what way does the discipline (associated with your topic of inquiry) gather data or information to "know" or "understand" something?

2. What are some ways a researcher (in the discipline associated with your topic of inquiry) should share or present information so it is valued by the discipline?

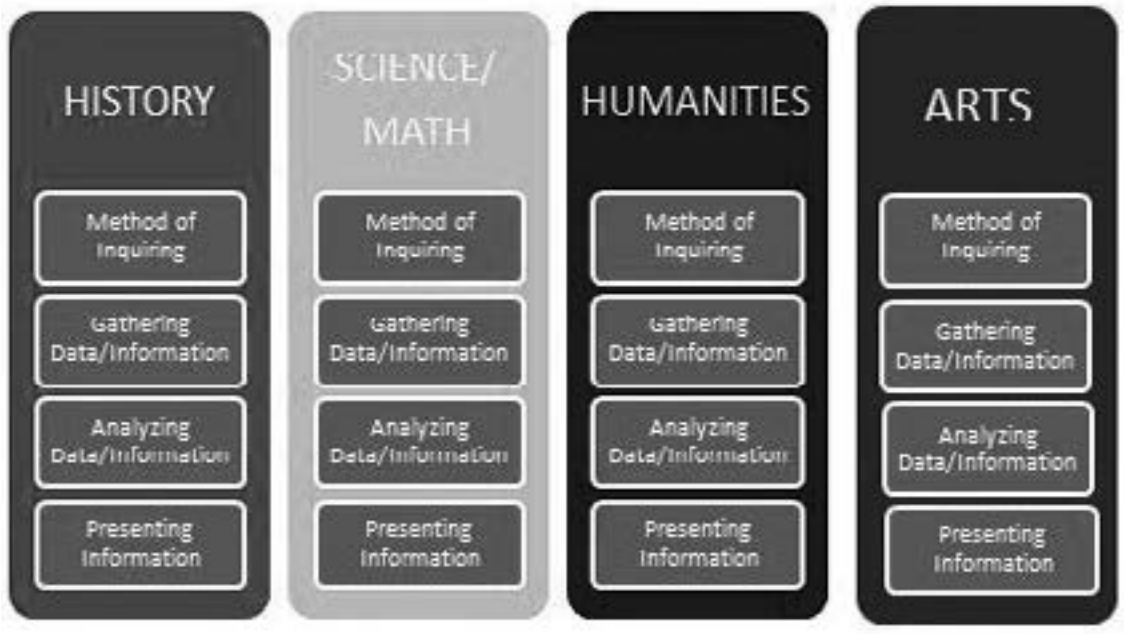
3. How does conducting research and sharing results in ways that align to discipline expectations affect author credibility?

4. Where can you find evidence for how a specific discipline engages in research, communicates findings, and/or cites sources?

Colors of Disciplinary Understanding

Directions

1. Using your responses and discussion from the previous task, develop a list of expectations/values from that discipline.
2. 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?)
3. Share your group's responses when directed.
4. After listening to all other disciplines, add two more categories to your discipline chart:
   - Commonalities (What are the overlaps among the different disciplines?)
   - Differences (What are distinct differences among the disciplines?)



Reflect

- What similarities exist between the disciplines and their ways of knowing through forms, knowledge, methods, and purposes?

- How can you use the discipline-specific ways of knowing activity to strengthen your rationale for the method you will choose to develop or use to engage in your own research?

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Lesson 2: 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 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 below (or via the Digital Portfolio once you have access):

http://bit.ly/APCapstoneEBSCO

You could also peruse an undergraduate research paper database to see more examples of research questions and academic papers:

1. Go to **ncurproceedings.org**.
2. Click on any of the journals on the left-hand side of the screen (for example, click on the VIEW JOURNAL link underneath the 2013 Journal).
3. At the top of the new screen, click the SEARCH button.
4. In the SEARCH ALL CATEGORIES FOR box at the top of the screen, type in "civil war" or any other topic you would like to see an academic paper for (leave all other boxes empty).
5. Scroll to the bottom and hit the search button.
6. You'll see three articles pop up. Click on the PDF link for any of the three, and then you can download that article onto your desktop.

Lesson 3: 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. 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 can 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 table 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. 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 table 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 2015?

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 4: 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.

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). 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 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). 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). 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]	

Building a Bibliography While Writing Using Microsoft® Word.

Writing citations in the selected format is a challenge for most students. This challenge is even more difficult if you choose to wait until your research is complete to write the bibliography. There are numerous types of resources available to help you develop your bibliography as your research progresses.

Pre-Populated Citation Sources

EBSCOhost

This resource provides a citation in the selected style for any source in the EBSCOhost database. The student will need to copy and paste the citation in the appropriate location in their paper.

Citation Generator

EasyBib

WorldCat

Citation Machine

Study Modes

These resources are fill in the blank style where the student includes the requested information about a source. A complete citation in the selected style is created. The student will need to copy and paste the citation in the appropriate location in their paper.

Citation Manager

MS® Word

This resource helps students create their bibliography while writing.

Step-by-step instructions for using this resource are available at **https://support.office.com/en-us/article/Create-a-bibliography-3403C027-96C8-40D3-A386-BFD5C413DDBB#bm1**

Using this resource helps students manage their citations by keeping the information all in one place and inserting in-text citations.

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

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 _____.

Teaching Mathematics and Its Applications (2010) **29**, 113–139
doi:10.1093/teamat/hrq006 Advance Access publication 23 April 2010

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

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[Submitted December 2009; accepted March 2010]

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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SMARTER Searches

Before writing an annotated bibliography, you must engage in an initial search for information known in the field about your topic of inquiry. Preparing for an inquiry project is not simply about gathering as many sources as possible.

It is about:

- Finding sources that help situate one's topic of inquiry in the larger field of knowledge on the topic,
- Finding relevant and reliable sources to help define and focus a research question, and
- Finding evidence to help support choices throughout the inquiry process.

Further, a common student misstep along the inquiry journey is not doing "due diligence" in looking for true studies or scholarly works pertaining to their topic of inquiry. Yes, some esoteric or truly unique topics may not have many scholarly studies pertaining to them; however, MOST TOPICS DO. Previous "studies" are normally found in scholarly, peer- reviewed journals or could be summarized in foundational texts written by well-known scholars. It is best to have searched through 50-70 journal articles to get an understanding of the knowledge of the field. It is acceptable to have a mix of journal articles and foundational texts.

To that end, you must learn to be "SMARTER" about your search process, not just more prolific.

Go through the "SMARTER" acronym with the instructor and think about how using this acronym will change the way you approach information gathering and evaluating. Remember, what you record in your annotated bibliography should be useful when making choices in your inquiry process as well as when writing your academic paper.

Using the SMARTER table that follows, generate guiding questions you could ask yourself to improve your search for and documentation of interaction with sources for your research.

Word	Meaning	Guiding Question
Situate	Find key words from a source to align/revise your question and to search for other sources	
Method	Look for what and how findings were developed in previous studies	
Annotate	Document/cite a source with an annotation on how it relates to your study	
Reference	Use bibliographies of the source to "mine" for other sources and other key words	
Transfer	Identify key quotes or elements of the source that you will add to your research	
Evaluate	Consider bias, gaps: be critical	
Reflect	Use your PREP journal to record insights after engaging with several sources	

Evaluating Student Searches: The SMARTER Way

Directions

In the following five annotated bibliography entries, use the SMARTER acronym to evaluate the usefulness of the information provided in each sample entry. Indicate where the student author of those annotated bibliography entries went wrong in using the SMARTER process to search for and annotate information pertaining to their topic of inquiry. Record your responses in the table.

Annotated Bibliography Sample #	Problem with the usefulness of the entry to the student's inquiry process	Description of SMARTER acronym component where the student could show improvement
1.		
2.		
3.		
4.		
5.		

Sample Bibliographies

1. **Annotated Bibliography Entry-Sample 1**

   Topic—Exploring the Extent to which Early-Childhood Programs Provide Effective Lessons in Health and Fitness for Pre-Schoolers

   www.caringforkids.cps.ca/handouts/child_ready_for_sports

   www.mayoclinic.org/healthy-living/childrens-health/in-depth/fitness/art-20048027

   http://kidshealth.org/parent/positive/family/signing_sports.html

   www.livestrong.com/article/362478-what-age-should-my-child-start-playing-sports/

   http://educatedsportsparent.com/my-child-ready-sports/

   http://activeforlife.com/child-old-enough-for-sports/

   Nelson Textbook of Pediatrics, 19th ed.

2. **Annotated Bibliography Entry-Sample 2**

   Topic—Determining the Correlation between Types of Information Technology Acceptable Use Policies and Consumer Acceptance Rates

   Website Title- CONSUMER ACCEPTANCE AND USE OF INFORMATION TECHNOLOGY: EXTENDING THE UNIFIED THEORY OF ACCEPTANCE AND USE OF TECHNOLOGY:

http://aisel.aisnet.org/cgi/viewcontent.cgi?article=3014&context=misq&sei-redir=1&referer=http%3A%2F%2Fscholar.google. ca%2Fscholar%3Fq%3DUnified%2BTheory%2Bof%2BAcceptance%2Band%2BUse%2Bof%2BTechnology%2B%28UTAUT%29%26hl%3Den%26as_sdt%3D0%26as_vis%3D1%26oi%3Dscholart%26sa%3DX%26ei%3DErcsVPX_NaqoigLh64CIAw%26ved%3D0CBwQgQMwAA#search=%22Unified%20Theory%20Acceptance%20Use%20Technology%20%28UTAUT%29%22

3. **Annotated Bibliography Entry-Sample 3**

   Topic—Exploring Unethical Implications of Gene Splicing

   Olesen, Kirsten. "HIV Can Cut and Paste in the Human Genome." Aarhus University. May 25, 2014. Web. October 13, 2014.

   Developed at the Department of Biomedicine at Aarhus University, the technology makes it possible to repair genomes in a new way. It also offers good perspectives for individual treatment of both hereditary diseases and certain viral infections: "Now we can simultaneously cut out the part of the genome that is broken in sick cells, and patch the gap that arises in the genetic information which we have removed from the genome. The new aspect here is that we can bring the scissors and the patch together in the HIV particles in a fashion that no one else has done before," says associate professor in genetics Jacob Giehm Mikkelsen from Aarhus University.

4. **Annotated Bibliography Entry-Sample 4**

   Topic—To What Extent are Modern Preservation Techniques Effective in Maintaining the Endangered Species of Bats in the United States?

   Twenty-two summer colonies of the endangered gray bat, Myotis grisescens, were censused in 1968–70 and 1976. A conservative estimate revealed a 54% decline in that time period and a 76% decline from known past maximum population levels. A strong association between decline and disturbance by people in caves was observed. Some major colonies disappeared entirely within the 6-year period. Gray bats are restricted to caves year-round and, due to specific temperature and foraging habitat requirements, they aggregate in large colonies in fewer than 5% of available caves. Management requires that the 9 known hibernation caves receive immediate protection, followed by protection of the most important summer caves used by bats from each protected winter cave. Adequate protection may prove impossible unless accompanied by public education. Environmental disturbances such as pesticide contamination, water pollution and siltation, and deforestation may pose serious threats and require further investigation.

   www.jstor.org/discover/10.2307/3800631?uid=3739392&uid=2&uid=3737720&uid=4&sid=21104199422361

   http://esrd.alberta.ca/fish-wildlife/wild-species/mammals/bats/documents/ Bats-GettingPastDarkAges-BatsAndPeople-Jun30-2011.pdf

5. **Annotated Bibliography Entry-Sample 5**

   Topic—To What Extent Does Migration Influence Genetic Varieties?

   The most useful article I found: "Novelty Seeking DRD4 Polymorphisms Are Associated with Human Migration Distance Out-of-Africa after Controlling for Neutral Population Gene Structure," Luke J. Matthews and Paul M. Butler, discussed the conclusion that "global population patterning of 4R and 7R frequency variation can be explained by increased migratory distances of novelty-seeking individuals (7R varient) compared with that of low novelty-seeking individuals (4R varient)." They caveat this statement, however, by insisting that the correlation is a result of migration selecting for individuals who could "deal more effectively, with less stress response" with changing circumstances associated with migration. This article provided confirmation of the results of a previous article by Chuansheng Chen, Michael Burton, Ellen Greenberger, and Julia Dmitrieva titled "Population Migration and the Variation of Dopamine D4 receptor (DRD4) Allele Frequencies around the Globe." This article also supports the theory of migration as a "key natural selection factor that accounts for the global variation of the DRD4 gene." These conclusions pose a problem for my current research tract. Therefore, it is inevitable that my question must morph, or else the answer to the question will be: Genetic influence is quite simply not the cause of migration. The end.

Building an Annotated Bibliography using MS Word ®

Students can create their annotated bibliographies from the bibliography they are creating in MS Word® by following the steps outlined here:

1. Use the instructions from Building a Bibliography While Writing Using Microsoft® Word from earlier in this lesson to create citations.
2. In a New MS Word ® document, under the References tab, select Manage Sources and the selected citations.
3. Under the References tab, insert the Bibliography.
4. Under each entry, write the annotations for each source. Students can insert the statements from the annotated bibliography template and include their responses as illustrated below.
5. Students can save and add to the annotated bibliography throughout their inquiry process.

Annotated Bibliography Example Template

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 _____.

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 5: 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?

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.

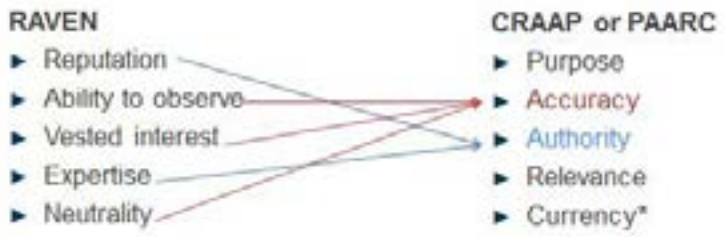
- Does the information relate to your topic or answer your question?
- Who is the intended audience?
- Is the information at an appropriate level (i.e., not too elementary or advanced for your needs)?
- Have you looked at a variety of sources before determining this is one you will use?
- Would you be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

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. 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.



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-

Received 25 August 2008; accepted 14 October 2008; electronically published 7 January 2009.

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Clinical Infectious Diseases 2009; 48:456–61

1058-4838/2009/4804-0015$15.00
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 μg 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 coholder of the rotavirus vaccine Rotateq and has served on a scientific advisory board to Merck. J.S.G.: no conflicts.

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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 Evidence from the text (include direct quotes, page numbers)	Description in my own words Evidence from the text (include direct quotes, page numbers)
Explicit Meaning ▸ What is the author's intended message? ▸ How does the author convey this message?		
Implicit Meaning ▸ What assumptions underlie the author's message? ▸ What belief system does the text convey? ▸ What contradictions exist between the explicit and implicit meanings you identified?		
My situatedness with respect to the texts 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 χ^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.

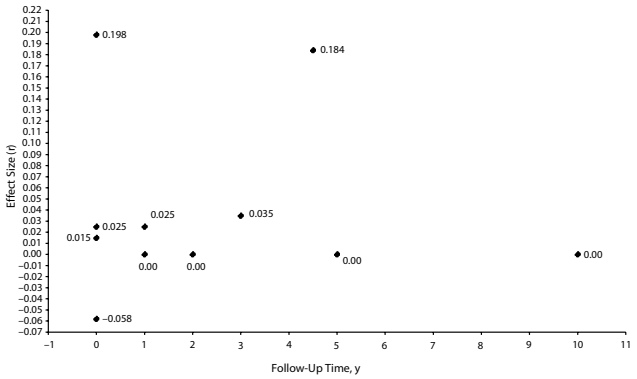

FIGURE 1—Plot of effect sizes, by follow-up time.

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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This article was accepted January 5, 2003.

Contributors

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

Acknowledgments

Portions of this research were presented at the Eighth Annual Meeting of the Society for Prevention Research, Montreal, Quebec, Canada, June 2000.

Human Participant Protection

No protocol approval was needed for this study.

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Subject codes 4, 53, 76, 77, 78

Hammond et al: Article 2

HEALTH EDUCATION RESEARCH Vol.23 no.4 2008
Pages 682–696
Advance Access publication 17 October 2007

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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doi:10.1093/her/cym036

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.

Funding

Robert Wood Johnson Foundation (039223 and 040371).

Acknowledgements

The views expressed in this paper are those of the authors and do not necessarily reflect the views of the funding body.

Conflict of interest statement

None declared

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Received on April 3, 2006; accepted on June 7, 2007

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.

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

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Provide your responses to the following questions.

1. What ethical issues with attributing or citing other's work might arise when you are writing about your inquiry?

2. What steps can you take to help prevent you using sources inappropriately?

3. What policies and procedures can be or are put in place in your school to ensure that you are meeting high ethical standards when writing about or presenting your inquiry?

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

Directions

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: *Vision-impaired people have sharper hearing than fully sighted people.*	
2. A student writes: *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: *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: *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 use the credibility test to evaluate your own work?

- What steps can you take to safeguard yourself from carrying out unethical research practices in your academic writing?

Lesson 6: 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 table 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 table group members have evaluated each of the story statements, work with your group to determine whether or not your group members 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 at your table to come to the same understanding?
   d. What assumptions were made by the different members at your table 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 table 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 table. 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 table 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 7: Big Idea 5: Team, Transform, Transmit

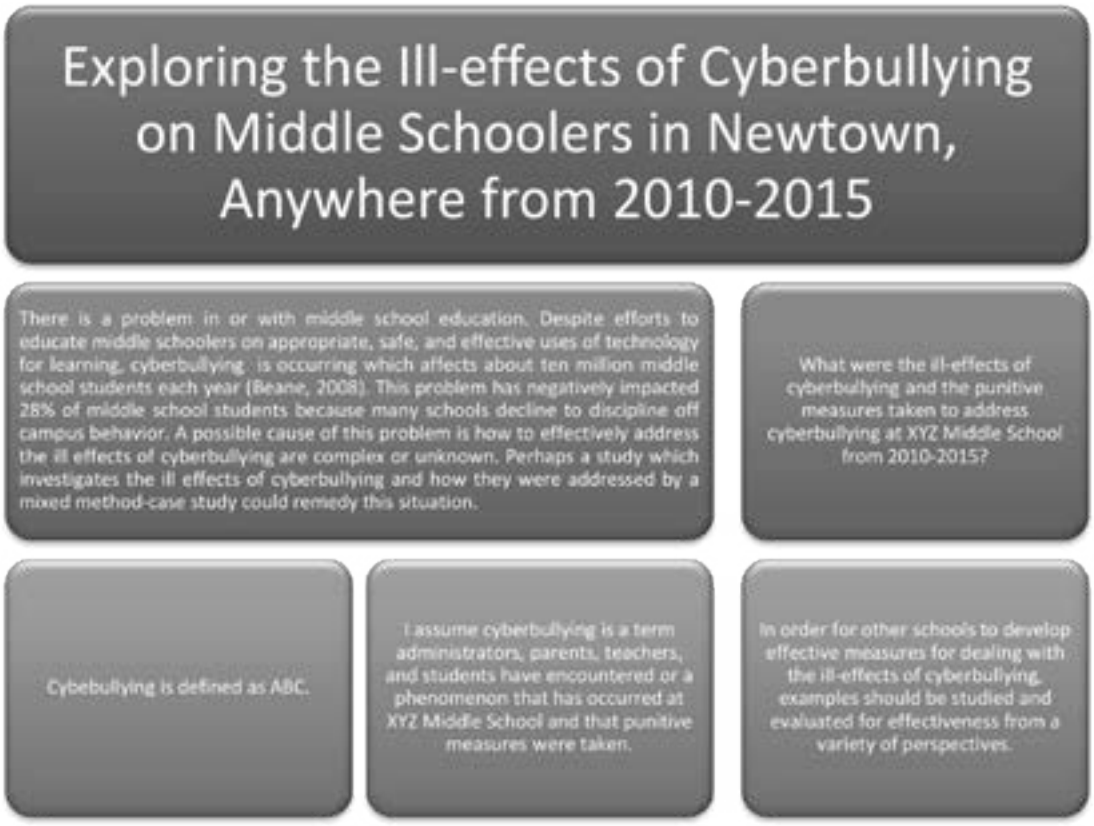
Presenting Where You Are on Your QUEST

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 consultant, 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 and listen to your teacher's elevator speech.



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 table 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. A complete poster presentation could include the following components depending on what you would reasonably have completed during your assigned time frame:
   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?

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Lesson 8: 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 they have collected to situate your topic of inquiry and show the significance of that topic to the broader field of understanding.

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

Share your thoughts with your table group.

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 questions like these:

- 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.

As your instructor models the strategy of reviewing a humanities and a science academic paper to identify the organizing principles of the introduction or literature review of these papers, record these principles in the table below.

Academic Paper Title	Discipline Associated with Academic Paper	Brief Description of Organizing Principles of the Literature Review or Introduction
To House a Moor and End a Marsh: Jane and Imperialism through Liminal and Structural Processes in Jane Eyre	Humanities	
A Plan for Conversion of Stormwater to Groundwater Recharge on the Utah	Science	
Implementation of a Ten-Tone Equal Temperament System	Art	
Following Sweden's Success: Promoting Intercultural Citizenship in the United States	History	
Victim Worthiness: The Effect of Media Coverage on the Portrayal of Homicide Victims	Social Science	

Directions

1. Spend 10–15 minutes reading the literature review/introduction of the academic paper assigned to your group.
2. On chart paper, 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 from the previous section.

Arts-Based Academic Paper

Implementation of a Ten-Tone Equal Temperament System

Abstract

Tracing back to the ancient Greeks, humans have always been interested in the "harmony" that music creates. Throughout time, many composers like Du Fay, Monteverdi, and Schoenberg have strayed from traditional musical practices in the hope of developing a more expressive sound. In this study, a system was created that is based on ten tones instead of twelve in an attempt to make a new expressive sound.

Music has endured many changes throughout the centuries. As the world moves into the 21st century, is it possible that a new melodious sound is yet to be discovered? Music we are currently familiar with is based on an equal temperament scale composed of twelve similar intervals. Each note on a piano and its corresponding frequency can be used to represent x and y values. Using the x and y values, a graph of the frequency spectrum of a piano can be generated, from which a formula can be derived. Next, dividing the number twelve by ten and then adding the sums together yields the ten-tone system x values. By substituting the new x values into the equation of the frequency spectrum, the frequencies for the notes of the ten-tone system can be found, conforming to new system of equal tone temperament. Using a program called "Cycling '74 MAX/MSP," these new frequencies can be assigned to the notes on a keyboard, creating an instrument based on ten tones instead of twelve. The resulting sound from the ten-tone instrument is very unique and yields intervals that the ear is not conditioned to hearing, excluding the fact that the notes are produced with a sine generator.

The research involves an interesting procedure that allows for further experimentation. For example, this system can be applied to create intervals built on any other number imaginable, all of which all would be based a new equal temperament scale. This study attempts to find a new direction for music by creating a system in which the notes in each octave are spread out over ten tones instead of twelve. The limited attempts in this study were unsuccessful in creating a sound that was music to one's ears. However, with further experimentation, it is possible that this system could yield pleasing results. Though the system did not produce any satisfying results at the moment, it opened up a new procedure for the creation of a unique intervallic system.

1. Introduction

Viewed historically, new stylistic eras have been ushered in when composers have strayed from traditional practices in the hopes of achieving a new expressive goal. Creating a musical system that is based upon ten tones instead of twelve pushed the boundaries of common musical practices. In the creation of the new equal temperament system, elements of sound and a program called "Cycling '74 MAX MSP" were used to generate the new notes in ten-tone system, thus creating an instrument called The Decitone.

2. Straying from Common Practices

The foundation for traditional musical practice was created in the time of the Ancient Greeks. The Greek's great thinkers such as Plato believed in a philosophical theory called idealism, where true reality is beyond the world of phenomena.[1] This "true reality," could be disclosed through music, known as harmonia. Later, the connection between sound and numbers was attributed to a philosopher named Pythagoras.[2] This connection was that intervals in music could be expressed as ratios, such as an octave being 2:1.[3] Intervals were determined to be consonant or dissonant depending upon their mathematical ratios, and were labeled as consonant if they had nice compact ratios such as 4:3. As a result, the intervals such as octaves, perfect fifths, perfect fourths, and major seconds were heavily favored in music because of their ratios.

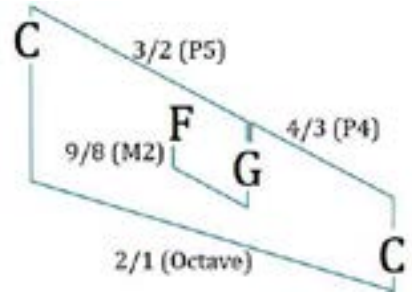

Figure 1. Perfect intervals with mathematical ratios[4]

In Plato's *Timeaus*, he said that the Pythagorean ratios produced a certain shape in the music, establishing "order."[5] This was very significant because the Greeks believed that through order, they could connect with the idealistic state. As a result, order can be found in the music of the Middle Ages, where the music was monophonic and made extensive use of these "golden intervals." There was an emphasis upon these intervals in the music because it allowed one to connect with true reality.

Individuals pushed the boundaries of music through their experimentation and unwillingness to accept the norm. During the "Renaissance," humanism placed emphasis on human perception as opposed to the ideal world of mathematical ratios.[6] Music began to focus on what is pleasing to one's ears, such as in the rise of polyphonic music; because it incorporated more notes being played at the same time. Works by Guillaume Du Fay, a composer from the 15th century, exemplified Renaissance ideals. Du Fay wrote a motet called "Nuper rosarum flores" for the consecration of the cathedral dome in Florence in 1436.[7] Du Fay employed more expressive possibilities as he made use of the intervals 3rds and 6ths, which were not favored in the Middle Ages because their ratios were not considered consonant. Therefore, Du Fay did not follow the norms; he pushed the boundaries of his time.

Later, in the Baroque period, there was a change of thought, ideas, and science from the Renaissance period. People decided to "revolt" and return to the Ancient Greek idea that music moves individuals to change their emotions. Thus came about the idea of the Doctrine of the Affections, the concept that music can affect one's emotions: such as love, hate, joy, and sorrow.[8] A composer named Monteverdi embraced this idea and revolutionized what was normally acceptable through his work "Cruda Amarilli."[9] In keeping with the idea of the Doctrine of Affections, he broke the rules specifically to express the text, which was about the sigh of love. For example, he made use of dissonance that was not prepared or resolved correctly. This type of behavior was so unacceptable that a gentleman by the name of Artusi wrote an article called the "Imperfections of Modern Music," in which he criticized Monteverdi for breaking the rules. However, Monteverdi strayed from the common practices of his time in order to achieve a new expressive effect of realizing the text.

Similarly, in the 20th century, Arnold Schoenberg developed a new musical idea called serialism, a compositional method that in which music is based off of a series of notes.[10] In serialism, one creates a line of the numbers 1-12 and then transposes that "layer." Each number can then be used to represent a note on the piano, and then the lines can be played: forward, in a retrograde, inverted, and in a retrograde inversion.[11] All 48 lines can then be implemented in the composition of the piece. Serialism created a new way to compose and thus created a new musical effect. Therefore, Schoenberg pushed the limits of music by adding a mathematical aspect to it in which a system for the arrangement of the notes is already predefined.

3. Temperament

All of these composers pushed the boundaries of their time, while adhering to a specific temperament. The Greeks followed Pythagorean temperament, Du Fay used mean-tone temperament, and Schoenberg complied with equal temperament. Temperament is a way of tuning all of the notes on a keyboard instrument so that a scale can be played and sound "in tune" in some positions.[12] For example, Pythagorean temperament, used in the Medieval Ages, is built upon a circle of pure 5ths, meaning their intervals yield perfect ratios. Consequentially, one of the fifths is a little sharp, called a Pythagorean comma, and other intervals are in odd positions.[13] Another type of temperament is the mean tone temperament. In the mean tone temperament, the interval from the notes C to E is pure, and each 5th is tuned a little flat in order to make some intervals more consonant.[14] However, the problem with this type of temperament is that as a result, the notes G# and Ab actually sound different, even though they are enharmonically the same note and should resonate the same. The standard Western equal temperament tuning solves this problem because all intervals "sound right" melodically and harmonically throughout every key, because they are constructed from a cycle of 12 modified 5ths that fit equally into the circle of 5ths.[15]

Comparison of Pythagorean and Equal Temperaments Based on C			
Notes	Pythagorean Temperament		Equal Temperament
	Fraction	Decimal	
C	1/1	1.00	1.000
D	9/8	1.125	1.12246
E	81/64	1.250	1.25992
F	4/3	1.333	1.33483
G	3/2	1.500	1.49831
A	27/16	1.667	1.68179
B	243/128	1.875	1.88775
C	2/1	2.000	2.000

Figure 2. Comparison of two types of temperament[16]

The Decitone adheres to a kind of equal temperament that has a whole new set of notes, whose intervals are consistent in every 10-tone system key.

4. The Creation of The Decitone

4.1 Acoustics

In the creation of The Decitone, fundaments of sound such as frequency and timbre were used. Any medium, such a gas, a solid, or a liquid is made up of particles. When vibrations are created by acoustical energy (such as your voice), the particles are disturbed and a waveform is created.[17] In the medium, there are areas of where the particles are condensed, and areas where the particles are spread out, creating the troughs and hills in the wave.

History-Based Academic Paper

Following Sweden's Success: Promoting Intercultural Citizenship in the United States

Abstract

The United States and Mexico, both members of the Organization of American States, enjoy a robust trade relationship galvanized through the North American Free Trade Agreement. However, when it comes to intercultural citizenship, including the ability to speak the national languages of each country, there is a lack of cultural understanding between the two. In contrast, the European Union, through the Council of Europe, supports cultural understanding between its member states, in part, by promoting second language education. The country that has been the most successful in foreign language education is Sweden, where an average of 82% of public school students command English proficiency at the advanced level, as measured by the Common European Framework of Reference, a standardized proficiency scale used internationally. This paper offers an analysis of what has made Sweden so successful in language education and how its approach, supported by membership in the European Union, can be followed in the U.S. to foster intercultural citizenship and to improve second language (e.g., Spanish) proficiency. The methodology for this project consisted of gathering data from European Commission and Council of Europe reports and analyses of U.S. language education data from educational research organizations such as the Center for Applied Linguistics. I have been analyzing this data through the lens of Critical Language Policy. The results show the importance of implementing governmental policy that vigorously promotes language learning and intercultural citizenship. For while the European Union works through the European Commission and the Council of Europe to promote appreciation of linguistic diversity in European countries, little or no similar governmental action can be found within North American countries. Therefore, I offer recommendations for measures to promote intercultural citizenship and the learning of the Spanish language in the United States.

1. Introduction

Historically, the United States and Mexico have had a complex relationship, which involves trade and economic interdependence, shared cultural history, and the effects of immigration on both nations. Yet, despite this complicated relationship, there is a lack of cultural understanding between the two countries. There is a deficiency in the learning of each other's dominant languages along with a lack of intercultural competence on both parts. In contrast, the European Union actively promotes language learning among its member states in order that they effectively communicate with each other. One of the countries that has seen the most success in advanced competence through language learning is Sweden. Unlike those in the U.S., the majority of Swedish students are successful in learning a second language. By the end of their compulsory education, approximately 82% of students have learned English at the advanced level.[1] Clearly there are reasons that many students succeed at such a high level by the end of high school. What has made Sweden so successful in language education? How can the United

States follow its approach to foster intercultural citizenship and to improve second language proficiency? To answer these questions, I focused on the language education policy that governs these countries in order to see if there were any differences in policies and how those affected learning in the schools.

As I narrowed the scope of the research, I looked toward Europe to examine language education policies. Within Europe, I could study the policies promulgated not only by each country, but also by the European Union. However, I found that this was too broad, so I decided to focus on the United Kingdom and Spain. I planned to compare these with Mexico and the United States because of the parallels in language. However, as I was mining the data, I found that this was indeed still too broad. While researching the second language competencies of the citizenry within European countries, I noticed that Sweden was highly successful in second language competence, in this case English. Thus, I decided to focus on Sweden because a study comparing proficiency in English as an additional language showed that they had been the most successful in language learning.[2] It is important to analyze what has made Sweden so successful in language education and how its approach, supported by membership in the European Union, can be followed in the U.S. to foster intercultural citizenship and to improve second language proficiency. Through the analysis of two documents with similar intent from governmental organizations in Europe and the United States, I will interpret their importance in promoting language learning in Sweden and the United States.

There is a lot that one can learn from the history of an organization or the context in which a policy document was written. Thus, it is important to note the historical background of language education in both countries. A member of the European Union since 1995, Sweden has been guided by the political, economic and educational policies of this international organization. Thus, it is guided by the ideals and values of the European Union. The history of the European Union itself starts in the aftermath of World War II: "The European Union is set up with the aim of ending the frequent and bloody wars between neighbours, which culminated in the Second World War." [3]After so much death and destruction, European countries decided that they could not continue fighting so violently amongst each other. And so, the very foundation of the European Union is built upon the concept that there must be more cultural understanding among countries in Europe. Thus, the European Union promotes language learning within its member states in order to encourage cultural understanding for the prevention of further misunderstandings in the region that could lead to war.

The U.S. story of government promotion of second languages differs from that of the European Union. In the aftermath of World War II, came the Cold War. In 1957, the Soviet Union launched Sputnik I, which was immediately seen as a threat to U.S superiority. Congress responded by passing the National Defense Education Act to promote increased proficiency in science, engineering, mathematics, and linguistics and language learning. Fast-forward forty-four years to the terrorist attacks of September 11, 2001, which revived the realization of the importance of language skills needed in our country. Therefore, 9/11 is seen as "Sputnik" moment because it was the second wakeup call for the need to improve our foreign language competences in the United States.[4] The "Sputnik" moment is recalled as a reminder for the pressing need of foreign language capabilities in the country.

2. Literature Review

Previous research has informed the current study, including the role of education for intercultural citizenship, the state of second language education in Europe and the United States, and the importance of national and international policies in providing a mandate for second language learning. This review will highlight such key concepts.

Michael Byram's conceptualization of Intercultural Citizenship goes right to the importance of language learning. According to Byram, being intercultural means more than just recognizing or knowing about a different culture. Byram states, "To act interculturally, however, requires a willingness to suspend those deeper values, at least temporarily, in order to be able to understand and empathise with the values of others that are incompatible with one's own."[5] It is not enough to just learn about someone else's culture, being intercultural takes on a deeper meaning and understanding. Becoming an intercultural citizen, therefore, adds a new dimension that combines language learning with political education. Education in intercultural citizenship prepares students for such experiences in which their deep rooted values and beliefs might clash with others' values or beliefs. Rather than resisting, intercultural citizenship would encourage students to meet those challenges.[6] Byram's research on intercultural citizenship within EU member states is valuable to the current study because it demonstrates the importance of not just language learning, but of having a deep comprehension and appreciation for other cultures. This enables a person to become a better global citizen with a much deeper understanding of the world.

However, if becoming an intercultural citizen relies on achieving proficiency in a second language, what progress do we see in the United States? Pufahl and Rhodes, of the Center for Applied Linguistics in the United States, offer

a recent analysis of the overall status of foreign language education in the U.S. Their research study shows that there are fewer elementary schools offering foreign language education in the United States then there used to be. In 1997, 31% of elementary schools offered foreign language education whereas in 2008, only 25% offered them.[7] One of the reasons that so few schools have offered foreign language education and have not planned to offer such courses in the future has been the lack of funding. Also, some schools included in the study indicated that there were not enough foreign language teachers available and that languages were simply not seen as part of the elementary school curriculum.[8] The work of Pufahl and Rhodes helps us understand the status and the value placed on language learning in the United States, especially at the primary level. In secondary education, there was also a decrease in foreign language instruction mostly because there was a significant decrease of middle schools offering language instruction. From 75% of schools in 1997, only 58% of middle schools continued to offer foreign language instruction in 2008. The high schools offering language learning programs however, stayed largely the same over the same time frame.[9] Overall, Pufahl and Rhode's study helps us understand the course of foreign language education in the United States over the period of time studied. Other reports published by the Center for Applied Second Language Studies at the University of Oregon give us information on the foreign language proficiency levels that high schools students reach in the United States.[10] This previous research study informs the current one with information regarding foreign language instruction in the United States.

Another important question to consider is how governmental policies or visions are interpreted at the local level. The research and writing of Woodside-Giron[11] in critical discourse analysis and Johnson[12], in the ethnography of language policy, informs the current study in its methodology. Critical Language Policy seeks to link language policy with the actual educational practices and interpretation at the local level. Johnson argues that policy implementation is determined by the interpretation at the local level and not the actual text of the language policy.[13] Critiques of Critical Language Policy by both Woodside-Giron and Johnson will be further discussed in the Methodology section.

3. Methodology

In order to analyze how second language learning is promoted in Sweden and in the United States, I researched language education policies promoted in each country. During the search I came across a multitude of documents from the European Union, of which Sweden is a member, and the Council of Europe, which seek to promote language learning among its member states. One in particular that caught my interest was *Promoting Language Learning and Linguistic Diversity: An Action Plan 2004-4006*. This document was developed by the European Commission, the executive body of the European Union. The main purpose of this document was to lay out the main policy objectives of the European Union and to identify three areas of action. It also made concrete proposals for short term improvements.[14] Although this document had no direct power or authority over the language policy in Sweden, it gave instructions for the general direction that the European Union would like to take in language learning. It is important because the context is identified in the document as well as the importance of teaching and learning languages. I selected this document for further analysis specifically because of its intent to promote language learning among the European Union member states.

Finding a comparable document for the United States was not an easy task. The only comparable agency is the Organization of American States (OAS) or the parties to the North American Free Trade Agreement (NAFTA). However, neither of these organizations specifically promotes language learning or intercultural competence. They are either economic or political entities that serve different purposes. Thus, the policy document that I chose for the United States, *A Call to Action for National Foreign Language Capabilities,* was developed at the national level and not at the international level.

In 2004, leaders and experts from all three levels of government, education, and the private sector came together for The National Language Conference. Under the leadership of the United States Department of Defense, the participants at this gathering discussed the importance of foreign language competences in the United States. Together they framed a document in which they outlined the important topics discussed during the meeting. *A Call to Action for National Foreign Language Capabilities* is a document that outlined the actions that were recommended to fulfill the need for foreign language abilities in the United States. The historical context was first described in the document as well as a call for the urgent need for national leadership to guide and recommend language learning strategies for the country.[15] This document is comparable to the document from the European Union because they have the similar intent to promote language learning in their respective regions.

Social Science-Based Academic Paper

Victim Worthiness: The Effect of Media Coverage on the Portrayal of Homicide Victims

In the last thirty years with the growth of 24-hour news channels, Internet only news sites and the decline of the newspaper, there have been tremendous changes in how the media covers crimes. Whether it is a catastrophic terrorist attack, school shooting or a low-profile homicide, violent crime is a staple of news coverage. The field of victimology has documented that the media does not portray all crime victims the same. The race and class of the victim as well as seemingly non-relevant factors such as their age, profession and the location of the crime as well as the demographics of the offender all influence public portrayals of crime victims. Scholars refer to these factors as influencing "victim worthiness." Victim worthiness can have an influence on jury selection, prosecutorial discretion and sentencing (Stabile, 2006). Utilizing computer content analysis, this study examined three case studies of violent crime, analyzing the news coverage and its impact on "victim worthiness." The hypothesis of this study was there would be media bias in the portrayal of homicide victims due to "extralegal" factors (e.g. race, age, status, etc) of either the victim (s) and/or the offender The findings of this study suggest mixed findings in support of the hypothesis.

Research Question & hypothesis
Is there a media bias in the portrayal of homicide victims?

This study examined whether there was a media bias in the portrayal of homicide victims. Our hypothesis was that there would be discernible media bias in the portrayal of homicide victims due to "extralegal" factors (e.g. race, age, status, etc.) of either the victim (s) and/or the offender.

Policy Relevance
This study is particularly important as most of the information the public receives about crime comes from the media and it is critical that the information be scrutinized and critiqued. According to the law all victims should be treated equally. In the media, however, victims are treated very differently. Media portrayal of crime victims and offenders can be objective or subjective. Scholars have documented that media coverage of crime victims and offenders tend to be biased (Callanan, 2012) (Greer, 2007). Media coverage of crime victims often focus on personal, situational and demographic characteristics, which had nothing to do with their victimization. As such media coverage affects jury selection and decision-making as well as public sentiment (Bing III, 2010).

Methods
This research used three different case studies as well as a computerized content analysis to answer the research question and test the hypothesis. A content analysis method is a way of evaluating text, newspapers, essays, etc. Computerized content analysis allows an electronic software package (Concordance® was used in this research) to assist in the identification of

1

themes, keywords and patterns articulated by the researcher. As such computer content analysis allows for the quick and methodological examination of large sums of text. The data for the content analysis came from local and national newspapers and national news broadcast transcripts that were obtained from LexisNexis, ProQuest, and news websites. Local television news coverage due to was excluded due to the lack of available transcripts. Also excluded were radio, and online only news sources due to time constraint.

Each case study qualifies as a mass shooting according to the FBI's definition. All three case studies initially received significant media attention. They also had varying racial dyads between victim and offender. The three case studies chosen were the Mattapan Massacre (Boston) in 2010, the Tucson, Arizona shooting in 2011, and the Oak Creek, Wisconsin shooting in 2012.

Literature Review

The Federal Bureau of Investigation (FBI) presents national homicide data through the Uniform Crime Reports (UCR) and Supplemental Homicide Report (SHR). According to the 2009 and 2010 SHR's, the majority of murder victims were male (77.6 percent). African Americans accounted for 50 percent of victims. Whites accounted for 45.2 percent of victims while 2.4 percent of the victims were of other races (Cooper & Smith, 2011). African Americans only constitute 13.1 percent of the U.S. population despite making up a majority of crime victims (State & County Quick Facts, 2011).

Fear of crime in America remains constant despite the declines and stagnant crime rates since the 1990's (Drakulich, 2012). Drakulich conducted a study in 2012 on racial anxieties to determine whether those who possessed racial stereotypes would have a higher perception of criminal danger than those who did not possess racial stereotypes.

Drakulich found that respondents who did not report interacting with neighbors of other races or ethnicities were more likely to possess racialized crime stereotypes. Those who did interact with other races and ethnicities were less likely to possess racial crime stereotypes. For example, Drakulich found that interactions with members of a different race led to a decreased likelihood of stereotyping African Americans and Latinos as gang and drug involved (Drakulich, 2012).

Stereotypes are not created based on fact. Stereotyping can lead to false ideas about specific groups. For example, African Americans are often stereotyped as criminals; this leads people to fear them due to the false stereotype (Mears et al., 2011). This issue is important to consider due to the widespread growth of media. Stereotypes now have the ability to be spread very quickly and reach many people.

A majority of Americans rely on the mass media for information about crime as opposed to obtaining information through personal experience. It is important, that the media reports

accurate information regarding crime to the public (Jewkes, 2011). News organizations serve the important purpose of informing the public; however, they also serve a conflicting role, which is to make a profit. In order for news organizations to make a profit they have to maintain high ratings and newspaper sales. This then leads to an emphasis on certain news stories that appeal to a mass audience known as newsworthy stories (Callahan, 2012).

Crimes that are considered newsworthy are those that include drama, a vulnerable victim, and are out of the ordinary (Callahan, 2012). Bing (2010) argues that the media constructs a connection between race and crime through social constructionism. According to Bing (2010), African Americans were twice as likely as whites to be shown under physical restraint by the police. This is true despite whites being accused of similar violent crimes.

According to Potter & Kappeler (1998), between 1991 and 1994 crime and victimization rates in the U.S. decreased. Despite the decrease in crime, all the major television networks consistently raised the number of violent crime stories they reported each year from 1991-1994. Despite the consistent drop in 1994 the public, when asked about their perception of crime, 88% answered that they thought it was at an all-time high. Politicians fueled this false perception of crime by proposing new laws that would combat the "crime problem" (Callanan, 2012).

Few crimes are considered as newsworthy as mass murder. This is because it is shocking, infrequently occurring, and involves multiple victims. Mass murder attracts local, national and sometimes even international media attention. There are however, some mass murders that are considered more news-worthy than others. Past studies have suggested this is because of certain characteristics. One characteristic is that of a lone gunmen who shoots strangers in a public setting. Less coverage is devoted to mass murders involving fire, family members of victims, and mass murders that were committed in connection with property offenses (Duwe, 2000).

Case Studies

The FBI defines "mass murder" as four or more murders occurring during the same incident, with no distinctive time period between the murders (Federal Bureau of Investigation, 2011). These events typically involved a single location, where the killer murdered a number of victims in an ongoing incident (Morton, 2008). Mass murders are rare but tragic crimes. Even in a nation which is becoming increasingly violent, mass killings demand attention.

This study examined three cases involving mass shootings to determine if there exists any media bias in homicide cases. The cases were all chosen because they were mass shootings (according to the definition of the FBI). The cases included mass killings in the Mattapan district of Boston, Tucson, Arizona and Oak Creek, Wisconsin. These specific case studies were also chosen because they initially appealed to elicit differing levels of media attention. The Mattapan case received only local media coverage. The Sikh Temple shooting received local media attention

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?

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 to find scholarly, peer-reviewed journals:

   http://bit.ly/APCapstoneEBSCO

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

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Lesson 9: 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 a student's 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.

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. Use the description of the various methods 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 10: Big Idea 1: Question and Explore

Choosing and Defending 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)?

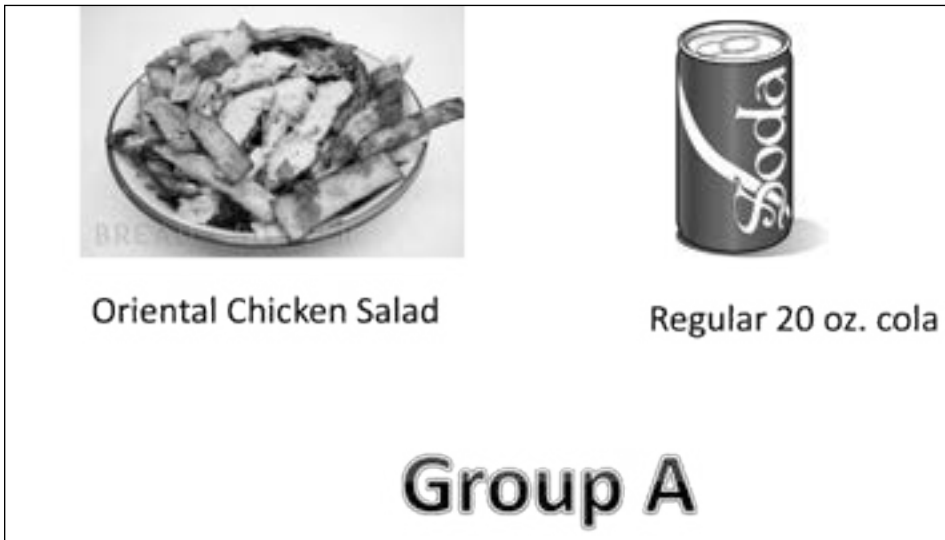
4. Why would a scholar want to implement a mixed methods (both qualitative and quantitative) approach?

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.

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 table 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 last two sets of homework you generated:

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 11: 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 always evaluate the strength of your 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. However, if the abstract contains components that do not show up in the paper, the reader will consider how your paper should be scored for inappropriately using organizational elements.

Did You Know?

Learning about ethical research practices that pertain to human subject research is both free and online.
Visit: **https://phrp.nihtraining.com/index.php**

Ring of Truth Activity

Directions

1. Without talking to your table group members, indicate on the associated chart the number of a particular statement from the next page that you believe to be TRUE by placing that number within the ring.
2. Indicate the number of a statement from the next page you believe is FALSE by placing it far outside the ring.
3. If you are unsure if a statement is TRUE or FALSE, indicate that uncertainty by placing the statement number right outside the line of the circle on the chart.
4. When prompted, check your understanding as the instructor reveals the truthfulness of each statement.
5. After you have checked your understanding, what anticipated misconceptions or misunderstandings do you think you will have about the organizing principles of the results and discussion components of your academic paper?

Ring of Truth Statements

1. In social sciences, the results component is where you evaluate your hypotheses.
2. Most academic papers contain discussion components that tie the results or evidence back to the original question, hypothesis, or assumptions as well as linking it to the findings of other studies.
3. It is acceptable to qualify your claims when discussing your results (using such words as *some*, *probably*, *most often*, and *may*.
4. When describing your results in a paragraph, it is a "best practice" for the results to be described in order of most importance to least importance.
5. If tables and figures are used to organize a student's results, such should not repeat the same information already given in the text of the manuscript.
6. In humanities-based research, limitations and implications are not included in the discussion component of the paper.
7. Historical academic papers often include results and a discussion of the results throughout the paper instead of distinct results and discussion sections.
8. When including figures, charts, and graphs to organize your results, the labeling of such images is the same regardless of the discipline.
9. Historical and humanities-based research papers can contain graphs and data tables.
10. It is acceptable to determine which results to present by deciding which are relevant to the question(s) presented in the introduction, irrespective of whether or not the results support the hypothesis(es). The results component does not need to include every result you obtained or observed.

Directions

As your instructor models the strategy of picking apart a humanities and a science academic paper to identify the organizing principles of the results and discussion components of these papers, record these principles in the table below.

Academic Paper Title	Discipline Associated with Academic Paper	Brief Description of Organizing Principles of the Results and Discussion Components
To House a Moor and End a Marsh: Jane and Imperialism through Liminal and Structural Processes in Jane Eyre	Humanities	
A Plan for Conversion of Stormwater to Groundwater Recharge on the Utah	Science	
Implementation of a Ten-Tone Equal Temperament System	Art	
Following Sweden's Success: Promoting Intercultural Citizenship in the United States	History	
Victim Worthiness: The Effect of Media Coverage on the Portrayal of Homicide Victims	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.
2. In your table and on chart paper, record a brief explanation of the organization or structure of these components. Be prepared to share how the structure of these components of the paper meets the requirement for the student 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 the differences in structure and organizing principles for these three papers in the table from the previous section.

Arts-Based Academic Paper

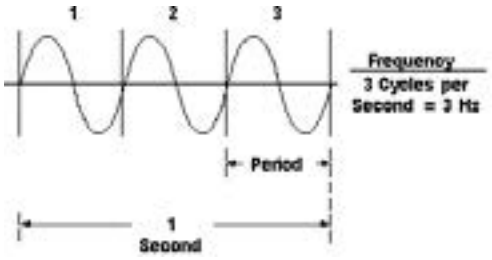


Figure 3. Completion of a 3 Hz sine wave[18]

Notice in the picture above that one completion of the wave is called a cycle, which then repeats.[19] The term frequency (perceived as pitch) is measured in cycles per second, or Hertz. The higher the frequency, the more cycles per second, so therefore the higher the pitch. Humans typically have a hearing range from 20 Hz to 20,000 Hz (or 20 kHz).[20] The wave is measured in meters per second, where the velocity (speed of the sound) is divided by the time. In order to find the time, take the inverse of the frequency. Therefore, the lower the frequency, the longer the resulting waveform will be.

The sine wave is the simplest waveform because it has only one harmonic (called the fundamental, which is the pitch you perceive it to be).[21] Harmonics are the building blocks that make up a sound. As more harmonics are added in addition to the fundamental, the waveform becomes more complex; and the timbre, which is the characteristic of the sound, changes too. For example, a piano and a clarinet may be playing the same note: however, they sound different because their complex waveforms are composed of different harmonics, resulting in different timbres. Many of these concepts were used in the creation The Decitone.

4.2 Implementation Of The Number 10

The idea of creating an equal temperament 10-tone system was inspired by the prominence of the number 10 in systems of measurement, such as in the metric system. Creating a musical system based off of 10 opens a whole new dimension of composition possibilities and connects music with the rest of the scientific world. First, a chart in Excel was created, in which all of the notes on the piano and their corresponding frequencies were mapped out. The frequencies were labeled "y" and each frequency was assigned an ascending multiple, "x." Once the coordinates were computed and a graph was assembled, the result was the frequency spectrum of an equal temperament piano. Using Excel, an equation of the graph was generated. Therefore, if any value were substituted for x in the equation, it would yield the corresponding frequency in the equal temperament system. In order to generate x values for the new 10-tone system, a new change in x would need to be created, like a semitone. A semitone is also known as a half step because it is half of a normal whole step on a keyboard.[22] If one were to strike every note on a piano in an ascending order until the first note was repeated, they would play 12 semitones. The 10-tone system does not have semitones because the actual notes are different, but it is just a point of comparison because it is still a consecutive step up. In order to create 10 "semitones" instead of the normal 12, the number 12 was divided by 10 and the result is that the new delta x (change in x), will have a space of 1.2 instead of 1. A0 was then labeled with the x value of 0 and then 1.2 was then added consecutively in order to create the new notes. Each x value was then substituted into the formula in order to generate the frequency for each 10-tone equal temperament note.

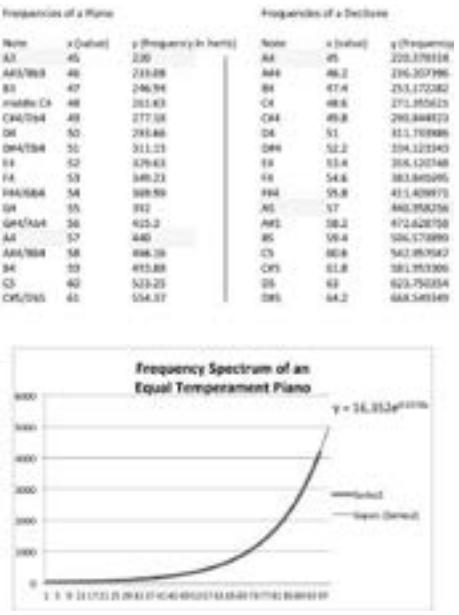


Figure 4. Frequency spectrum and examples of charts

Next, a system was needed in order to play the "notes."

4.3 Sounding The New Notes

There is a program called "MAX MSP" that allows one to perform various operations by connecting a spider web of "objects," each one having their own special functions. In the program, one can make use of a MIDI keyboard. MIDI stands for Musical Instrument Digital Interface and is a standard that allows for devices to communicate with one another by relaying a variety of performance data.[23] For example, when each note on a MIDI keyboard is triggered, they output a signal that has a numeric tag which tells the computer what note was just played. The idea of MIDI was taken a step further as these "tags" were routed so that the incoming MIDI notes will trigger the corresponding 10-tone frequency. The notes were assigned in the order of A to F#, and then back to A.

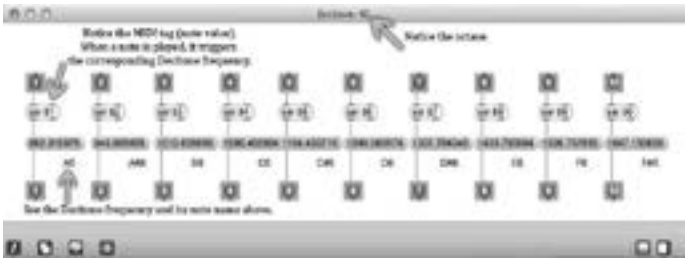


Figure 5. MIDI notes trigger their corresponding frequencies

Page5

Once the frequencies are triggered, an oscillator creates a sound at the pitch of the triggered frequency. The oscillator can create the sound for any frequency by constructing the electronic signal that one cycle of the frequency produces, and then repeating it.[24]

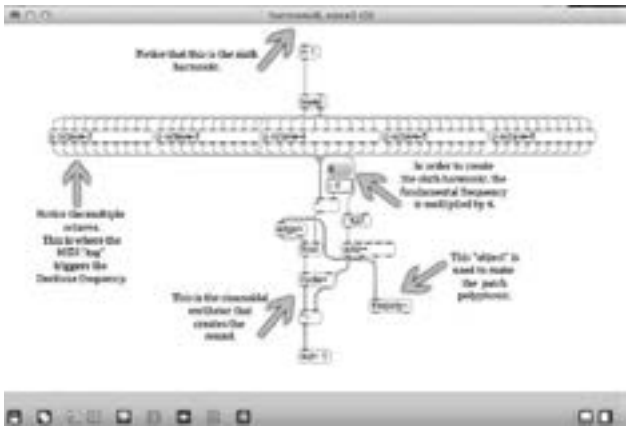


Figure 6. Sound is created through an oscillator

The sound that The Decitone creates has multiple oscillators, a technique called additive synthesis, involving the addition of harmonics. Additive synthesis is accomplished by adding numerous sine waves at different multiples of the fundamental frequency together, each at a different volume.[25] Creating a more complex sound by adding harmonics incorporates the same idea as the piano and clarinet example from earlier (4.1). Therefore, The Decitone has a unique timbre because of its harmonics.

Page6

The patch was then made polyphonic so that multiple notes can be played at the same time. The resulting sound is very interesting, as human ears are not conditioned to the unique intervals. But, it adheres to a type of equal temperament scale.

4.4 Examples

It is important to actually hear the new system to understand the uniqueness of The Decitone. First, please copy and paste the following links into an Internet browser, then open and listen to the audio file. The first audio file is of a chromatic scale starting on A of a normal 12-tone system for reference.

http://www.ncurproceedings.org/ojs/index.php/NCUR2014/article/view/1096/609

Now, notice as the same chromatic scale is now played on The Decitone.

http://www.ncurproceedings.org/ojs/index.php/NCUR2014/article/view/1096/613

Next, the childhood song "Mary Had a Little Lamb" is played using The Decitone.

http://www.ncurproceedings.org/ojs/index.php/NCUR2014/article/view/1096/615

Notice the dramatic difference.

5. Accessibility of the System

People have created an equal temperament system based off of the numbers 31, 53, and 72. However, none were found to have been based off of the number 10.[26] These systems in the past never found practical use among composers and performers because of the difficulty involved in creating instruments that could perform the new temperament system. However, this system is extremely accessible as all one needs is a computer, the 10-tone system standalone application, and a MIDI keyboard. What is most interesting about the system is that using the procedure developed, virtually any other whole number division of the scale imaginable can be assembled.

6. Conclusion

Overtime, individuals have pushed the common practices of music in order to achieve a new expressive effect. This study strayed from the norm of a 12-tone equal temperament system and created a new equal temperament system with 10 notes. The resulting sound is very unique and interesting, but it allows for new expression in music and for music to connect with the scientific world. Who knows where music will evolve next?

Please find the downloadable version of the Decitone at: www.andrewgula.com/the-decitone

History-Based Academic Paper

2 Having chosen the two documents to analyze, I further researched language education in both Sweden and the United States. The research data consisted of studies done by the European Commission, which is the executive body of the European Union. For information on language learning in the United States, I found studies done by the Center for Applied Second Language Studies.

4 The data was viewed and analyzed through a Critical Language Policy lens, with insight from the Ethnography of Language Policy.[16] This methodology is important for this research study because it not only seeks to analyze policy documents but also how the policy is interpreted and ultimately, implemented at the local level. Critical Language Policy also examines the different levels of discourse and how they can vary in the interpretation of the policy document. Johnson states, "Each context-federal, state, district, school, classroom etc. – carries its own set of dominant and alternative discourses about language education and language policy."[17] The different levels of discourse can have different interpretations of the language policy. This method, then, was chosen because it looks not just at the actual texts of the documents but also at how they are implemented at the local level.

4 To further aid the analysis of the two documents, I utilized WordSift, an online word cloud tool for educators. This resource identifies important words in the inserted text and creates a word cloud and a text concordance. This tool was useful in analyzing the vocabulary and word use of both documents.

4. Analysis

4 The analysis of the documents includes interpreting the general purpose and intent of the documents. The context in which the document was written in is equally important. The structure of the document and the language use was also analyzed for the purpose of this study. The historical context of *Promoting Language Learning and Linguistic Diversity: An Action Plan 2004-2006* is related to that of the European Union. After World War II, it was necessary to create a peaceful Europe and to take necessary means to prevent such destruction from occurring again.[18] Thus, the European Union was created in order to establish an international organization to promote mutual understanding of member states and it recognizes the cultural and linguistic diversity that exists in Europe. The intent of the document is to promote the learning of foreign languages for the purpose of better communication and mutual understanding among member states. As the document states, "Building a common home in which to live, work and trade together means acquiring the skills to communicate with one another effectively and to understand one another better. Learning and speaking other languages encourages us to become more open to others, their cultures and outlooks."[19] The European Union has been expanding, and with this, the need for language learning for intercultural competence between its members. Thus, the purpose of this document is to promote language learning for the increasing diversity of the region, work, trade, communication for mutual understanding and to for global market success.

3 In many ways, *A Call to Action for National Foreign Language Capabilities* is similar to *Promoting Language Learning and Linguistic Diversity: An Action Plan 2004-2006.* The intent of both documents is comparable because both of them call for the promotion of language learning. However, there is a difference in purpose for which they call for language learning. In contrast to the European Union Action Plan, the United States Language Conference promotes language education for the purpose of national security. The document authors state, "We must act now to improve the gathering and analysis of information, advance international diplomacy, and support military operations. We must act to retain our global market leadership and succeed against increasingly sophisticated competitors whose workforces possess potent combinations of professional skills, knowledge of other cultures, and multiple language proficiencies."[20] Clearly the purposes and reasons for improving foreign language capabilities in the U.S. National Language Conference document are very different than in the European Union Action plan. The main reasons that this documents states for the reasons of promoting foreign language education are for national security, economic competitiveness, and domestic well-being.[21] On the other hand the European Union document states that there is a need for action for the reasons of work and trade, communication, understanding, and global market success.[22] Thus, we can analyze that although both documents promote language learning and seek action to improve foreign language education, they do it for very different purposes and reasons.

5 The structure of the documents is also meaningful. In the introduction of the European Union Action Plan, the reader is introduced to the context of the importance of language learning in the European Union. Right away we can see that language learning is highly valued because it is needed for intercultural competency, economic and trade purposes, communication, and the global market-place. In fact, so much value is placed in promoting language learning that it is not enough to only learn one language, but the learning of two other languages is encouraged: "Learning one lingua franca alone is not enough. Every European citizen should have meaningful communicative

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competence in at least two other languages in addition to his or her mother tongue".[23] Clearly the standards are quite high but this demonstrates that importance and value that is put on language learning in European culture. In the first section of the action plan, the three broad in which action needs to be taken for language learning are introduced. The first area is "Life-long Language Learning," where the importance of starting at an early age and learning through adulthood is demonstrated. The second area is ""Better Language Teaching," which focuses on teaching the different languages as well as teacher training. The third and last area that is described is "Building a Language-Friendly Environment." This area is important because it identifies the importance of language diversity in the European Union, and it values communities where all languages are welcome. The last section of the overall document includes actions that are proposed for the years 2004-2006. This section further describes details about specific actions that can be taken to support the broader areas introduced in the first section.

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The structure of the National Language Conference document differs from that of the European Union. The document starts out similarly, detailing the context of the document. The purpose of the document is stated and background information is given. Much attention is given to the "Sputnik" moment and the importance of the second wakeup call, the terrorist attacks of 9/11. This is done in order to contextualize the document's purpose for supporting language education. In the next section, the document outlines the importance and the urgent need for national leadership to increase the nation's foreign language capabilities.[24] The last section of *A Call to Action for National Foreign Language Capabilities* lists the different actions that were recommended during the National Language Conference. They are as follows: 1. Develop cross-sector language and cultural competency. 2. Engage federal, state, and local government in solutions. 3. Integrate language training across career fields. 4. Develop critical language skills. Some of the languages identified as "critical languages" were Arabic, Urdu, Farsi, and Pashto. 5. Strengthen Teaching capabilities in foreign languages and cultures. 6. Integrate language into education system requirements. 7. Develop and provide instructional materials and technological tools. These are the seven actions that are stated in the document as necessary for the United States to do in order to develop foreign language capabilities.[25]

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The vocabulary and language use of both documents is also important to analyze. It was interesting to see how both of the documents used similar language and vocabulary. The text of both documents was inserted into a word cloud which worked to visualize the words used in the document.

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Figure 1. Word cloud created with WordSift, using the text *from Promoting Language Learning and Linguistic Diversity: An Action Plan 2004-2006*.

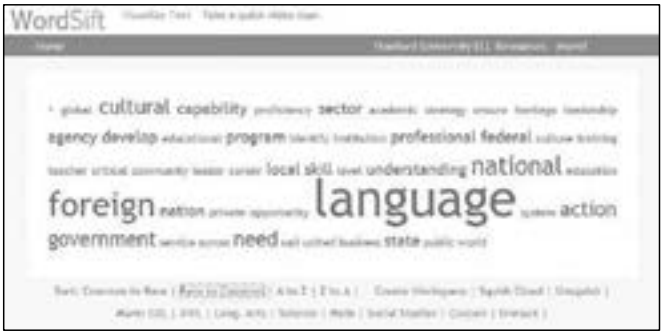

Figure 2. Word cloud created with WordSift, using the text from *A Call to Action for National Foreign Language Capabilities.*

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It is interesting to see the similarities in the word clouds. Not surprisingly, the most frequent word in both documents was "language." Other words that also appeared were culture, education, learning, teaching, foreign, government, and action. Many of these words appeared in both of the word clouds. Clearly, vocabulary and language usage are similar across these documents. However, the similarity is a surface phenomenon. They may seem the same and they may promote the same general goal but the outcome is different. Thus, although both documents have some similarities, it can be said the intent and path that the documents take toward second language competence differ.

5. Discussion

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The analysis of these documents demonstrates that one document promotes intercultural citizenship more than the other. The European Union's *Promoting Language Learning and Linguistic Diversity: An Action Plan 2004-2006* promotes language learning for the purposes of mutual understanding and communication, thus it supports intercultural citizenship the most. In contrast, the United States National Language Conference's document, *A Call to Action for National Foreign Language Capabilities*, promotes language education for the purposes of national security. It does not do much to encourage language learning for the purposes of cultural understanding and intercultural citizenship. In general, the United States does not do much to promote cultural competence, especially with regard to our neighboring countries. United States federal educational policy does not promote the learning of Spanish, even though Spanish is the most widely spoken language of the Americas. It is important to note this because Mexico and the United States share a complex historical relationship yet, it cannot be said that intercultural citizenship is actively encouraged by the United States (or, for that matter, by Mexico).

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There is irony in the fact that the United States National Language Conference called for the need to improve foreign language abilities in the nation, yet, there is no funding to actually work on accomplishing this goal. As far as I was able to find, nobody answered this "call" to action at any level of government. In general, the purpose of the policy recommendations for the U.S. National Language Conference document is misguided. It promotes language learning for the purpose of national security instead of intercultural competence. It can be said that foreign language education called for in this document is viewed as instrumental, just another tool for world dominance and for national security. This document does not focus on creating peace and mutual understanding between neighbors but instead uses language to combat the perceived threats, with citizens viewed as resources for national security. In contrast, the European Union action plan looks at foreign language education as integrative. In this document, language learning is a tool for growth. There is a sense of coming together and mutual understanding from learning each other's language. This is emphasized in this document and it is a clear example of how the European Union works to promote it amongst its member states.

9

6. Conclusion

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Sweden's achievement in language learning should serve as an example for the United States. Based on the success of Sweden and countries from the European Union foreign language education, I would like to offer some recommendations of what the United States can do to promote language learning and intercultural citizenship. First, it is important to begin learning at an earlier age. Many students in the United States do not begin learning a foreign language until middle or high school. There also needs to be an emphasis on deep cultural learning along with language learning, which would promote cultural understanding and create better global citizens. Another recommendation is to fund and encourage teacher exchanges. This should not only be at the national level, but at the international level where teachers would experience living and learning in a new cultural context. Teacher exchanges are encouraged in the European Union and along with having teacher networks where teachers could connect internationally, this could create more mutual understanding among those teachers and their students.

5

Study abroad opportunities should be offered for all students. Although many colleges and universities offer these programs, they are not always accessible for everyone, and so this is a problem. Study abroad programs need to be made more accessible for all students. Adult education is also important. The European Union action plan states that language learning should start at an early age and go through adulthood. Adults who would like to learn additional languages should have the opportunity to do so. Overall, there needs to be more governmental involvement in promoting language learning. All levels of government should promote foreign language. The last recommendation is that language learning should be promoted for the purpose of cultural competence and intercultural citizenship and not just for national security. It is very telling that the only document that I was able to find that promotes language learning by the government was done under the leadership of the U.S. Department of Defense whose focus was national security. National security is important of course, but it should not be the only reason for promoting language education.

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8. References

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3 European Union. "The history of the European Union." *European Union*. European Union. Web. 01 Mar 2013. <http://europa.eu/about-eu/eu-history/index_en.htm>

4 *A Call to Action for National Foreign Language Capabilities*. (2005). The National Language Conference. Washington D.C.: Department of Defense, Print.

5 Byram, M. (2008). *From foreign language education to education for intercultural citizenship*. Clevedon, UK: Multilingual Matters, 69.

6 Byram, M. (2008). *From foreign language education to education for intercultural citizenship*. Clevedon, UK: Multilingual Matters.

7 Pufahl, Ingrid, and Nancy C. Rhodes. "Foreign Language Instruction in U.S. Schools: Results of a National Survey of Elementary and Secondary Schools." *Foreign Language Annals*. 44.2 (2011): 258-287.

8 Pufahl, Ingrid, and Nancy C. Rhodes. "Foreign Language Instruction in U.S. Schools: Results of a National Survey of Elementary and Secondary Schools." *Foreign Language Annals*. 44.2 (2011): 258-287.

Social Science-Based Academic Paper

Giffords, a nine year old girl, Christina Taylor Green, and three senior citizens who came out to support Gifford's event, Dorothy Morris, 76, Dorwan Stoddard, 76, and Phyllis Schneck, 79 (Lacey & Herszenhorn, 2011).

Jared Lee Loughner was arrested at the scene by police and taken into custody. Originally Loughner pled not guilty to the 49 charges against him on March 9, 2011. On March 25, 2011 he was diagnosed with schizophrenia and the judge ruled him incompetent to stand trial (Bendery, 2012). After months of treatment, Loughner was ruled competent on August 7, 2012 to stand trial based on testimony from various medical personnel (Santos, 2012).

Assistant U.S. District Attorney Christina Cabanillas, offered Loughner a plea deal of life in prison without the possibility of parole. By accepting this plea, Loughner avoided the death penalty. He pled guilty on November 8, 2012 and was sentenced to seven life terms and an additional 140 years on federal charges (Martinez & Lah, 2012).

Case Study #3. Sikh temple Shooting (2012)
On August 5, 2012 a gunman killed six people and injured three in Oak Creek, Wisconsin. The shooting happened during Sunday services at a local Sikh Temple (Romell, 2012). The victims included, Suveg Singh, Sita Singh, Ranjit Singh, Satwant Sing Kaleka, Paramjit Kaur, and Prakash Sing (Green, 2012). The shooter was identified as Wade Michael Page, a 40- year- old white male. The first officer to arrive on scene was Brian Murphy. Upon his arrival the two exchanged gunfire. Page hit Murphy nine non-fatal times. One shot from Murphy hit Page, which immobilized him. Page then committed suicide by shooting himself in the head (Romell, 2012).

The Federal Bureau of Investigation's Joint Terrorism Task Force, led by Special Agent Teresa Carlson and Oak Creek Police Chief John Edwards, investigated the shooting as an act of domestic terrorism because of the tattoos found on Page's body (Pearce & Bennet, 2012). The Southern Poverty Law Center (SLPC) a hate crimes research organization had been watching Wade Michael Page for over ten years. In contrast with the FBI, in the SPLC's final report labeled the shooting an act of domestic terrorism. They also suggested that the attack was motivated by hate (Elias, 2012).

FINDINGS

Part I – Type & Quantity of News Stories
The following tables analyze both the quantity and type of local and national media coverage. Each case study is presented in the first column. The second column in the table is the number of total stories dedicated to each incident. The final column represents the predominant area of the media's focus labeled "Top Category." Each article was divided into categories based on the

predominate subject of the article. These categories were victim, offender, incident, investigation, trial and other.

Table 1. Local Newspaper Coverage

Case	Total Coverage	Top Category
Mattapan	77	Trial 37 (48.05%)
Tucson	165	Victims 43 (26%)
Sikh Temple	31	Victims 9 (29.03%)

Table 2. Local Television Coverage:

Case	Total Coverage	Top Category
Mattapan	178	Trial 94 (52.81%)
Tucson	490	Victims 120 (32.34%)
Sikh Temple	316	Victims 112 (35.44%)

As evidenced in Tables 1 and 2 the local media in the Wisconsin Sikh Temple and Tucson shootings focused more of their coverage on the victims. Boston focused a majority of its coverage on the trials of the Mattapan murder defendants. It is difficult to interpret these results most notably because there was no trial in the Sikh Temple Shooting due to Page's suicide.

What is clear is that the victims in Tucson and Oak Creek warranted more coverage than those in Mattapan. As discussed in the full report, media will emphasize homicides involving strangers, minimize the murder of African Americans and will rationalize inner-city violence. Both Oak Creek and Tucson were stranger-based shootings. Mattapan involved the murder of four poor African Americans in the inner city.

An explanation for the differences in coverage between the Sikh Temple victims, Tucson victims and the Mattapan victims could also be based on the victim's backgrounds. The victims of the Mattapan shootings were described by local media as being involved with drugs or having previous criminal histories. The only victim described as "innocent" was Amanihotep, the two-year- old boy who was shot, (Cramer, Mattapan Slay Trial Back Before Jury, 2012). In contrast, the Tucson victims were all white victims. Gabby Giffords received the most coverage out of all of the victims and this could be directly related to her status as a congresswoman (Nowicki, 2011).

Unlike the Mattapan Massacre victims, the victims in the Sikh Temple Shooting and Tucson case did not know their attacker (Green, 2012). It has been reported that the media are more likely to cover cases if the victim and offender are strangers (Potter & Kappeler, 1998). This could explain why the Sikh Temple Shooting and Tucson were national stories whereas the Mattapan shooting was not.

Table 3. National Newspaper

Case	Total Coverage	Top Category
Mattapan	0	0
Tucson	348	Victims 107 (31%)
Sikh Temple	33	Incident12 (33.36%)

Table 4. National Television News

Case	Total Coverage	Top Category
Mattapan	0	0
Tucson	400	Victims 120 (30%)
Sikh Temple	93	Incident 34 (36.56%)

As evidenced in Tables 3 and 4 the Mattapan case did not receive any national coverage. This is true despite Mattapan qualifying as a mass killing consistent with Tucson and Oak Creek. The results from the second column in Tables 3 and 4 are consistent with our hypothesis of media bias and victim worthiness.

The Sikh Temple and the Tucson shootings both received national coverage however they differed significantly in terms of quantity of coverage. Tucson received more coverage than the Sikh Temple. As discussed in the full report, race does affect the coverage of crime. White victims are favored over minority victims. The victims in the Sikh Temple shooting were originally from India and all were immigrants to the United States. This may have also affected their status as victims.

In Tucson, the media coverage was primarily about the victims. Although focusing on the victims, the media prioritized some victims over others. Although Gabby Giffords was not the only person injured in the shooting the media often referred to the killing as the "Gabby Giffords Shooting" in many of their headlines. The Sikh Temple shootings' top category was the incident itself. This is inconsistent with my hypothesis because national media covered this case in a mostly objective manner.

Part II – Intercase Study Analysis: Computerized Content Analysis:
The results of the computerized content analysis are presented in the following section. Data for the content analysis came from local newspapers, national newspapers and national television. Table 5 shows the coded keywords searched in the articles and the number of times those words appeared in each case study.

7

Coverage of the Tucson shooting used more subjective language than any of the other case studies. The Tucson shooting also received more national coverage than Oak Creek and Mattapan (which received none). Although it is not clear why, previous research can aide in our interpretation. Typically, high profile cases involve white victims. High profile cases also tend to be covered if they are considered stranger-based. Also, cases are more likely to be covered when the victims are of a higher status. The Tucson case, more than any of the other case studies, contained these themes.

One interesting data point can be found in the analysis of table 5. The media used the term "tragedy" nearly 200 times in describing the Tucson killings. This occurred in nearly 1 out of every 5 stories (18.6%). More than any other phrase this term demonstrates media bias and victim worthiness. Despite the death and destruction occurring in each shooting, the media clearly portrayed the Tucson killings as "worse." This demonstrates positive support for the hypothesis.

Table 5.

Word	Mattapan Shooting	Tucson Shooting	Sikh Temple Shooting
Brave	0	3	1
Bravery	0	16	0
Child	4	31	0
Disturbing	0	24	0
Drugs	5	30	0
Evil	0	14	1
Father	1	17	7
Heartbreaking	0	0	0
Hero	0	28	4
Husband	0	51	0
Horrendous	0	0	0
Horrific	0	13	0
Innocent	4	15	1
Monster	0	8	1
Mother	2	48	1
Peaceful	0	12	5
Pure	1	1	0
Strong	0	40	0
Terrorism	0	4	20
Tragedy	1	174	26
Veteran	0	0	3
Wicked	0	2	0
Wife	1	44	3
Worst	1	16	4
Number of Phrases / Stories	20/66 (30.30%)	623/996 (64.5%)	78/151 (51.7%)

In conclusion, the findings yielded positive results in support of the hypothesis that there would be a media bias in the portrayal of homicide victims due to extralegal factors of the victim and or the offender. The limitations of the study included the time limit allowed for the research (10 weeks). Also, the content analysis was completed by only one coder thus allowing for possible

Reflect

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

Page L–138 has intentionally been left blank.

Lesson 12: Big Idea 1: Question and Explore

Engaging in Ethical 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 (p. 44) for more information. Below are the links to the Health and Human Services publications pertaining to human subject research and IRBs.

http://www.hhs.gov/ohrp/humansubjects/guidance/belmont.html

http://www.hhs.gov/ohrp/policy/checklists/decisioncharts.html#c2

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

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

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 _____

Checking for Ethical and Safe Research Practices

Directions

1. Review the Example Social Science Inquiry Proposal included below. Follow along as your teacher demonstrates how to evaluate if the ethical and safe research practices are *implied*, *made explicit*, or *missing* and places the information on the table.

Image of Islam in the U.S. *Inquiry Proposal*

AP Research

Image of Islam in US

1. How does the rise of Islamic-based extremist groups affect the image of Islam in the United States of America through media? (What are the perspectives of American adolescents on Islam?)
2. As this topic is a recent event, there are gaps in the research regarding the view of Islam by adolescents in America. Through this research, I will hope to fill this gap in research.
3. Some information that will have to be collected to answer or address my question would be any books or online journals talking about Muslims in America. I will also need to conduct my own research to fill the gap I am basing my research on. This research will be conducted in the form of an interview. Potential interviewees would include a random assortment of seniors from B. C. High School from multiple backgrounds and ethnicities, depending on how the randomization process results. This method will ensure that I will include as many different American adolescents as I can.
4. The introduction will cover books and articles published about Muslim communities in the United States. Authors of such works will include Leila Ahmed: the holder of the Victor S. Thomas Professor of Divinity chair at the Harvard Divinity School.
5. A case study research method will be used to collect data on the the perceptions of American adolescents. This shall be conducted through an interview inquiring multiple questions on the topic while attempting to not sway viewpoints.
6. For this research, a recording device and a computer will be required. As I interview the subjects, I will note all responses by each individual. Afterwards, I will translate the information into a computer for safe storage of the data and a more formal appearance. I will need interviewees as well to conduct my research upon.
7. Challenges that may occur during the research process is the acquisition of interviewees and the information that I may pull from for background knowledge on the subject. In terms of the interviewees, though I will be pulling from a generally large group, I will need to randomly select individuals as to eliminate bias. In terms of the background knowledge, this topic is still new in regards to what I am trying to research, so any information related to the topic may not be present.
8. As I will be interacting with humans, I will need an IRB from the school district to make sure my research will not violate any rules. I will also require consent forms to keep participation voluntary.
9. Interesting and relevant study! Will be excited to see what you find.
   Mrs. Magrogan-I'm interested in what your method and analysis reveals.

Proposal Title	Explicit	Implied	Missing	Should Safe/ Ethical Practices be Made Explicit (Y/N) and why	How could this proposal be IRB Exempt?
Example: Image of Islam in the U.S.					
Sustainable Operations					
Mathematical Incompetence					

Proposal Title	Explicit	Implied	Missing	Should Safe/ Ethical Practices be Made Explicit (Y/N) and why	How could this proposal be IRB Exempt?
Politically Correct Movement					

2. Complete the table above using the three 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.

3. As you complete the table, develop a list of criteria or guiding questions that you can use to ensure you are addressing ethical and safe research practices in the method of your inquiry. Be prepared to share your responses.

Sustainable Operations Inquiry Proposal

Sustainable Operations Inquiry Proposal

Use the following to create a formal research proposal. **Print this form and fill it out for teacher approval.** This will serve as your WRITTEN portion of the Research Proposal.

1. State your name:
   A.

2. Provide the working title for your research
   Sustainable operations and architecture in Chicago
3. Describe your issue and your curiosity with your topic. What led you to this topic?
   I have always been passionate about the topic of architecture because it's a profession that requires creativity and individualism but also technical, scientific skills. The idea of sustainable architecture seemed important to me because there has been an increasing awareness over the topics of global warming, climate change, and the carbon footprint in the last 25 years or so. These topics have been advertised and the public has become more aware of the environmental impacts of modern society. Also, architecture/building is part of our infrastructure so I believed that the architecture field would be able to make a large impact on the environmental issues we face today.

4. **State your research question** and then indicate the following:
   How can the effects of sustainable operations guidelines in Chicago influence the integration of sustainable architecture in the next 40 years?

   a. What variables you are measuring?
   I am measuring the effects of sustainable operations guidelines in terms of environmental impact, specifically in air quality, I could measure different qualitative indicators of sustainable urban construction like health and comfort of the building and the full use of available technology. I would also still like to take public opinion into consideration (opinion of the people that must adhere to the guidelines) .

   b. What is your scope (Who? How large?)?
   My scope or setting is in the US, specifically Chicago. However, I do plan on looking at guidelines of sustainable operations, some of which are national policies and can be enforced in different ways in cities/urban areas like Seattle and New York. Because of that, I can compare the effect of guidelines between cities (to an extent) so the scope can be US cities in general at times. he time I would be looking at would be the last 20 years because that is when policies started to arise and climate change became a big issue.

   c. What is the value (Why is it significant? Why will researchers in your field care? Why will anyone care?)
   It would be valuable to see how effective the sustainability guidelines have been since they were enacted because the main goal of them is to prepare Chicago for climate change and improve the carbon footprint for cities.

It would be valuable to see how the architecture could improve based on how the operations policies have affected the sustainability of the city and the infrastructure at the time. Also, the topic is just interesting because architecture is art in its own respect so there is so much beauty and complexity with this topic and the reader will enjoy reading about it.

d. How is your research feasible (What resources are available to you? Who is your consultant? How can your consultant help you?)

The research is very feasible because there were specific guidelines set out for the city of Chicago in the local programs and policies that I know of, and the national policies have requirements as well. Also, the idea of sustainability and being "green" is very popular, so many papers exist with indicators of sustainability. The actual data exists because it is data of today, not of the past. People are currently collecting data on things like water consumption of buildings because it's important, where they might not have in the past because it wasn't a blown up issue. My consultant is Ms. O., who is an architect and an architecture professor at College of Dupage. She can guide me in the right direction in terms of collecting data and how it is done in this field. Also, she was an architect during the time that the guidelines were set in place, so she could tell me if I am not considering all the aspects or perspectives I should be.

5. Describe your purpose and your role for working on this project. (See your PREP entry, "Developing Keywords to Continue Your Research.")

My first purpose and role is to <u>inform</u> the reader on the effects of sustainable operations guidelines in Chicago and report the facts that relate to goals stated for the city. Then, I will <u>analyze</u> why and how these effects are happening, by interpreting the data and seeing if the results are positive or negative. Next, I will <u>evaluate</u> modern approaches to sustainability in cities and see how the effects of infrastructure compared to the architecture used. I will evaluate if these effects are really the most sustainable and how architecture could change whether the answer is yes or no.

6. What is the gap in your preliminary research? How does this gap influence the development of your research question?

The gap in my preliminary research is an analysis of the effects of certain guidelines in Chicago, or basically how effective they really are or could be. Do the benefits compensate for the costs specifically for the city of Chicago? The guidelines are relatively new, so there isn't a plenitude of research done on them. I also think that there is a gap in terms of the future of architecture based on the changes done on the infrastructure to make it more sustainable.

7. What data do you need to collect to answer your question? What research methods do you plan to use in your study. What kinds of quantitative data will you gather? Qualitative data? How will you analyze your data?

The data I need to collect is like my variables. I need to see environmental impacts on Chicago today and compare them to the goals that were set out in guidelines. The quantitative data will come from the numbers that I collect from status reports or other sources on the Chicago guidelines. I will analyze these by determining trends and if the trends are positive or negative. Also, how they are connected to other infrastructure. Qualitative data I could collect would be from surveys and any opinion articles I find. I can analyze the qualitative data by seeing if opinions match

up with the quantitative data or how they could support/refute the effects of sustainable architecture policies.

8. What biases do you have toward your research topic? How will you monitor these biases during your research process?

The only bias that I would think I would have is that I believe sustainable architecture is very important. However, the more I read, it seems that there really is no debate about the importance of making cities sustainable. I really am going in blind with this topic because I am not an architect nor am I knowledgeable in the infrastructure of Chicago, so most of the information is scientific and I will have to draw a conclusion from mostly facts.

9. What equipment or resources do you need to collect data?

Resources I need to collect my data would be access to statistics on the progress of sustainable architecture, which I believe are available on the program websites. I would also need to communicate with supervisors of Chicago buildings or different architects.

10. What are challenges you anticipate when implementing your chosen research method?

I think I might run into the challenge of not being able to accurately interpret the more scientific variables I want to measure, like how to know what the changes in numbers mean or how certain sustainable "procedures" work. My status as a student might hinder my ability to interact with the architects who work with sustainable architecture. The distance might impact how much data I can collect.

11. What approvals do you need prior to starting your research? (IRB, etc)

I might need IRB approval but I don't think the questions I would ask in surveys would be too personal.

Teacher's Approval (signature) _____

Mathematical Incompetence Inquiry Proposal

Inquiry Proposal Form

Mathematical Incompetence

1. Mathematical Incompetence: The Causes Behind Why Students May Struggle With Math To what extent do 9th to 12th grade students have difficulty comprehending math? Two other questions I wish to explore or study include: Is innumeracy caused by the difficulty of the subject or from a lack of motivation? Compared to the student perspectives, what about math do math teachers think may make it difficult?

2. The reason I chose this particular topic was due to the fact that I always excelled in math and science courses and wondered why others had trouble when it came naturally to me. Math comes easy to me where others have to dedicate much more time to it than I do. Because of this I wanted to uncover why that possibly is and why exactly people struggle with math.

3. The information I will collect will be obtained via a survey of different grade level high school students and interviews with various different math teachers teaching different forms of math. The information will pertain to students' motivation levels when it comes to doing math, why they think math is difficult in general, and if they think math is important.

4. Possible sources of information from my conducted research will be from a survey given to students and interviews done with teachers. I can then compare the teacher and student responses to find a possible gap in what makes math difficult to some people. Other sources of information with include other similar studies I have found studying motivation and attitudes towards math and other factors that may lead to the success or failure in the subject.

5. I can give surveys to students and possibly get more in depth answers from interviews with teachers. I can then compare those results to find any possible gaps in what students believe which could help explain why some students struggle in math classes.

6. Equipment I will need includes a survey to administer to students and a recording device for my teacher interviews.

7. Some challenges I anticipate will be obtaining valuable responses from students, hopefully finding time to interview teachers as they may be busy with other work and hopefully finding enough willing students to make my research valuable.

8. Expected approvals other than this document will be an IRB and consent from student participants, parental consent from those who are under 18 and consent from adult participation (teachers).

9. Teacher Feedback: This looks like an interesting study! As someone who dislikes math, I'm looking forward to seeing what you find

The Politically Correct Movement Inquiry Proposal

Inquiry Proposal Form

The Politically Correct Movement

1. Research question (with associate project goals if applicable). Include revise question, if needed.

Do participants believe that the Politically Correct Movement in the United States infringes on the constitutionally given rights to freedom of expression?

2. Reason for choosing the topic of interest and research question/ project goal.

I have always been very loose with my expression and I have also achieved highly in college-level academics, and it interested me to research what forms of my academic expression are protected, and if other believe that I should censor my speech in order to communicate in a more 'socially acceptable' way.

3. Data or information that will have to be collected to answer the research question/address the project goal.

The data collected will provide both an objective percentage of participants with above-average awareness of their rights to expression, as well as a majority consensus of whether or not academic expression is limited by self-censorship (Political Correctness).

4. Brief list of possible sources of information to discuss during the introduction of the paper.

My sources of information are collected from peer-reviewed databases, and my study data will be collected from 11th, 12th, and undergraduate students.

5. Chosen or developed research method to collect and analyze the above data/ information.

Qualitative study with a short-response survey.

6. Equipment or resources needed collect data or information.

Paper, pencil, the survey or interview, and a recording device (if granted permission to use) will be used for this qualitative study.

7. Anticipated challenges to implementing the chosen research method (to collect and analyze data or to pursuing research methods appropriate to a paper that supports a performance/exhibit/product.

The challenge will be finding volunteers who meet the requirements of:

*Taking Advanced Placement, Dual Enrollment, or another form of college-level education

*Are currently in 11th-12th grade, or currently attend an undergraduate program.

8. Expected approvals need and where (IRB. etc).

I have already submitted my IRB and completed the required research methods course.

9. Teacher feedback. You'll also need consent forms from your participants. This is shaping up to be an interesting study.

10. Teacher 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 13: Formative Assessment and Feedback

The Proposal Form

In the previous lesson, you saw three examples of the Inquiry Proposal Form (see p. 55 of 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 proposal form component for strengths and weaknesses. You will then use your own experience and what you have learned in other sessions to outline steps the students could take to improve the quality of each proposal.

Introducing the Proposal Form

Directions

1. Follow along as your teacher provides strategies for guiding this student to improve the research proposal (see the Sample Student Proposal below).
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. Research question (and revised question, if needed)

   How does the rise of Islamic-based extremist groups affect the image of Islam in the United States of America through media? (What are the perspectives of American adolescents on Islam?)

   * What is meant by image?
   * Do you mean all of America? All age groups?
   * Do you mean all types of media?
   * Perspectives about what pertaining to Islam?

2. Reasons for choosing the topic of interest and research question

   As this topic is a recent event, there are gaps in the research regarding the view of Islam by adolescents in America. Through this research, I will hope to fill this gap in research.

   Why is this a topic of interest?

3. Data or information that will have to be collected to answer the research question

   Some information that will have to be collected to answer or address my question would be any books or online journals talking about Muslims in America. I will also need to conduct my own research to fill the gap I am basing my research on. This research will be conducted in the form of an interview. Potential interviewees would include a random assortment of seniors from B. C. High School from multiple backgrounds and ethnicities, depending on how the randomization process results. This method will ensure that I will include as many different American adolescents as I can.

   I am not sure I understand. Are you studying how Americans feel about Islam or about Muslims in America? Consider this question as you search for data and develop interview questions.

4. Brief list of possible sources of information to discuss during the introduction of the paper

   The introduction will cover books and articles published about Muslim communities in the United States. Authors of such works will include Leila Ahmed, holder of the Victor S. Thomas Professor of Divinity chair at the Harvard Divinity School.

   Again, I am not sure I understand. Are you studying how Americans feel about Islam or about Muslims in America? Consider this question as you search for data and develop interview questions.

5. Chosen or developed research method to collect and analyze the above data/ information

   A case study research method will be used to collect data on the perceptions of American adolescents. This shall be conducted through an interview inquiring multiple questions on the topic while attempting to not sway viewpoints.

   Most case studies are a study of information observed over time. Will you compare your results to similar studies? Will you revisit the individuals from whom you collect data at a later date to determine if their perceptions have changed? Remember, you have approximately 6 months to complete this work.

6. Equipment or resources needed to collect data or information

   For this research, a recording device and a computer will be required. As I interview the subjects, I will note all responses by each individual. Afterwards, I will translate the information into a computer for safe storage of the data and a more formal appearance. I will need interviewees as well to conduct my research upon.

   How will you use these resources to help keep identifying participant information anonymous? What ethical research practices regarding human subjects will you put into place?

7. Anticipated challenges to implementing the chosen research method (to collect and analyze data or to pursue research methods appropriate to a paper that supports a performance/exhibit/product)

   Challenges that may occur during the research process are the acquisition of interviewees and the information that I may pull from background knowledge on the subject. In terms of the interviewees, though I will be pulling from a generally large group, I will need to randomly select individuals as to eliminate bias. In terms of the background knowledge, this topic is still new in regards to what I am trying to research, so some information related to the topic may not be present.

   Consider school related challenges of time, schedules, permissions, etc.

8. Expected approvals needed and from where (institutional review board, etc.)

   As I will be interacting with humans, I will need an IRB from the school district to make sure my research will not violate any rules. I will also require consent forms to keep participation voluntary.

9. Teacher's feedback

   Interesting and relevant study! Will be excited to see what you find.

   You have a great start here. Please review my comments/questions and update the proposal for resubmission by Friday of this week.

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

Lean on Each Other: Peer Reviewing Proposals

Directions

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

   Mathematical Incompetence

   The Politically Correct Movement

   Sustainable Operations

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 student does well and suggest improvements.

3. After you share your initial feedback, discuss with your table group the peer-review feedback that you would provide that would help this student with his or her 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

Page L–168 has intentionally been left blank.

Lesson 14: 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 students 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 reviewing the Power Point animation about 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 table 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?

Page L–172 has intentionally been left blank.

Lesson 15: 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 on pp. 56-57:

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?

Evaluating Student Work

Directions

1. Review the Academic Paper rubric components that pertain to the student's chosen method or research design.
2. In your assigned sample paper, find the elements that pertain to the student's chosen method or research design.
3. Discuss with your group where the student would be in the achievement level pertaining to this element of the rubric.
4. Discuss what strategy this student could use to move up an achievement level (if warranted).

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

Directions

1. Use the Academic Paper rubric to work with your table group to evaluate the level of overall performance of another student sample.
2. Highlight the evidence in your assigned paper that meets one of the performance levels (points) using the language of the rubric.
3. Discuss what performance level the student paper is demonstrating using the language of the rubric. Come to a consensus on the overall level of performance and document the decision rules your group used to do so.
4. When prompted, you and your group will join forces with all another table to compare notes associated with assigned levels of performance for each paper.
5. If disagreement persists, remind each other to review the task description for the Academic Paper.
6. Once a consensus is reached, discuss what strategies you would use to move this student up an achievement level (if warranted).
7. Be prepared to share your score, decisions for assigning the score, and strategies for improvement 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 16: Big Idea 5: Team, Transform, Transmit

Performance Assessment Task — The Presentation and Oral Defense

After viewing the Presentation and Oral Defense (POD) rubric as well as the "work-in-progress" video of an AP Research student, reflect on the skill level the student is 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 (see pp. 58-59 at the link below):

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

- Take 10 minutes to read through p. 58-59 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 table group, take five minutes to discuss your questions and concerns.

What Makes a Good Presentation

Directions

1. Review the presentation and oral defense rubric.
2. Look at row 1 of the rubric.
3. Watch the final submission of the student's Big Hero Six video (from the link provided by your teacher).
4. Find the component in the presentation that addresses row 1 of the POD rubric.
5. Discuss where the student would be in the performance level along this row in the rubric.
6. Discuss what strategy the student could use to move up an achievement level (if warranted).

Coming to Consensus

Directions

1. With your group, view your assigned video from the Thinking Ahead homework assignment.
2. Identify the components found in the video 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 should this student do (if warranted) to move up a performance level with respect to row 3?
4. Next, work with your table groups to come to a consensus on the strong versus weak presentations that you viewed for homework, 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 17: Big Idea 5: Team, Transform, Transmit

Practice and Peer Review Makes Permanent

It is important for students to build effective presentation skills throughout the year so that they will be ready to engage their audience and present their research work by April 30. The AP Research Course and Exam Description (CED) 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.

The CED also includes instructional strategies you can use throughout the year to help students develop these skills throughout the year (see pp. 39-40).

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) 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		

Avoiding Good Information Presented Poorly

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 skills in AP Research in front of your peers. Reflect on the times you have already engaged in peer review. What additional strategies could you employ to strengthen your skills required for the Presentation and Oral Defense?

Peer-Review Personalities

Directions

1. Watch the video set up by your teacher pertaining to different types of peer reviewers. 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?