COLUMBIA | MAILMAN SCHOOL OF PUBLIC HEALTH

HEILBRUNN DEPARTMENT OF POPULATION & FAMILY HEALTH

Capstone Paper Handbook

2021-2022

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Guidelines for Capstone Paper Preparation

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Overview for Current Students

The Capstone Paper serves as the Integrative Learning Experience for MPH students in the Heilbrunn Department of Population and Family Health. Completing it successfully is a graduation requirement and meets the standards set by the Council on Education for Public Health, which accredits public health schools and programs in the United States.

Purpose of the Capstone Paper

The Capstone Paper requires students to demonstrate their abilities to think and communicate clearly, reflect on their new knowledge and training, and make professional contributions to their main fields of interest, with guidance from faculty. It serves as the final piece of evidence that the student is prepared to practice as a public health professional. By producing a high-quality written product for their Capstone paper, students demonstrate that they can synthesize foundational and concentration-specific competencies. These competencies can found in Appendix A of this handbook.

The value of a well-researched and well-written Capstone Paper extends far beyond the MPH degree. Effective organizations depend upon staff members who can design needs assessments, programs, evaluations, and strategic plans, and document them in writing. Policy advocates seek professionals to articulate complicated public health evidence and ideas in briefs, articles, reports, and monographs. Doctoral programs look for students who can conceptualize, analyze, and communicate complex, interdependent health circumstances. Capstone Papers stand as concrete examples of students' mastery of substantive areas, as well as proof of their ability to synthesize competencies in key public health skills.

Options

In the Heilbrunn Department of Population and Family Health, students meet the CEPH Integrative Learning Experience (ILE) requirement for a high-quality written product by writing a Capstone Paper and can choose from one of four options. They may write a:

1. Manuscript of publishable quality (e.g. a research article, a review article in journal format, or a book chapter);
2. Proposal narrative, including an executive summary, for a major research or evaluation project aimed at a specific funding agency or foundation;
3. Rigorous reflective paper about the practice of public health service delivery (based upon one's practicum); or
4. Paper presenting the theory-based development of an innovative educational curriculum (the curriculum itself stands as an addendum to the Capstone Paper).

Each option is available to all students in the Department. Students choosing Options 1 or 2 do not need to base their paper on their practicum experience—a related or even completely different topic can be selected. Alternatively, these options can also be directly related to the practicum experience, often because the field work served to introduce or "set the stage" for the broader paper.

Option 3 must be related to the practicum, as it is designed to encourage critical, independent thinking about the experience.

Option 4 is often based on the practicum, especially if the field work involved some aspect(s) of health education including curriculum implementation or evaluation. In this case, the Capstone paper represents a "deeper dive" into the development of a full curriculum including the planning and evaluation stages. If a student would like to select this option on a topic unrelated to the practicum it is possible but does need the approval of the Academic Director.

Students who base all or part of their Capstone Paper on work that was initiated during or inspired by their practicum—regardless of which option they choose—may not use one of their practicum deliverables for their Capstone.

Capstone Reader

The role of the Capstone Paper Reader is to provide students with guidance and feedback during the writing process and assess the final product. Students in consultation with the Capstone Reader will select the foundational and concentration-specific competencies appropriate for your paper. The Capstone Reader will need to review and approve the capstone proposal before it is submitted to the Academic Coordinator. Additionally, they will work with the student on a timeline in order to provide feedback on the capstone as it is being written. Finally, the faculty Capstone Reader is responsible for assessing the final paper and certifying that the required number of competencies have been demonstrated adequately.

Input from students is one of several factors considered when the Department matches faculty readers. Students who wish to express their preferences should do so via the SurveyMonkey link (emailed to you by Chelsea Kolff). This survey can be found in Appendix D, and a list of potential faculty readers can be found in Appendix E. Please be sure to consult this list prior to noting your preferences. In consultation with the Certificate Leads, the Academic Program makes final decisions regarding students' Readers.

In some cases, a student may wish to consult with other faculty or non-faculty members. Students are asked to inform the Capstone Reader first. Only the faculty member designated as the Capstone Reader is able to approve that student's Proposal and evaluate the final Capstone Paper.

Prerequisites

Before beginning the Capstone Paper, students must have completed the following components towards their MPH degree:

- The Core
- Personal Leadership in Public Health
- Integration of Science and Practice
- Research Design and Data Collection
- Public Health Program Planning
- Department Selectives: Quantitative Data Analysis, Qualitative Data Analysis, Evidence to Action in Child Health, Public Health Aspects of Adolescent Health, Investigative Methods in Complex Emergencies, A Health Systems Approach to Maternal Mortality, or Methods in Program Evaluation

Time Frame

You will request a Capstone reader via an electronic survey distributed in the fall of your second year (timeline may vary for February and October graduates). Once assigned, you should plan to meet with your capstone reader.

IRB approval would be required if you plan to work with data that has personally identifying information of individuals (See Appendix B). If you think you may need IRB approval, you should discuss this with your Capstone reader as soon as the reader is assigned, at the latest.

If you are pursuing the **Manuscript** or R**esearch or Evaluation Proposal** option, you must submit a **Capstone Proposal** before its due date.

Students electing to write a **Reflective Paper or Curriculum** do not need to prepare a Capstone Proposal; instead, they should present an **annotated literature review** of the sources they intend to incorporate into the Background section of the paper. The proposal or literature review will also specify at least 5 foundational and department competencies that their final product will demonstrate.

Your final, approved Capstone Proposal or Literature Review should be delivered to your reader and the Academic Coordinator no later than **November 19th.**

Dual degree, part-time, and off-cycle students will follow adjusted time frames set in consultation with the Academic Coordinator and their Capstone Readers. **It is the responsibility of students in this category to remain informed of the Department's policies, processes, and deadlines.**

Due dates for Capstones are:

December 1 for February Graduation
March 15 for Spring Graduation
July 15 for October Graduation

Late Capstones may delay your graduation.

Capstone Grading

The Capstone Paper will be evaluated by the Capstone Reader according to these criteria:

A **High Pass** will be reserved for papers that are excellent. These papers are well-written and organized. They present new insights and make significant contributions in their fields.

A **Pass** will be given to papers that are solidly acceptable. They meet the stated purpose or goal. They demonstrate solid writing and organization, within a range from good to very good.

A **Low Pass** will be given to papers that are minimally acceptable, but lack certain aspects of writing and organization, within the range from average to good.

A grade of **Fail** will be given to papers that do not meet minimally acceptable standards. If a paper is not adequate—meaning poorly written and organized, missing critical elements, or is written in such a way that the thoughts and ideas are inaccessible to the reader—the student must revise the Capstone Paper, and submit to the Capstone Reader. The revised Capstone Paper must be graded to at least the level of a Low Pass before they can graduate.

The extent to which the student demonstrates mastery of the selected competencies will be documented by the Capstone Reader. In addition, the quality of writing will factor highly into the final Capstone grade. Students who want to improve their writing skills can consult the Columbia University Writing Center (https://www.college.columbia.edu/core/uwp/writing-center/faq#visit)

Technical Considerations

Authorship:
Usually, peer-reviewed articles, book chapters, review articles, and/or monographs are written by more than one person. In public health, the steps underlying articles (including the conceptualization of the research question, instrument design, sampling, field work, and data collection, analysis, processing, and interpretation) are typically collaborative activities. Specific individuals may be more involved in some steps than in others, and it is often the case that many people indirectly contribute to the research by maintaining the ongoing health care services or public health programming on which the research is based.

Department students may be involved in some or all of these steps, including the proposal or writing of a manuscript or proposal for submission. Thus, even if a student (or any other individual) has drafted much or all of an article, he or she may not be the first author when the article is published due to prior contributions from other authors. Because such earlier contributions may not be apparent as time passes, the *names and order of authorship will be a joint and early decision of those involved in the research or proposal writing*. It is appropriate for the student to be listed as an author on the article, providing that she or he has contributed to 1) the conception, design, acquisition of data, or analysis and interpretation of data, and 2) drafting the article. The student and, ideally, any other author listed should, have participated sufficiently in the work to *take public responsibility* for it.

The Department does expect and require that the student will be making a substantial contribution to the writing, regardless of whether she or he is the first author on the final

product. The student should delineate their specific role as an author, and provide a rationale for author order and the respective roles of other authors

Length:

1. A manuscript should be about 25 double-spaced pages; or (for a peer-reviewed journal) about 3,500 words – excluding tables, figures, and references.
2. A complete proposal narrative should follow the length and spacing specified in the target agency guidelines.
3. A reflective paper should be a minimum of 20 double-spaced pages, not including attachments.
4. A paper describing a curriculum should be a minimum of 20 double-spaced pages, not including attachments.

Format:

- 1" margins.
- Page numbering.
- 12 pt Times New Roman or 11 pt Arial fonts.

Capstone Paper Proposal or Literature Review Outline

All students are required to prepare a Capstone Proposal or Literature Review outline and secure approval from their Reader and the Academic Coordinator prior to preparing the Capstone Paper.

If you are electing Option One or Two (a manuscript or proposal), you need to prepare a Capstone Proposal, according to the following guidelines:

1. **Cover page:** The title of your paper, your name, your certificate track, option selected for your paper (manuscript, evaluation proposal, etc.), expected date of graduation, and the name of your Capstone Reader. Also indicate whether IRB approval (if necessary) has been received or is in progress.
2. **Description of project:** Limiting yourself to two double-spaced pages, incorporate the following elements:
    a. **Statement of the problem**: The public health issue to be addressed.
    b. **Background and significance:** Briefly sketch the basis for the Capstone Paper proposal, the existing knowledge on the topic, and the importance of the project for public health in general and your area of specialization in particular.
    c. **Specific aims:** State concisely and realistically what your Capstone Paper intends to accomplish.
    d. **Project plan:** Provide a brief description of the proposed project, target population(s) or sample(s) to be used, specific theory(s) to be applied, program components (if applicable), proposed methods, and data analysis plan (if you plan on using data).
3. **Authorship**
    a. **Listing of joint authors, in order.**
    b. **Rationale for student's authorship role:** Explain your role as a manuscript author, and a rationale for the author sequence.
    c. **Delineation of student's expected contribution:** Describe the portion of the final joint-authored paper for which you are responsible.
4. **Competencies**
    a. On a separate page, **list the five competencies** you plan to synthesize as you write your Capstone Paper.
    b. All students must select the concentration-specific competency: *Demonstrate skills in written and oral communication that is clear, concise and accessible to the audience being addressed.*
    c. For the remaining four competencies, at least one must be foundational.

If you are electing write a **Reflective Paper (Option Three)**, follow these guidelines:

1. **Cover page:** This should include the title of your paper, your name, your certificate track, expected date of graduation, and the name of your Capstone Reader.
2. **Description of project:** In two double-spaced pages, incorporate the following elements:
    a. **Description of the practicum site and project (two paragraphs)**.
    b. **Annotated Relevant Literature** – Identify and summarize at least eight peer reviewed sources that speak to one or more of the issues your will

reflect upon in your paper. Briefly note the importance of the issue(s) for public health in general and your practicum experience in particular.

3. **Authorship:** Students may submit reflective papers on an individual basis only.
4. **Competencies**
    a. On a separate page, **list the five competencies** you plan to synthesize as you write your Capstone Paper.
    b. All students must select the concentration-specific competency: *Demonstrate skills in written and oral communication that is clear, concise and accessible to the audience being addressed.*
    c. For the remaining four competencies, at least one must be foundational.

If you are electing to write a **Curriculum (Option Four)**, follow these guidelines:

1. **Cover page.** The title of your paper, your name, your certificate track, expected date of graduation, and the name of your Capstone Reader.
2. **Description of project.** In two double-spaced pages, incorporate the following elements:
    a. **Purpose of curriculum**, description of the target audience and potential training site(s) for curriculum use (two paragraphs).
    b. **Annotated Relevant Literature** – Identify and summarize at least eight peer reviewed sources that speak to one or more of the theories upon which you will base your curriculum. Briefly note the importance of the theories for public health in general and for your curriculum in particular.
3. **Authorship:** Students may submit reflective papers on an individual basis only.
4. **Competencies**
    a. On a separate page, **list the five competencies** you plan to synthesize as you write your Capstone Paper.
    b. All students must select the concentration-specific competency: *Demonstrate skills in written and oral communication that is clear, concise and accessible to the audience being addressed.*
    c. For the remaining four competencies, at least one must be foundational.

A copy of your final, approved Capstone Paper Proposal or Literature Review must be approved by your Faculty Reader and submitted to the Academic Coordinator via email by **November 19th, 2021**.

Detailed Guidelines for Capstone Options

Manuscript of Publishable Quality

Overview

Students may elect to write high-quality review articles, or manuscripts targeted at specific peer-reviewed journals.

Manuscript Targeted for a Peer-Reviewed Journal

A manuscript published in a peer-reviewed journal is an excellent way to highlight original research or evaluation findings. Students considering this option should consult with their faculty academic advisors regarding the necessity of obtaining IRB approval during their first spring semester.

Most peer-reviewed journal articles consist of: a set of arguments that illustrate the public health relevance of the topic or question under study, the purpose of the study and proposed hypotheses, the methodology employed to examine this question, the scientific results, a discussion of these results within the context of the available literature, and conclusions about the application of the findings to practice or future work.

Peer-reviewed publications vary in their focal areas and structural requirements, but most include quantitative studies, such as surveys and secondary data analysis; qualitative studies, such as ethnographic studies; mixed methods studies that combine elements of both; and review articles.

In the peer review process, each submission is reviewed by two or three outside experts in the subject area, who provide recommendations to the journal editor about the manuscript's scientific quality and merit for publication. Reviewers provide constructive criticism, whether or not manuscripts are deemed acceptable for publication. Their recommendations may include:

- Strengthened or clarified rationale for the study given prior evidence;
- Additional literature to review;
- Correcting errors in logic or analysis;
- Considering perspectives or alternative statistical methodologies that will improve the study's scientific rigor;
- Clarifying research findings; and/or

- Ensuring that recommendations or conclusions are supported by the data or evidence provided.

Sometimes, manuscripts are rejected by editors due to reviewers' assessments of weak scientific quality, or because of a mismatch between the journal audience and the focus of the study.

Notes:

1) Students selecting this option are encouraged to submit their work for publication. The student should identify the target journal prior to drafting the Capstone Paper, and organize their paper according to the guidelines of the target journal. While you are not required to submit the paper to the journal to meet the Capstone requirement, the Paper should be ready to submit in manuscript format.
2) If the target journal's word limit is substantially shorter than the 3,500 recommend for a Capstone Paper, students should discuss how to supplement the article with their faculty readers in order to meet the Capstone requirement.

Structure

Journals require distinct formats for submitted manuscripts. It is the student's responsibility to prepare the manuscript according to the guidelines of the target publisher (often found in the "Instructions for Authors" section). Submitted manuscripts usually are divided into five main components, namely: abstract, introduction, methods, results, discussion, and references.

Abstract

The abstract of the manuscript is a concise summary of the research problem, objectives, research design, results, and conclusion. Usually the word count for the abstract is between 250–300 words. Some journals require a structured abstract that includes subheadings such as objective, design, setting, participants, outcome measure, results, and conclusion.

Introduction

This section provides a focused literature review. Here, the goal is to present:

a. A detailed description of the research problem, including its magnitude, scope, and significance;
b. The key findings in the scientific literature regarding your research problem;
c. How your study will contribute to the existing knowledge gained from prior findings;
d. If appropriate, the theoretical framework that guides your hypothesis; and
e. The purpose of the investigation and hypotheses.

Methods

After you select a research problem, determine the most effective design for investigating. In your manuscript, you will need to decide which of the following sub-sections to include, and the approximate length of each:

Overview of Research Design: Briefly describe the overall approach of your study. If it has phases, describe these too.

Source(s) of Data: Depending upon the type of study that you are designing, you should include as many of the following sub-sections as necessary:

Sample: In writing this sub-section, try to answer the following questions: What is the population from which you are planning to draw your sample? Who are you selecting to participate in your study? Who is eligible and not eligible? In other words, what are the inclusion and exclusion criteria for your study? What are the reasons for your selection criteria? How many people do you plan to include in the study? What are the reasons for your sample size? How much power does your study have to detect an effect? What are your estimates of participant attrition? How do you plan to recruit research participants? Be very specific. For example, *Latina women between the ages of 60 and 75 who reside in upper Manhattan, New York City will be recruited*. If you have completed a secondary data analysis, you should answer the following questions: What is the data set that you have selected for your research? How were the data collected for the selected data set? What are the benefits and limitations of the data set?

Research Setting: Describe in detail the geographical and/or social community that you have selected for your study and the reasons for your selection.

Data Collection Method(s): Present a general overview of the method(s) you selected, your reasons for selecting it, and how this is going to be implemented in your data collection. If your research proposal only concentrates on secondary data analysis, you should focus this section on the types of measures that you are going to use in your analysis.

Measures: Describe what measures will be used, the reliability of each measure, the suitability of each measure for the study population.

Analytical Methods: Specify the types of methods that you are going to use to analyze your data (e.g., logistic regression, historical trends, and content analysis) and the reasons for your selection. Describe how these methods address specific aims.

Ethical Concerns and Protection of Human Subjects: For all original research and/or secondary data analysis, protection of human subjects must be addressed, i.e., was IRB approval requested and obtained, or if not, was this study exempted and on what basis. This information is usually one or two sentences in the methods section.

Results

In the *Results* section, accurately account for the study findings. Once you have completed your analyses, and decided how best to present each finding, think about how you will arrange them. Your analyses should tell a story that will lead your readers through the steps needed to logically answer the question(s) you posed in the *Introduction*.

Because the order in which you present your results can be as important as what you actually say in the text, authors usually begin this section by reporting descriptive statistics, i.e., sample characteristics. Often, tables are used to present comprehensive pictures of the sample and their characteristics. Text should not reiterate data that are presented in tables or graphs, but complement what is written in the narrative.

After you have outlined your descriptive results, the next task is to provide the results of any statistical analysis that have been performed on your data. There are distinct conventions concerning how your analysis should be described. A good reference for conventions can be found in Lang TA, Secic. How to Report Statistics in Medicine: Annotated Guidelines for Authors, Editors, and Reviewers. Philadelphia: PA: The American College of Physicians. 1997. The basic pattern is as follows: the data analysis plan is outlined (the statistical test that was used should be named), the actual results in figures of the analysis are given, with a short verbal description, e.g.:

The recall scores for condition 1 and condition 3 were compared using an independent t-test and a significant difference between the two conditions was found, ($t (28) = 17.86$, $p<0.002$).

One important issue is how to give the actual statistical results in figures. The main information that should be given is the statistic used[1], the degrees of freedom of the actual analysis[2], the obtained value of the statistic (the t-score, etc.)[3] and the probability of the results (the p-value)[4]. The example below provides an illustration:

$t^{1}(28)^{2}=17.98^{3};p<0.002^{4}$

Students commonly provide too much information in the *Results*. Typically, editors allow a maximum total of 4-5 tables and/or figures. Only the most salient results should be reported. Also, remember that the purpose of this section is to describe the obtained results, not to provide interpretation of their meaning. Interpretation will be presented in the *Discussion* section.

The two examples that follow demonstrate well-presented results. When you prepare yours, consider:

- Are your data are reported in a clear, concise, logical, and well-organized manner?
- Are your data are presented on any measurement that was not described in the Methods?
- Are your findings are internally consistent?
- Do the numbers add up? (e.g. text and tables)

Example 1

RESULTS
Participants were primarily female (64%) and Latino (68%), with a mean age of 16.3 (SD=1.5) [Table 1].

Sleep Quality, Subjective Sleep Quality, and Psychosocial Stressors
The mean global PSQI score was 9.2 (SD=3.2, range 0-16 with lower scores indicating better sleep quality). More than half of patients (58%) had global PSQI scores >5, indicating poor sleep quality, a higher proportion than the 32% who reported fairly bad or very bad subjective sleep quality. Less than half (45%) of those with poor sleep quality characterized their sleep as fairly bad or very bad. Substantial proportions of participants reported experiencing psychosocial stressors, including going to bed thinking about things they need to do (65%), replaying the day's events over in their minds (42%), worrying about things happening at home or at school (41%), experiencing things that made them feel strong emotions within an hour of going to bed (35%), and feeling upset (26%).

Demographic Differences in Poor Sleep Quality
Female participants, compared to male, had significantly higher odds of poor sleep quality in all logistic regression models (unadjusted: OR=2.32, 95% CI 1.19-4.53; adjusted for sociodemographic variables: OR=2.44, 95% CI 1.13-5.30; adjusted for number of psychosocial stressors: OR=2.80, 95% CI 1.21-6.45). Almost two-thirds(62%) reported experiencing at least one stressor (38 reported 1 stressor, 29 reported 2, and 37 reported 3 or 4). Experiencing 3-4 psychosocial stressors before bed was also associated with higher odds of poor sleep quality in both the unadjusted model (OR=3.88, 95% CI 1.40-10.77) and the model adjusted for number of stressors (OR=3.32, 95% CI 1.09-9.68) [Table 2].

Interest in and Preferences for a Mind-Body Integrative Health (MBIH)-Based Intervention *Most participants (77%) reported that they would be likely to participate in an MBIH-based intervention, with 92% reporting they would participate in four or more sessions. The proportion of participants who reported being interested or likely to participate in an intervention, both overall and among those reporting poor sleep quality, did not differ significantly by gender or race/ethnicity. Approximately one-third (30%) of participants reported that they would prefer an equal mixture of both one-on-one and group sessions to learn about MBIH modalities. About half (52%) of participants would be willing to provide their parent or caregiver's information to receive information about healthy sleep. The preponderance (80%) of participants would be willing to wear an actigraph on the wrist for two weeks.*

Example 2

TABLE 1. Characteristics, sociodemographics, and psychosocial stressors by sleep quality (n=167)

	PSQI ≤ 5 "Good" Sleep Quality	**PSQI >5 "Poor" Sleep Quality**	**Total**	**P-value**
	n (%)	**n (%)**	**n (%)**	
RACE/ETHNICITY				**p=0.318**
Black	14 (26.4)	20 (18)	34 (20.7)	
Latino	32 (60.4)	80 (72.1)	112 (68.3)	
Neither Black nor Latino	7 (13.2)	11 (9.9)	18 (11.0)	
GENDER[a,]				**p=0.012***
Male	27 (50.0)	34 (30.1)	61 (36.5)	
Female	27 (50.0)	79 (69.9)	106 (63.5)	
AGE in years	**mean (SD)**	**mean (SD)**	**mean (SD)**	**p= 0.302**
	16.15 (1.26)	16.42 (1.51)	16.29 (1.45)	
PSYCHOSOCIAL STRESSORS: "quite often," "frequently," or "always" going to bed…	**n (%)**	**n (%)**	**n (%)**	
Feeling upset	8 (15.1)	34 (30.9)	42 (25.8)	p=0.031*
Replaying the day's events over in mind	16 (30.2)	52 (47.7)	68 (42.0)	p=0.034*
Worrying about things happening at home or school	14 (26.4)	53 (48.2)	67 (41.1)	p=0.008*
Thinking about things I need to do	32 (59.3)	75 (67.6)	107 (64.8)	p=0.294
1 hour before bed, things happen that make me feel strong emotions (e.g. sadness, anger, excitement)	12 (22.6)	45 (40.9)	57 (35.0)	p=0.022*

**Chi-square test, p-value <0.05.*

[a] Gender identity options included in survey but not selected: trans female/transwoman/transfeminine; trans male/transman/transmasculine; gender nonconforming, non-binary, or genderqueer.

Discussion

In the *Discussion* section, begin with a narrative summary of your study's findings. (Do not repeat the *Results* section here; simply summarize. You should not include tables or figures from the results.) Then, explain and expound upon your findings in the context of existing literature. (i.e. Does your study extend the literature? Provide new findings? Contradict findings?)

Next, you can attempt to explain the results by relating your findings to other research findings and theoretical models (which you already referred to in the *Introduction*). Do your results support or refute the theoretical framework you may have employed? If you are looking at HIV prevention interventions, for example, you might ask: How does the finding that there is no difference between two interventions relate to what others have found about what makes a successful HIV prevention program? Do our findings agree with or contradict the published research? How can what we have found be explained in terms of the theoretical models outlined in the introduction?

Then, analyze the methodology. Were there any weaknesses that could have affected the results? Were your experimental results due to the manipulation of the independent variable or were they due to some other factor? If you found no difference among conditions (and thus accepted the null hypothesis), is this because there is no real difference or are there other explanations? Could there be other reasons?

The role of the final part of the discussion is to suggest further research in light of your results. An attempt should be made to move beyond simply saying that "there should be more participants" or that the experiment should "be more controlled." Your suggestions should show a full grasp of the methodology or the actual area being studied. You should try to elaborate on the implications of your results and fruitful areas for new studies.

The *Discussion* section should close with the conclusions of your study and can include recommendations for public health practice that are supported by your findings.

References

This section lists the sources that you cited in the text. Depending on the style specified by your journal guidelines, references may be listed either numerically as they are cited in text, or alphabetically (for more detail about citing references and sources within a manuscript, see section entitled "Citations" in this handbook.)

You want to make sure that references are:

- current;
- the most important sources for this topic, in your opinion;
- accurately stating the information from sources; and
- accurately cited (all types, including journal articles, books, reports, etc.).

Tables and Figures

The last section of a submitted manuscript is the tables, graphs, and/or figures. They should be presented in order of appearance in the text and all should be clearly titled.

Tables: Tables present lists of numbers or text in columns, each column having a title or label. Do not use a table when you wish to show a trend or a pattern of relationship between sets of values - these are better presented in a Figure. For instance, if you needed to present population sizes and sex ratios for your study organism at a series of sites, and you planned to focus on the differences among individual sites according to (say) habitat type, you would use a table. However, if you wanted to show us that sex ratio was *related to* population size, you would use a Figure.

Figures: Figures are visual presentations of results, including graphs, diagrams, photos, drawings, schematics, maps, etc. Graphs show trends or patterns of relationships.
Graphs are the most common type of figure.

Review Article

A review article (or book chapter) consists of selecting a problem; reviewing what is currently known in the scientific literature; and building an argument that will lead to new insights, a set of suggestions, and recommendations. Review articles or book chapters typically fall into one of the following categories:

- Research reviews focus on scanning, summarizing, and synthesizing findings from research on a particular issue. Research reviews include **scoping reviews,** which are exploratory reviews covering a broad topic, seeking to identify gaps in the evidence; **systematic reviews** collate empirical evidence from a focused research question, and assess the quality of the evidence; and **meta-analyses**, a type of systematic review that combining pertinent qualitative and quantitative **study** data from several selected studies
- Theoretical reviews focus on the theoretical underpinnings and frameworks around a particular issue, develop an argument that constructively critiques current thinking, and propose alternative ways or frameworks for analyzing the issue.
- Methodological reviews focus on a particular method or methodology for research, evaluation, or intervention on a specific research or service delivery problem, discuss the strengths and limitations of the method, and offer a critique and suggestions for future work.
- Policy reviews focus on analyzing the impact of a specific policy or set of policies in certain populations, and suggesting arenas and strategies for advocacy and points of intervention.

Structure

The structure of a review article or book chapter will depend in part upon the content of the material that you collect, and upon the desires of the editor of the target journal for whom you might be writing. Most peer-reviewed journals accept review articles, and have specific submission guidelines for review articles. Your argument will need to be consistent with your editor's mission. Most review articles or book chapters contain

these common components:

Introduction

(Approximate length**:** 2-3 pages)

Introduce the central issue or topic of your argument, state the significance of the issue or topic, and present an overview of the overall manuscript. Provide a rationale for the use of the type of review (scoping review vs. systematic review).

Methods

(Approximate length**:** 1 page)

Describe 1) the time frame the review covers, with rationale for why that time period; 2) the electronic databases you searched; 3) the search terms used; 4) the inclusion and exclusion criteria for papers identified during the search [ideally, using a table that describes the population, intervention/comparator, outcomes, and setting]; and 5) the process used to scan the abstracts and read the full texts to determine inclusion/exclusion, and 6) the process used for synthesizing the findings.

Argument/Subtopics

(Approximate length**:** 20 pages)

Divide the second part of your essay into the subtopics that will allow you to build your argument. Be strategic and creative in efficiently conveying the elements of your argument. Delineate the different subtopics with subheadings. You may want to elaborate a progression in your argument that starts from the basic points and moves through to the more complex ones.

Conclusions

(Approximate length**:** 4-6 pages)

In the concluding part of your argument, you will summarize the primary points of your general thesis, advance any new directions, and provide recommendations or suggest approaches you have identified after analyzing this body of information.

Common Errors

The main error that students make is failing to provide a comprehensive discussion. Do not merely repeat your findings, actually discuss them, compare them to other findings, and relate them to important models or theories. Avoid drawing conclusions that are not supported by the findings presented. A discussion section should include a subsection thoughtfully discussing the limitations of your research. Show thought and imagination when you suggest further research.

Research or Evaluation Proposal

Overview

As you know from Public Health Program Planning, a well-written proposal is one of the primary means through which public health programs are funded. Because the final project in that course was the framework for a program proposal, it is not an option for your Capstone Paper.

The "Quick Guide for Grant Applications" by the National Institutes of Health has a resource "Writing Your Application" that offers specific tips on writing the different sections of a research proposal for funding at this government agency https://grants.nih.gov/grants/how-to-apply-application-guide/format-and-write/write-your-application.htm .

More resources on grant applications – especially the specific aims – can be found at the National Institute for Child Health & Development (NICHD). https://science.nichd.nih.gov/confluence/pages/viewpage.action?pageId=88771536

If you choose to write a research or evaluation proposal, you should obtain the guidelines of a funding agency which might consider proposals like the one you are writing, and follow those guidelines closely.

Research Proposals

A research proposal presents a set of arguments that illustrate the public health relevance (at the theoretical and/or programmatic level) of the specific topic of investigation, followed by a convincing methodology to investigate the research problem. Research proposals may be approached from multiple methodological perspectives, including but not limited to quantitative studies (such as surveys and secondary data analysis), historical studies (such as those using archival data); qualitative studies, such as ethnographic studies; and mixed-methods studies that incorporate qualitative and quantitative elements.

Note: All figures in this section are excerpts from a study at the National Institute for Child Health and Development.

Structure

Most research proposals are divided into three main components, namely: the abstract, the research or evaluation protocol, and the references. The research or evaluation protocol include several key subsections.

Abstract

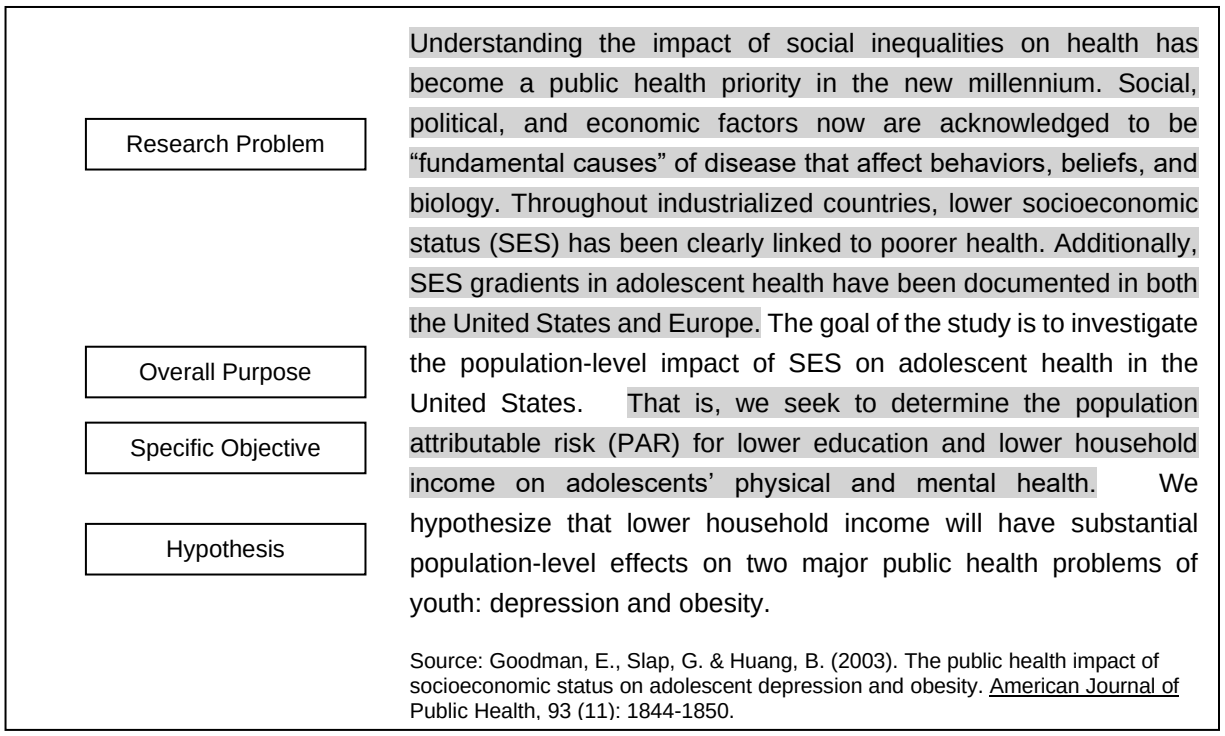
Approximate length: half a page

The abstract of your proposal is a concise summary of your research problem, objectives, and research design. It is the last thing that you should write and the first thing that you should present.

Research Protocol

Section 1: Specific Aims Approximate length: 1 page

In this section, you should describe: the research problem, the overall purpose of the study, the specific objectives of the study (i.e., what you explicitly want to investigate), the hypotheses (if applicable), and the implications of the study (see Figure 1 below).



Section 2: Background and Significance Approximate length: 6 pages

This section provides a literature review. Here the goal is to present:

a) A detailed description of the research problem, including the magnitude, scope, and significance of the research problem that you have elected to address;
b) The key findings in the scientific literature regarding your research problem;
c) How your study will contribute to the existing knowledge gained from prior findings; and
d) If appropriate, the theoretical perspective that your study is guided by (e.g., social learning theory, social constructionism) and your reason for selecting it. Remember to be concise.

Section 3: Preliminary Work (optional) Approximate length: 1 page

In this section, you should describe the findings from prior studies that you have conducted or have been involved with. Do not repeat findings mentioned in the prior section. This section allows you to argue why you and/or your team will be capable of conducting the proposed study.

Section 4: Research Design Approximate length: 18–21 pages

This is the part of the proposal where you need to be the most creative. After you select a specific research problem, you need to decide upon the most effective design for investigating it. Therefore, you need to determine which of the following sub-sections to include and the approximate length of each:

Overview of Research Design: Briefly describe the overall approach of your study. If it has phases, describe these, too (e.g., household survey of clients, focus groups, interviews).

Source(s) of Data: Depending upon the type of study that you are designing, you should include as many of the following sub-sections as necessary:

> **Sample:** In writing this sub-section, try to answer the following questions: What is the general study population from which you are planning to draw your sample? Who are you selecting to participate in your study? Who is not eligible? In other words, what are the inclusion and exclusion criteria for your study? What are the reasons for your selection criteria? How many people do you plan to include in the study? What are the reasons for your sample size? How much power does your study have to detect an effect? What are your estimates of participant attrition? How do you plan to recruit research participants? Be very specific. For example, *Latina women between the ages of 60 and 75 who reside in upper Manhattan, New York City will be recruited*.
>
> **Archival Materials:** In writing this sub-section, try to answer the following questions: Which archives do plan to visit? What are your reasons for selecting these archives? What type of materials will be

included as part of the study? Which materials will be excluded?

Secondary Data Sets: In writing this sub-section, try to answer the following questions: What is the data set that you have selected for your research? How were the data collected for the selected data set? What are the benefits and limitations of the data set?

Research Setting: Describe in detail the geographical and/or social community that you have selected for your study and the reasons for your selection.

Data Collection Method(s): Present a general overview of the method(s) you selected, your reasons for selecting it, and how this is going to be implemented in your data collection. If your research proposal only concentrates on secondary data analysis, you should focus this section on the types of measures that you are going to use in your analysis.

Measures: Describe what measures are used, the reliability of each measure, the suitability of the measures for the study population.

Analytical Methods: Specify the types of methods that you are going to use to analyze your data (e.g., logistic regression, historical trends, content analysis) and the reasons for your selection. Describe how these methods address specific aims.

Data Management: How are you going to organize the collection and storage of data? You should include a timeline or timetable for the duration of the project period. Describe how these methods address specific aims.

Ethical Concerns and Protection of Human Subjects: Discuss the most salient ethical concerns related to your research proposal, whether or not these relate to human subject research or broader ethical implications of your research study, and what mechanisms you propose to use to address them. While you are not expected to write a Protection of Human Subjects Protocol for an Institutional Review Board, you must write at least one Informed Consent Form.

Section 5: Feasibility Approximate length: 1-2 pages

In this section, you ought to consider the feasibility of the proposed study. Discuss the resources that will be needed to implement the research project. It is very important that it is possible and practical to conduct the study. As part of the feasibility section, include a timetable to show when and how the different components of the research study are going to be implemented. Discuss potential problems you may encounter with the research plan, and strategies you will use to mitigate them.

Evaluation Proposals

If your practicum exposed you to a program that was recently design and implemented,

or particularly successful (or particularly ineffective), or if you are interested in policy impact analysis, you may want to explore your questions through an evaluation proposal.

Structure

Evaluation proposals for the Capstone Paper are divided into three main components: the abstract, the evaluation protocol, and the references.

Abstract *Approximate length: Half a page*

The abstract of your proposal is a concise summary of your evaluation problem, objectives, and evaluation design. It is the last thing that you should write and the first thing that you should present.

Evaluation Protocol

Section 1: Specific Aims

Approximate length: 1 page

In this section, you should describe the overall purpose, specific objective(s), and implications of the evaluation (see Figure 2 for an example).

Section 2: Background and Significance

Approximate length: 6-8 pages

This section is dedicated to your literature review. Here the goal is to present:

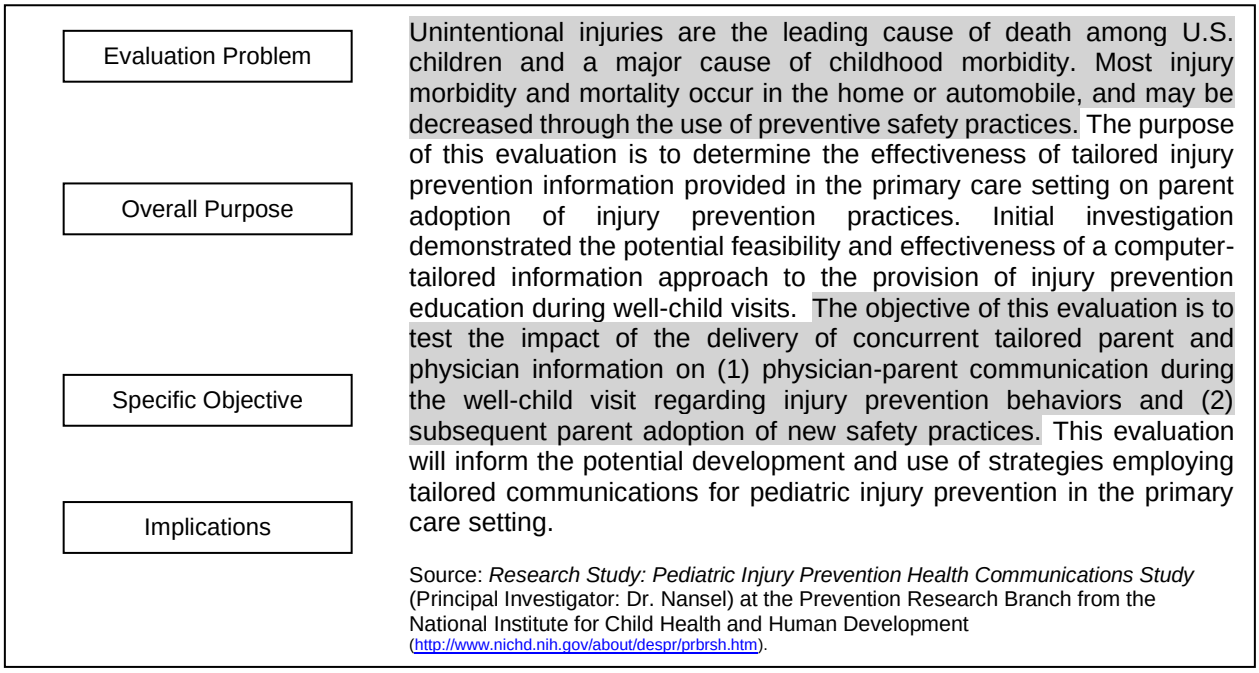
a) A detailed description of the evaluation problem and the significance of conducting a rigorous evaluation of the problem that you have selected;
b) The key findings in the scientific/evaluation literature regarding ways to evaluate your selected problem;
c) A discussion of how your study will contribute to the already existing knowledge base from prior findings;
d) The theoretical perspective from which your evaluation design emerged; and
e) Any conceptual innovations in the approach of your evaluation. Remember to be concise.

Section 3: Evaluation Design

Approximate length: 8-21 pages

This is the part of the proposal where you need to be the most creative. After you select a specific evaluation problem, you need to decide upon the most effective design for investigating it. Therefore, you need to determine which of the following sub-sections to include and the approximate length of each:

- Overview of evaluation design: Briefly describe the overall design/approach



of your evaluation (outcome evaluation, process evaluation, structural evaluation, etc.) and your reasons for selecting it. *Approximate length: 1-2 pages*

- Target Program/Initiative: Describe the program/initiative that you plan to evaluate, its core components (content, pedagogy, intended implementation), its target population (e.g., urban youth), and its expected goals. *Approximate length: 2-3 pages*
- Indicators: Identify and define the specific indicators that you are going to use in your evaluation, and your reasons for selecting these indicators. Specify the data source for each indicator. *Approximate length: 2-3 pages*
- Data collection methods: Describe the methods and strategies that you are going to use to assess the indicators of the proposed evaluation. For each data collection method/strategy, present a general overview, your reasons for selecting it, the sampling strategy (from whom you will collect data), and how it is going to be implemented in your data collection. *Approximate length: 3-5 pages*
- Validity: In this part of your proposal, you ought to identify the issues of potential threats to internal validity, construct validity, and external validity of your evaluation design, and discuss the ways that you are going to mitigate them in your evaluation methods. *Approximate length: 1-2 pages*
- Analytical methods: Specify the methods that you are going to use to analyze your data (e.g., logistic regression, historical trends, content analysis) and the reasons for your selection. *Approximate length: 2-3 pages*
- Data management: Describe how are you planning to organize the collection and storage of your data. You need to include a timeline or timetable for the duration of the project. *Approximate length: 1-2 pages*

- Ethical concerns and protection of human subjects: Discuss the most salient ethical concerns related to your evaluation proposal, whether or not these relate to human subjects research or broader ethical implications of your evaluation, and the mechanisms you propose to use to address them. You are not expected to write a Protection of Human Subjects Protocol for an Institutional Review Board.

Section 4: Feasibility

Approximate length: 1-2 pages

In this section, you ought to discuss the feasibility of conducting the evaluation design that you propose. The viability of the evaluation is a very important component of your proposal. Discuss potential problems you may encounter with the evaluation plan, and strategies you will use to mitigate them. As part of the feasibility section, include a timetable to show when and how the different components of the evaluation are going to be implemented.

Section 5: Results

How will the information be used for decision-making? Who will be involved? How will the results, findings, and lessons be shared with the organization, the population of interest, and the broader professional community?

Reflective Paper

Overview

This Capstone Paper option involves writing a cohesive synthesis of the practicum experience that includes a literature review (incorporated into the background section); a comprehensive description of the project's history, goals, methods, and findings (or products); and a reflective section connecting the project to classroom learning. The paper must illustrate how various components of the practicum project reflect key topics in public health practice as discussed in the Practicum Seminar and in the current literature. Use the following outline to structure your paper.

The length for your paper should be a minimum of 20 double-spaced pages, not including appendices.

Section 1: Background

Approximately 4-5 pages

This section should contain background information regarding both the practicum organization or agency, and the particular project you were working on. On the macro level, the goal here is to discuss your project within a broader social and public health context. **Current literature should be reviewed (note: this review forms the main focus of the background section and should include a minimum of eight carefully selected sources)**. Areas of focus for this section include a brief history of the agency/project; social, demographic, political, and/or cultural issues that have shaped your project historically and in the present, and how the project reflects or contributes to broad public health objectives and challenges.

On a micro level, you will want to briefly describe your practicum site: its location, population, demographics, and mission. This section should also **include the specific goal(s) of your practicum project** and how they relate not only to the mission of your agency, but also to the broader macro context you described. Specific goals may include answering a research question (or questions) through data collection/analysis, developing educational materials, implementing a program, etc.

Section 2: Methodology

Approximately 1-2 pages

Once you have provided sufficient background, describe the methodologies or processes you used to conduct your work. Be specific about project design, sample, instrument construction, data collection, and data analysis procedures. If your project involved program or education components, describe in detail the theoretical framework that these were based on as well as the methods utilized to develop, implement, and assess the activities or materials. All papers should include a section evaluating the strengths and weaknesses of your methods, including any methodological problems encountered and the strategies you used to minimize them. Also discuss how and what you would modify to improve the methodology, if appropriate.

Section 3: Findings and Deliverables

Approximately 4-5 pages

Research Project: If you collected primary data or analyzed secondary data, this section should describe your methodology, analysis plan, and main findings. If you developed research instruments, refer to them here. Describe how they were developed and how they were (or will be) used. If other components of the research process constituted your deliverables, describe them, the methodology you applied, and the contributions they will make to the overall project.

If you conducted qualitative or quantitative data analysis, make sure to discuss the public health implications of your findings (or potential findings), both at the individual/agency level, and within a broader social context. What steps need to be taken to integrate your findings into service delivery/program development? Are there unanswered questions raised by your study findings that should be followed up with further research?

Program/Educational Project: Describe and include (as an attachment) the deliverables you completed. Was there (or could there be) an effect or outcome among the population you were attempting to serve? Was there (or will there be) organizational changes as a result of your work? What challenges need to be overcome for change to take place, again on both the micro and macro levels?

For all projects: What are the next steps that can /should be taken in this particular area of public health practice? Reflect on those steps that should be taken at various levels of social organization (individual, institutional, and policy).

Section 4: Reflections and Conclusions

Approximately 6 - 8 pages

In this final section, the student is required to place the practicum experience within the context of classroom learning. Please reflect upon one theme from each of the following areas:

Area A: How did classroom learning compare with your field learning and experiences?

- What *specific* theoretical approaches, skills, or other class-based information, from specific courses, were relevant to your practicum?
- What were areas of convergence and divergence in your coursework versus field experience and how can the two combine (or not) to offer a holistic view of the public health issue/problem/challenge addressed by your practicum?
- What field lessons were not taught in the classroom and vice-versa?

Area B: Select an important area of public health practice and critically assess how it is relevant to your practicum experience. **This is a critically important area of your Capstone Paper**. As you explore your chosen area, refer to recent literature including theoretical and/or research/program/clinical discussions. Include the strengths and limitations of your practicum experience as it did (or did not) reflect best practices in the area you choose. These include (but are not limited to):

- Cultural Competency;
- Community Involvement, including a CBPR model;
- Advocacy;
- Mission/Goals (including long-term versus short-term goals).

Theory-Based Educational Curriculum

Overview

In this paper, a student will describe the development of a curriculum, usually prepared during the practicum, including its theoretical bases, learning objectives, pilot results (if applicable) and other components described in the Handbook. If a student wishes to base the Capstone Paper on a curriculum developed outside of the practicum experience (a curriculum created as a course assignment is not eligible), s/he must obtain the approval of the Academic Director prior to initiating the project.

Structure

Section 1: Literature Review

Identify the health problem or issue and what need the curriculum is developed to address.

Section 2: Target Population

For whom is the curriculum intended? Why?

Section 3: Theoretical Framework

(Discuss relevance of at least two aspects listed below)

- Theories of Health Behavior
- Theories of Adult/Adolescent/Child Learning
- Pedagogical Approaches
- Other Models

Section 4: Goals and Objectives of the Curriculum

- Utilization of the SMART model (see below)
- Learners will be able to…. (see Haller example below)

Section 5: Content of the Curriculum

- Given the learning objectives of the curriculum, many different topics areas could have been included. You likely included some topics and not others. Justify those decisions.
- Some topics/themes/skills rose to a central position in your curriculum (which may be reflected in their coverage across a variety of sessions). How and why did you choose the ones you did for this central position?
- How did you decide what material to utilize from other curricula and what to create on your own?
- Instruction Strategies

- Method(s) of Instruction
    - Mode(s) of presenting material (actual activities of teachers and learners; didactic and interactive components)
    - Connection to theoretical framework and objectives
- Implementation: frequency, setting, train the trainers (if applicable)

Section 6: Quality Control, Supervision and Limitations

- Address the assurance of fidelity in the delivery of the curriculum
- Address ideas/plans for re-dosing of the curriculum (as applicable) as well as preparation of new educators as staff changes
- What are the limitations of the curriculum?

Section 7: Evaluation Outline

Outline a plan for evaluating the effect(s) of the curriculum on learners, including key indicators.

Section 8: APPENDIX OF CURRICULUM COMPONENTS

SMART Goal Setting

- **S = Specific**
- **M = Measurable**
- **A = Attainable**
- **R = Realistic**
- **T = Timely**

Specific

Goals should be straightforward and emphasize what you want to happen. Specifics help us to focus our efforts and clearly define what we are going to do.

Specific is the What, Why, and How of the SMART model.

- WHAT are you going to do? Use action words such as direct, organize, coordinate, lead, develop, plan, build etc.
- WHY is this important to do at this time? What do you want to ultimately accomplish?
- HOW are you going to do it? (By…)

Ensure the goals you set are very specific, clear and easy to understand.

Measurable

If you can't measure it, you can't manage it. In the broadest sense, the whole goal statement is a measure for the project; if the goal is accomplished, the project is a success. However, there are usually several short-term or smaller incremental measurements that can be built into the goal and represent steps toward achieving it.

Choose a goal with measurable progress, so you can see the change occur. How will you see when you reach your goal? Be specific! Assign numbers / quantity to goals.

Establish concrete criteria for measuring progress toward the attainment of each goal you set. When you measure your progress, you stay on track, reach your target dates, and experience the exhilaration of achievement that spurs you on to continued effort required to reach your goals.

Attainable

When you identify goals that are most important to a project, you begin to figure out ways you can make them come true. You develop attitudes, abilities, skills, and financial capacity to reach them. Your begin seeing previously overlooked opportunities to bring yourself closer to the achievement of the goals.

Goals you set which are too far out of reach will not be sustainable. A goal needs to stretch the project slightly so you feel it is possible, yet realistic.

Realistic

This is not a synonym for "easy." **Realistic, in this case, means "do-able."** It means that the learning curve is not a vertical slope, that the skills needed to do the work are available, that the project fits with the overall strategy and goals of the organization. A realistic project may push the skills and knowledge of the people working on it but it shouldn't break them.

Devise a plan or a way of getting there which makes the goal realistic. The goal needs to be realistic for the project, organization or company. Be sure to set goals that can be attained with some effort! Too difficult and you set the stage for failure, but too low sends the message that the project team is not very capable. **Set the bar high enough for a satisfying achievement!**

Timely

Set a timeframe for the goal: for next week, in three months, by next year. Putting an end point on your goal gives you a clear target to work towards.

If you don't set a time, the commitment is too vague. It tends not to happen because you feel you can start at any time. Without a time limit, there is no urgency to start taking action now.

Time must be measurable, attainable and realistic.

HALLER-HDPFH HEALTH EDUCATION-2010

PROGRAM CONTENT EXAMPLE-SEX EDUCATION

SESSION 1: HIV/STIS, PREGNANCY PREVENTION

Goals: To identify risk factors for HIV/STIs and pregnancy and contraceptive methods to prevent disease and unwanted pregnancies. Students will be able to identify that abstinence is the only 100% effective means to avoid sexually transmitted diseases and pregnancies, and identify the responsibility of both partners to communicate about contraception and the use of an effective birth control method.

Objectives:

- Students will identify at least 3 methods of birth control and the prevention of HIV/STIs and pregnancy.
- Students will identify 2 advantages, 2 disadvantages, and 2 risks of various forms of birth control.
- Students will identify at least 3 long term consequences of STIs and pregnancy in terms of their health and life goals.

SESSION 2: SUBSTANCE USE AND ADDICTION

Goal: To identify different substances and their impact on their bodies and health. Students will be able to analyze different situations that lead to use and abuse of substances. They will also be able to critically assess the role of advertising in teenager's view of alcohol and tobacco.

Objectives:

- To be able to state the cycle of use for substance use
- To list 3 effects of different substances, e.g tobacco and alcohol
- To increase student's knowledge of advertising strategies by listing at least 3 strategies advertisers use
- To increase student's ability to critically evaluate ads and messages and have them demonstrate 2 ways to debunk ads

SESSION 3: DATING VIOLENCE

Goal: To challenge myths regarding abuse in dating relationships and to educate about the different forms of relationship abuse.

Objectives:

- To identify and clarify at least 3 myths about abuse.
- To identify and list at least 4 different forms of abusive relationships.
- Define and identify 3 aspects of abusive relationships.
- To demonstrate and list 3 factors that increases the risk of date rape.

SESSION 4: COMMUNICATION

Goal: To emphasize the importance of effective communication skills to reduce the risk of engaging in sexual risk-taking behaviors and increase the prevention of STIs. Students will learn the application of assertive communication and interpersonal skills through skill building and dialogue.

Objectives:

- Students will be able to list 3 techniques of effective communication strategies to prevent pregnancy and STIs/HIV.
- Students will demonstrate through role play how to communicate about risk reduction with their partner.
- Students will be able to state 3 specific facts about STIs.

Appendix A: MPH Competencies

MPH Foundational Competencies

Evidence-based Approaches to Public Health

1. Apply epidemiological methods to the breadth of settings and situations in public health practice
2. Select quantitative and qualitative data collection methods appropriate for a given public health context
3. Analyze quantitative and qualitative data using biostatistics, informatics, computer-based programming and software, as appropriate
4. Interpret results of data analysis for public health research, policy or practice

Public Health & Health Care Systems

5. Compare the organization, structure and function of health care, public health and regulatory systems across national and international settings
6. Discuss the means by which structural bias, social inequities and racism undermine health and create challenges to achieving health equity at organizational, community and societal levels

Planning & Management to Promote Health

7. Assess population needs, assets and capacities that affect communities' health
8. Apply awareness of cultural values and practices to the design or implementation of public health policies or programs
9. Design a population-based policy, program, project or intervention
10. Explain basic principles and tools of budget and resource management
11. Select methods to evaluate public health programs

Policy in Public Health

12. Discuss multiple dimensions of the policy-making process, including the roles of ethics and evidence
13. Propose strategies to identify stakeholders and build coalitions and partnerships for influencing public health outcomes
14. Advocate for political, social or economic policies and programs that will improve health in diverse populations
15. Evaluate policies for their impact on public health and health equity

Leadership

16. Apply principles of leadership, governance and management, which include creating a vision, empowering others, fostering collaboration and guiding decision making
17. Apply negotiation and mediation skills to address organizational or community challenges

Communication

18. Select communication strategies for different audiences and sectors
19. Communicate audience-appropriate public health content, both in writing and through oral presentation
20. Describe the importance of cultural competence in communicating public health content

Interprofessional Practice

21. Perform effectively on interprofessional teams

Systems Thinking
22. Apply systems thinking tools to a public health issue

Concentration-Specific MPH Competencies for the Department of Population and Family Health

1. Discuss and defend the ethics, social justice and human-rights principles surrounding longterm, action-oriented research; articulate how each factors into the practice of service delivery with sustainable, measurable, effective outcomes; and relate these professional ethics and practices to equity and accountability.
2. Apply the concepts and skills of culturally appropriate community engagement and empowerment within diverse communities, with attention to privilege and power dynamics, and to human resource assets and constraints in diverse locations.
3. Articulate how complex interrelated forces combine to affect people's health and wellbeing, especially in the areas of fertility, mortality and migration.
4. Demonstrate substantive expertise in major public health topics in the student's selected track, as well as knowledge of the strengths and limitations of current directions in programmatic and policy responses.
5. Design, conduct, synthesize, and apply methodologically-sound, evidenced-based research to improve both public health practice and policy in the main substantive areas of the Department.
6. Develop and implement data collection instruments (e.g., survey questionnaires, rapid assessments, focus group guides, in-depth interviews); and create monitoring and evaluation strategies for use in the United States and in resource-constrained settings throughout the world.
7. Differentiate between qualitative and quantitative evaluation methods in relation to their strengths, limitations, and appropriate uses with emphasis on reliability and validity.
8. Design and implement viable and culturally appropriate programs using logic models in the primary substantive areas; differentiate among the goals, measureable objectives, related activities, and expected outcomes for effective public health programs; and articulate the location of the programs within public health systems.
9. Differentiate the purposes of formative, process and outcome evaluation; and design, conduct, and analyze rigorous needs assessments, evaluations, and other service-based research.
10. Engage in dialogue and learning from key stakeholders to advance public health goals.
11. Promote high standards of personal and organizational integrity, compassion, honesty, and respect.
12. Demonstrate skills in written and oral communication that is clear, concise and accessible to the audience being addressed.
13. Demonstrate competence in the professional skills necessary to move quickly into leadership positions within organizations that deliver public health services.

Appendix B: Institutional Review Board Approval

Not all Capstone Papers will require Institutional Review Board (IRB) review and approval. Approval may involve a full review or an exemption. An exemption can only be granted by the IRB. That is, neither you nor the faculty member with whom you are working can make the determination that your project is exempt.

The following types of Papers will need approval by the IRB:

- Papers that involve the collection and analysis of data from human subjects need to be submitted for review to the IRB before any data are collected.
- Papers that involve the secondary analysis of previously collected data may require IRB approval, and need to be submitted to the IRB so that it can determine if your project is exempt from IRB review or needs approval.
- Papers that involve the collection or analysis of data from human subjects as part of an already approved IRB study may require submission to the IRB of a modification or amendment to the IRB protocol and/or the addition of you to the personnel listed on the IRB protocol.

The IRB review process is usually straightforward but can be complex and lengthy. Thus, if your Capstone Paper may require IRB approval, submit the IRB application as soon as possible. You should consult with your Capstone Reader about this process when developing your proposal.

The Columbia University Medical Center Institutional Review Board does not permit students to be listed as Principal Investigators on IRB protocols. Applications that are submitted to the IRB need a Columbia University faculty member sponsor listed as the Principal Investigator (PI) on the IRB protocol. Students can be listed as Investigators. In the protocol, the project can be identified as Capstone Paper research that you are conducting under faculty mentorship.

If you seek to work on a project that may require an application to the IRB, you should discuss your project with your capstone reader before beginning the process, and obtain her/his agreement to serve as the PI on your project.

All Columbia personnel listed on the protocol (including students) need to have passed the Good Clinical Practices (GCP) exam and the Health Insurance Portability Accountability Act (HIPAA) training exam.

Submission of IRB protocols and correspondence with the IRB is conducted on-line using RASCAL (see https://www.rascal.columbia.edu/). At the RASCAL website, click on “Compliance” and then click on “Human Subjects Protocols” or “Consent Forms” as applicable. Under “Human Subjects Protocols” you can also click on “Helpful Information,” a comprehensive archive of information and commonly asked questions.

Appendix C: Writing and Style Tips

In writing, think about your audience. An effective essay is one that argues a point. Imagine that you are arguing your point to a class, during a meeting, or to friends. Write in a formal (social science) style, but write clearly. Use simple language. Avoid jargon, fancy words, and florid styles. Use terms consistently. Try to be very economical. Even if you have many interesting ideas, concentrate on one or two major themes. Introduce the theme or themes early on, preferably in the first paragraph (e.g., "In this essay I will argue that…"). Use a title and headings to help your reader move along through your essay; these will make it clearer when you move to the next step of your argument, or from one topic to another.

Often, the most important part of the writing process is in the editing stage. You are unlikely to come up with a clear structure on your first draft. Allow yourself the freedom to write unreservedly, but then edit your work closely. Even if you did start out with a clear structure, outline your essay after it is written. This provides an opportunity for you to add headings if you didn't start out with them. Make sure your arguments are built logically and coherently. Careful editing will help you to see where you drift from a main argument, or where a second argument needs an introduction. Don't hesitate to remove passages if they distract from the main theme(s) of your essay. Even if these extrinsic arguments are interesting, it is better to be coherent and stay on topic. You may expand on such passages in another essay or place them in a footnote.

Provide evidence to support to your statements and arguments. Imagine your readers are a jury in a court of law. You have to convince us! Why should we agree with what you say? What is your reasoning? Where is your evidence? In the social sciences, we use and cite sources of both ideas and facts. But remember, evidence may be of mixed validity – use it critically! Don't just say, for example, "Young people have unsafe sex because of low self-esteem." Be clear when you are mentioning this as a fact based upon research evidence by citing the source of the information. If instead you are proposing this as a hypothesis, let your readers know. If the hypothesis is someone else's, cite the source. Furthermore, you will help the reader assess the evidence you provide by qualifying it. Is there overwhelming evidence for this assertion, or is it merely suggested by one research project? Is the evidence convincing to you? It is more than all right if you don't know the answer to everything. Raise questions. Discuss problems.

Draw conclusions and take sides. Your paper should reflect your own thinking. Take care not to be simplistic or overzealous. Complex problems often have complex, somewhat conflicting, or even bewildering conclusions. This makes them interesting.

Citations

Use a consistent scientific style of citation. You may choose to use either the *American Medical Association Manual of Style: A Guide for Authors and Editors (*http://www.amamanualofstyle.com/*)*or the *Publication Manual of the American Psychological Association* (5th ed.) (http://www.apastyle.org/) in preparing this section. For certain disciplines (history, anthropology, sociology), the endnote conventions of the Chicago Manual of Style (14th ed. 1993:487-635) may prove more apt. If you are preparing a manuscript for eventual publication, the target journal or publisher's website

will indicate their preferred citation style.

Make sure that you properly cite the sources of information that you use throughout your proposal. When citing in the text, use the last name of the author or authors and the year of publication (e.g., Markel, 1995). The following are examples of AMA and APA reference citation styles.

AMA Journal Article
Golding JM, Cooper ML, George LK. Sexual assault history and health perceptions: seven general population studies. *Health Psychology* 1997; 16:417-425.

AMA Book:
Hall R. *Rape in America: A Reference Handbook*. Santa Barbara, CA: ABC-CLIO, 1995. pp.188-202.

AMA Newspaper article:
Di Rado A. Trekking through college: classes explore modern society using the world of Star Trek. *Los Angeles Times*. March 15, 1995:A3.

AMA Book Chapter:
Plichta SB. Violence and abuse. Implications for women's health. In: Falik MM, Collins KS, eds. *Women's Health. The Commonwealth Fund Survey*. Baltimore, MD: The Johns Hopkins University Press, 1996:237-70.

APA Journal Article:
Drucker, E. (1986). AIDS and Addiction in New York City. *American Journal of Drug and Alcohol Abuse* 12:165-81.

APA Book:
Gartner, A. & Riessman, F. (1979). *Selfhelp in the Human Services*. San Francisco: Jossey Bass.

APA Newspaper article:
Lambert, B. (1989). In Spite of Crisis, New York Lacks Basic Services for AIDS Patients. *New York Times*, January 3, pp. A1, B2.

APA Book chapter:
Weissman, H. (1983). The Social Welfare System. In:, S. Richard Sauber, (Ed.), *The Human Services Delivery System* (pp.184-222). New York: Columbia University Press.

We recommend using a citation management software program. The Health Sciences Library offers support for a number of citation management software programs, including EndNote, Zotero, and Mendeley: https://library.cumc.columbia.edu/activities/citation-management

Appendices

Appendices are not required. Questionnaires, scales, interview schedules, maps, photographs, and so on, can be included in an *Appendices* section, after the *References* section. There is no limit on the number of appendices or the number of pages in the appendices.

Additional Help on Writing

The Columbia University Writing Center
http://www.college.columbia.edu/core/uwp/writing-center is available for students.

For a general writing manual see, for example, Lunsford, A. & Connors, R. (1989). *The St. Martin's Handbook*. NY: St. Martin's Press, or any of many other guides.

For writing research papers see Booth, W.C., Colomb, G.G., & Williams, J.M. (1995). *The Craft of Research*. Chicago: The University of Chicago Press.

An excellent resource for review articles is the *Handbook of Research Synthesis* by H. Cooper & L. Hedges (eds.), (1994). New York: Russell Sage Foundation. The CUIMC Health Sciences Library offers numerous resources on writing scoping and systematic reviews in its searchable knowledge base: https://library.cumc.columbia.edu/kb

For writing about multivariate analysis, see Miller, Jane E. (2005) *The Chicago Guide to Writing about Multivariate Analysis.* Chicago: The University of Chicago Press.

Appendix D: Survey of Capstone Intentions

Note: Please complete the online survey:
https://www.surveymonkey.com/r/V6BBMHZ

The content of the survey is this:

> Please provide us with information about your plans for the Capstone Paper.
>
> 1. Your Name
> 2. Uni
> 3. Certificate
> 4. Which Capstone Paper option you plan to do (this can be modified later, if you change your mind)
> 5. The Department matches students with faculty capstone readers. To express your preference, please provide the names of three potential capstone readers.
> 6. Capstone comments? Questions? Additional information we should know? It is helpful if you include information about your planned topic or content.

Appendix E: Potential Capstone Paper Readers

Kayum Ahmed
Maureen Allwood
David Bell
Bill Bower
Sara Casey
Marina Catallozzi
Wendy Chavkin
Silvia Cunto-Amesty
Linda Cushman
Nicole Cushman
Melanie Gold
Claire Greene
Abigail Greenleaf
Stephanie Grilo
Kelli Hall
Neetu John
Patrick Kachur
Helen de Pinho
Lynn Freedman
Samantha Garbers
Cassie Landers
Terry McGovern
Rachel Moresky
Virginia Rauh
John Rausch
Karampreet Sachathep
Goleen Samari
John Santelli
Craig Spencer
Melissa Stockwell
Vandana Tripathi
Mike Wessells
Monette Zard