Chapter 6 Evaluation Research Design: Literature Reviews & Synthesis

Many times, the issue, problem, or question, which prompted an evaluation study can be resolved or answered by systematically collecting, analyzing, and synthesizing previous research reports form the professional and/or empirical (i.e., scientific) literature or existing databases. The examination of the existing information resources is called secondary research. The three primary secondary research strategies are the traditional narrative literature review or analysis, meta-analysis, and best evidence synthesis. Primary research is the systematic collection and analysis of data directly from surveys, experiments, interviews, observation, and other direct sources of data (see Chapter 8), but not those found in existing or historical literature collections or databases.

In program evaluation, it is often necessary to describe or explain the rationale for how a program is/was intended to function in order to achieve its goals and objectives. The description or rationale is called the program's theory. Program theory is integral to explaining why a program "worked" or "didn't work," drawing conclusions about the program's implementation or impact, and framing recommendations for decision-making.

Evaluation research proposals serve as the basis for negotiating a study commission, project contract, and/or conducting the actual evaluation research study. Once a study has been completed, it is necessary to file a written evaluation report.

Presented in this chapter are a comparison of the traditional literature review, meta-analysis, and best evidence synthesis and a detailed description of (1) how to conduct and report a literature review or syntheses and (2) format an evaluation research proposal and report. Presented in chapter appendices are (1) social science and business data sources, (2) a tool for assessing and evaluating research articles, and (3) budgeting basics for use in preparing an evaluation research proposal and report.

I. **Comparing the Traditional Literature Review, Meta-Analysis, and Best Evidence Synthesis**
   A. Suri (2000) explains that a <u>single</u> study is usually unable to definitively answer questions under investigation in the socio-behavioral sciences (e.g., education, business, sociology, psychology, etc.) or able to generate generalizable (to similar organizations or samples) definitive results. Based on this assumption, Suri goes on to critique three contemporary methods of literature synthesis: traditional narrative reviews of research, meta-analysis, and best evidence synthesis.

   B. Suri (2000) identified the primary strength of the traditional narrative review of research as methodological flexibility when the review is undertaken by a highly experienced research reviewer. However, the principle weaknesses of this approach include reviewer subjectivity, unclear article inclusion criteria, different methodologies employed by the empirical research studies included in the review, inconclusive results as evidenced by conflicting conclusions and/or hypotheses. It is these probable weaknesses, coupled with research reviewer subjectivity, which may contribute to the failure to find any effects, inconsistent effects, or false

effects upon the problem or issue under investigation. The authors also add that frequently, authors of traditional literature reviews are not necessarily highly experienced research reviewers and as a consequence such traditional reviews are often characterized by uneven levels of quality and accuracy of interpreting and distilling the results of studies included in the review. Suri argues that in analyzing any relevant empirical literature, it is critical to identify and analyze variables which may mediate the effects of the independent variable(s) on the dependent variable; Suri argues that traditional narrative research reviews frequently fail to identify, let alone explain these variables and their possible effect on the dependent variable. Confounding variables may limit, block, or enhance any effect an independent variable may have on the dependent variable; thereby, leading to false, or inaccurate conclusions. The traditional literature review or synthesis is often conducted in conjunction with primary research.

C. Next, Suri (2000) turns attention to meta-analyses where it is argued that research syntheses should contain "the same methodological rigor as is demanded in the data analysis of an empirical study" (p. 51). The meta-analytical approach advocated by Glass (1976) includes the aggregation of relevant findings from empirical studies as summarized by the effect size, as well as an analysis of relevant variables which may operate on the dependent and/or independent variables of each empirical study included in the analysis. Suri describes advantages of the meta-analytic approach over the traditional narrative review; these include: (1) identification of effects, (2) analysis of operating moderating variables, (3) an explicit explanation and rationale for study inclusion criteria, and (4) the methodological flexibility to include a large number of empirical studies. Suri reports that criticisms include a tendency to over generalize findings, the potential to include poorly designed empirical studies, overreliance on published juried research, and ignoring studies where effect size isn't computed.

D. Finally, Suri (2000) examines Slavin's (1986) best-evidence synthesis.
   1. Slavin (1986) asserts that best-evidence synthesis, "is designed to draw on the strengths of each approach [traditional reviews and meta-analysis] and to avoid the pitfalls and characteristics of each" (pp. 5-6). Slavin goes on to explain that best-evidence synthesis includes the "application of rational, systematic methods of selecting studies to be included and use of effect size (rather than statistical significance alone), as a common metric for treatment effects" (p. 6). In effect, Slavin merged the traditional research review with the meta-analytic approach to produce the best-evidence or evidence-based research (EBR) strategy. ERB strategy does not include primary research.

   2. We will first examine the traditional narrative literature review in some detail as it is presently, the most utilized secondary research strategy utilized in evaluation research. Next, we will examine the evidence-based research EBR process as it is the emerging secondary research paradigm.

II. Constructing a Literature Review or Synthesis
 A. Comparing the Literature Review or Synthesis
  1. Literature reviews and/or syntheses are often commissioned in response to a problem, issue, or other need to answer questions or test a hypothesis.

  2. A literature review is constructed as an element of a larger effort, such as an evaluation research or grant proposal, usually with a primary focus on a problem or an issue of interest.
   a. A literature review presents a detailed discussion of the problem or issue (1) history, (2) relevant variables (e.g., cause, enabling, supporting, confronting, etc.), (3) immediate and long-term impact, (4) prior efforts to address the problem or issue, and (5) any other useful information.
   b. Interpreting the literature, drawing conclusions, and/or making recommendations are not included.

  3. A literature synthesis, for our purposes, includes all the information in a literature review plus interpreting the literature, drawing conclusions, and/or making recommendations. **It is also called a literature analysis.**

  4. Common Elements
   a. A literature review or synthesis is a very concise and logically precise review or synthesis of knowledge regarding the evaluation research question or questions under investigation.
   b. A literature review or synthesis is based on primary or secondary data or information sources, housed in libraries or the Internet. Primary and secondary information sources include journals, reports, books, monographs, dissertations, government and other documents, oral histories, films, documents, etc.
   c. If a synthesis is being conducted, the basis for data interpretation, conclusions, and recommendations will emerge from the literature reviewed. The experience and professional judgment of the researcher and/or the research team must provide the interpretation, grounded in the professional and empirical literature.

  5. If properly conducted, a literature review or synthesis will assist in defining and limiting the scope of the topic, place the research into a comprehensive context, guide the construction of operational definitions, avoid unnecessary research, identify potentially useful research methods and measurement instruments, relate current research results to prior knowledge, and/or suggest future research.

 B. Preparing for the Literature Review or Synthesis
  1. When constructing a literature review or synthesis (we will not consider the meta-analysis), secondary sources are employed; these are data sources warehoused either in a library, archives, on the Internet, or in databases.

Before any evaluation research project is initiated, it is routine practice to first review and then synthesizes the relevant literature to produce the analysis.

2. The researcher is guided by research questions and/or hypotheses; see Chapter 2. He, she, or they then examine the "literature" which is distributed in millions of articles, reports, and unpublished manuscripts across thousands of indexes, bibliographies, dictionaries, encyclopedias, handbooks, directories, manual and electronic databases, CD-roms, Internet portals, and webpages.
   a. Different types of information are primarily drawn from different sources; see Table 6.1. The researcher should tailor his or her literature search to those sources of information which best meet his or her needs. For example, if the researcher needs to describe a current situation or event, he or she would draw information from a newspaper, radio or TV report, etc. To discuss the most recent advances in educational science, he or she would draw from empirical, professional, or trade journals; expert blogs might also contribute.

Table 6.1
Information and Source

Information Type	Reference Source
Current events, current information	Newspaper, news magazine, government, or professional organization printed periodicals or websites
Current technical information	Empirical, professional and/or technical peer reviewed printed or electronic journals
Current professional information	Empirical, professional and/or technical peer reviewed printed or electronic journals
Unique local information	Local newspapers, organizational documents, personal communications, etc.
Product descriptions	Company documents or websites (Just describe the product or service in neutral terms, when citing company or sales sources. Effectiveness evidence must come from independent sources.)

   b. Different sources carry different levels of authority (i.e., credibility and believability); see Table 6.2. When analyzing the literature, draw from and cite the most relevant, authoritative sources, you can access. To assess degree of authority, ask yourself these questions.
   (1) Is the article objective in its treatment of the topic?
   (2) Is the article rooted in the empirical and/or professional literature?
   (3) Do the authors possess relevant professional or research experience?
   (4) Do the authors possess the highest relevant academic credentials?
   (5) Is the source (e.g., journal, newspaper, blog, etc.) independent of any potential beneficiary of its articles, editorial opinions, etc.?

A "yes" answer to each question, will ensure authoritative sources. The extent, to which a researcher departs from a "solid yes" answer, diminishes the degree of source authority.

Table 6.2
Information Source Authority

Information Source	Authority
Empirical journals, print or electronic	Highest. Empirical journals are the highest level of authority as the articles are peer reviewed (critiqued by fellow experts/researchers, holding the highest academic credentials) for conformance to high quality standards.
Professional journals, print or electronic	High. Professional journals may contain peer reviewed articles and descriptions of professional practice. The professional practice articles may or may not be peer reviewed.)
Technical or trade publications and expert opinion blog, print or electronic	High or Medium, depending on the publication. Technical or trade publications are written primary for practitioners and typically contain a mix of articles based on expert opinion or articles intending to keep readers informed about current events, within the trade or profession, etc. Few if any articles undergo a formal peer review process such as the empirical journals.
Newspapers, news magazines, organizational documents, blogs, print or electronic	High or Medium, depending on the publication. These current publications are written for mass information consumption usually by professional journalists. While there are processes in place to verify the accuracy of what is written or taped, the process is not as rigorous as those used in the standard academic peer review process.
Popular magazines, print or electronic	Low. These may contain articles based on opinion, gossip, etc. They follow minimal journalistic standards.

c. Many blogs and Internet webpages provide information but are linked to an implied or direct solicitation for business. If you find the information provided useful, verify it with an independent source and cite the independent source. For most academic and professional purposes,

websites, such as Wikipedia are not acceptable references, as they are perceived to lack the quality control provided by the peer review or standard journalistic processes.

3. The Bibliographic Record: A Critical Tool
    It is useful to construct a bibliographic record for your own research purposes. The bibliographic record aids the researcher in keeping track of sources, information, insights, etc. Such a record can be organized as follows.
    a. Citation: An accurate and complete bibliographic entry heads the abstract. Use a style manual's referencing conventions.
    b. Purpose and Problem Description: This is a summary of the research problem or circumstance of the report being reviewed; it should include the research question(s) or hypotheses.
    c. Subjects: Describe the individuals (subject) involved in the research.
    d. Procedure Description: This section describes how the research was conducted. It includes such items as the measurements used and the analyses performed. This section also may be called methodology.
    e. Results and Conclusions: This section identifies the relevant results and conclusions of the study. A distinction may be made between results and conclusions. Results are those finding or "things" which occurred. Conclusions are made by the researcher based on the results, literature, and professional judgment. In long reports with many results and conclusions, it is best to number them.
    f. Insights: Record any response (e.g., feelings) which arises from reading or viewing the source which may affect interpretation of source findings or conclusions. Also, record any "aha" moments, as they tend to provide insight into the research foci or provide a seed for further research.

4. When initiating a search (for examples of data sources and databases, see Appendix 6.1), one uses a bibliographic database, where each "record" is a bibliographic citation to a book or a journal article usually in the form of a citation, abstract, and/or full-text article. A process for searching bibliographic databases (on-line or CD-ROM), including using Internet search engines is:
    a. Locate a database relevant to your research question or hypothesis.
    b. Learn the search conventions, e.g., Boolean logic, and then construct your search string. The more specific your search string, fewer and more relevant citations or webpages will be located.
    c. Continue to refine your search string until you are getting the most relevant citations and/or webpages.
    d. Of course, you will want to save the most useable citations and webpages. Be sure to "back-up' what you download.

5. Before starting the actual literature search process, become familiar with the various literature sources and databases typically used in your area of professional practice or the topic under investigation.

a. The actual mechanics for conducting a search are beyond the scope of the present work and are often particular to the bibliographic database being used.

b. Easily accessible databases include EBSCO, LEXIS-NEXIS, Westlaw, ProQuest, Academic Search Premier, ERIC, PsycINFO, Newsbank, Wilson, or Business Source Complete and hundreds more. Any of the Internet search engines, Especially Google Scholar, will provide access to thousands of relevant documents and hundreds of Internet only scholarly and professional journals. When assessing information sources for quality and potential inclusion in a literature review or synthesis, the quality assessment tool found in Appendix 6.2 or any similar device may prove useful. Other general quality guidelines include:
   (1) Use primarily peer-reviewed professional and scholarly journals as information sources.
   (2) Use doctoral dissertations or master's theses from reputable universities; dissertations and theses are supervised and vetted by faculty members serving the peer review function.
   (3) Use federal, state, and local government reports as these are also typically vetted by competent reviewers. Information from international organizations, such as the United Nations, is typically of high quality as this information is vetted by competent experts.
   (4) Use information from nonprofit organizations such as the American Cancer Society, Liver Foundation, American Red Cross, etc.; information found on these sites are written by committees recognized as subject matter experts.
   (5) Avoid using information from commercial publications or websites as these typically are not reviewed and vetted by objective competent experts.
   (6) Avoid using, generally, information from advocacy groups as this information tends to be biased and potentially inaccurate.

c. There are approximately 1,500 U.S. government document depositories, where virtually all non-secure government documents are archived and available for public use. Millions of government documents (e.g., federal laws, regulations, court decisions, government statistics, FedStats, and census reports, etc.) are available on-line, usually through the relevant federal government department or agency. Just link to the applicable website location.

C. Writing the Literature Review or Synthesis: A Process
1. First, carefully analyze the problem statement, general and specific research questions, and operational definitions (See Chapter 2) to have a clear idea of exactly what it is you are researching.

2. Next, read whatever relevant, based on your current understanding of the research topic, information sources (e.g., journal articles, reports, dissertations, etc.) which are available to you in order to develop a comprehensive understanding of the topic, and to identify other potential primary data sources, key word descriptors, and leading researchers.
   a. Keyword descriptors and author names are required to search bibliographic databases and other information sources to identify potential primary and secondary information sources.
   b. Information sources (e.g., journal articles, reports, dissertations, etc.) are classified either as secondary or primary. Primary data sources are always preferred over secondary data sources.
      (1) A secondary source is a report of or about a primary source. Secondary sources include syntheses of prior research, textbooks, encyclopedias, newspaper articles or other descriptions based on eye-witness accounts, police reports, etc. Typically, a secondary source will provide an overview, context, and general knowledge about the topic under investigation.
      (2) A primary source is an original research report as in a journal article, eyewitness to an event, a film or audio recording of an event, etc. Primary sources tend to be recent, technical, and very detailed. <u>Primary sources are the foundation of a literature review or synthesis</u>.

3. Based on Step 2, identify the most promising bibliographic databases and Internet search engines (e.g., Google Scholar) to identify more primary and secondary sources to include in a bibliography.
   a. Use the key word descriptors or significant authors to identify specific primary data sources (i.e., journal articles, reports, dissertations, etc.) to include in your bibliography.
   b. It is also helpful to identify a few really important studies relevant to the topic you are researching and use their reference lists to include in your bibliography.

4. After completing Step 3, sort through the bibliography searching for promising titles, researchers, etc.
   a. Once done, obtain abstracts to further narrow the scope of the bibliography (and your reading).
   b. Review the abstracts and retain only those articles, reports, dissertations, etc. that are the most promising. Remember primary sources are preferred over secondary sources.
   c. Read the most relevant primary and secondary sources and construct for each, a bibliographic record.

5. Steps 4 & 5 are iterative; they are complete only when the literature review or synthesis is complete.
    a. Organize the bibliographic records into a useful sequence based on your insights about the problem, theme, methodology, findings or in any other manner that makes sense to you as the writer.
    b. Write the literature review or synthesis, citing only those primary and secondary data sources included. Thus, your bibliography becomes a reference list. Do not include in your reference list primary or secondary sources not specifically included in your literature review or synthesis.
    c. Have a colleague or two read the literature review or synthesis for completeness, clarity, and logical construction. Have another colleague, who is not necessarily familiar with the topic under consideration, review the literature review or synthesis for clarity and writing mechanics.

D. **Organizing the Literature Review or Synthesis**
   Literature reviews or syntheses are typically organized as below, if they are stand-alone documents. If included in a larger document such as an evaluation research proposal, the literature review comprises sections 1-5 while the literature synthesis includes sections 1-7. The literature review or synthesis requires a reference list (Section 8) and not a bibliography. It may be instructive to read seminal articles on the topic under examination for additional guidance and models for writing a literature review or synthesis. The term "issue" is used as a referent for problem, opportunity, research question, or hypothesis.

   1. Preface Pages: Title page where the title of the report, its authors, and sponsors are identified.

   2. Abstract: This is up to a 350 word summary of the paper's purpose, chief points, conclusions, and any relevant key recommendations. (Abstract is usually written last.)

   3. Introduction: Within this section, discussed are (1) the issue's relevance and importance; (2) the consequence(s) of failure to address the issue and/or the benefits to be accrued through addressing the issue; and (3) other key introductory points. This section sets the context for all other sections in the review or synthesis to follow.

   4. Statement of Problem: Here, you define (in as much detail as is necessary to enable your audience to understand) the problem, issue, or opportunity. The narrative must be logically related to the context described in the introduction and logically linked to the introduction and the literature review or synthesis.

   5. Literature Review: This section presents a detailed discussion of the problem or issue (1) history, (2) relevant variables (e.g., cause, enabling, supporting, confronting, etc.), (3) immediate and long-term impact, (4) prior efforts to address the problem or issue, and (5) any other useful information. The literature review and synthesis should be logically related to the issue

identified within the statement of the problem. A literature review will typically stop here. <u>A literature synthesis includes sections 6 and 7</u>.

6. <u>Discussion</u>: Within this section is presented an analysis, as it applies to the organization and/or issue at hand, within the context provided by the introduction, problem statement, and literature review. The discussion is richly referenced using high quality primary sources from the relevant empirical and professional literature to enable data or information presented in the literature review to be interpreted.

7. <u>Conclusions & Recommendations</u>: The writer will draw conclusions based on any statistical evidence proffered, such as effect sizes (see Chapters 11-13), and the logical analysis presented in the Discussion. Any conclusions drawn must be a logical outgrowth of the previous discussion; <u>conclusions</u> are the authors' informed opinion, based on evidence and require no action on the part of a third party. Usually, the writer next makes whatever recommendation(s) he/she views as justified, given the line of logic begun in the introduction. There must be an explicit logical relationship between any conclusion(s) and recommendation(s). <u>Recommendations</u> are either the suggestion for or expectation of action by a third party.

8. <u>References:</u> Here are cited all references used in the paper. Do not list references not cited; this is not a bibliography.

E. **Evaluating the Quality of a Literature Review or Synthesis**
   1. Guidelines for evaluating the quality of a literature review or synthesis may be organized in to three categories: data source quality, the manner in which the literature was synthesized, and how the literature was interpreted.

   2. Guidelines for Ensuring Quality
      a. Data Source Quality
         (1) Limitations and delimitations (presented later in this chapter) should be reasonable and logical and consistent with prior research or seminal literature reviews or analyzes.
         (2) Primary sources must be emphasized; secondary sources must be few.
         (3) Recent research developments regarding the problem, issue, or opportunity should be reported.
         (4) The primary and secondary data sources must be recent and relevant.
         (5) The reference list must be full and complete.
         (6) Only high quality peer-reviewed journal articles or research reports should be used. Presented in Appendix 6.2 is a rating scale to assess their quality.
      b. Literature Review or Synthesis Quality
         (1) The review should be organized by topics, ideas, etc. which make logical sense. Do not organize by author or chronological date of a data source.

      (2) Major prior studies and leading researchers' comments should be discussed individually. Minor studies and researchers' contributions should be discussed as a group.

      (3) There should be sufficient critique of the design, methodology, analysis, and findings of each prior major study so that a reader may draw an informed conclusion about each study's quality.

      (4) Studies must be compared and contrasted to identify conflicting and inconclusive results. These conflicting and/or inconclusive results should be explained.

      (5) Each reference must be explicitly relevant to the problem, issue, or opportunity under investigation.

   c. Literature Interpretation Quality

      (1) The principle question to answer is "Are the interpretation, conclusions and/or recommendations logically consistent with the literature cited and professional experience of knowledgeable professional practitioners and researchers, etc.?"

      (2) The interpretation must contribute to an understanding of the problem, issue, or opportunity under study.

      (3) The interpretation should logically suggest further research.

III. Evidence-Based Research (EBR): A Brief Introduction

A. The Principle of Best Evidence

   1. Slavin advanced the "Principle of Best Evidence" which requires that the best available evidence, in the form of rigorously designed relevant empirical studies be included in the review at the expense of less rigorously designed studies; thus, overcoming EBR researcher bias and subjectivity. Slavin was referring to the quality of the "data sources" which would be candidates for inclusion into the EBR study being designed.

      a. The quality "pecking order" for quantitative studies is true-experimental (also referred to as randomized control trials, RCT's), quasi-experimental, and pre-experimental designs. See Chapter 8.

      b. Candidate qualitative studies should be high in interpretive validity, trustworthiness, comparability, and translatability. See Chapter 8.

      c. Surveys, correlational, and ex post facto studies should be used sparingly; but those included should be of the highest quality. See Chapter 8.

   2. EBR research is driven by research question(s) which frame the parameters of the literature to be studied and synthesized. The RQ or ERQ (Chapter 2) drives the inclusion criteria. Explicit study inclusion criteria must be specified and included in the best-evidence synthesis report. Slavin (1986, pp. 7-8) presented four standards for the explicit statement of study inclusion criteria:

      a. The study must be germane to the problem or issue under investigation.

      b. The study's methodological rigor must be analyzed and found to be suitable and to have minimized as much as possible, bias and internal design validity threats (see Chapter 7).

      c. Study external validity should be as highly valued as its internal validity.

    d. As appropriate, an explanation of the rationale for excluding some studies should be presented, thus giving the reader a full picture of the inclusion criteria application.

3. High quality data (i.e., articles, research reports, dissertations, etc.) would likely be drawn from the empirical, professional and technical or trade literature (see Tables 6.1 and 6.2), printed or electronic. Slavin argued for the inclusion of unpublished studies such as dissertations and government or foundation reports, provided they were well designed and germane to the topic under examination.

4. Some Technical Inclusion Considerations
    a. Select only those studies or reports which meet each of the 4 criteria for inclusion into the EBR study.
    b. All included studies should be well designed conforming to relevant, prevailing sampling, research design, and statistical analysis conventions.
    c. All data collection instruments must be appropriately reliable and valid.
    d. The relevant literature must be sufficiently abundant to produce enough rigorous studies suitable for EBR analysis.

B. The Systematic Review of the "The Best Available Evidence"
1. Suri also noted that Slavin failed "to provide guidelines for systematic and rigorous methods of synthesizing qualitative research" (p. 52) and by extension the quantitative literature. However, in fairness Slavin did write, "[t]here are no formal guidelines or mechanistic procedures for conducting a literature review in a best-evidence synthesis; it is up to the reviewer to make sense out of the best available evidence" (1986, p. 9). To synthesize the literature, Suri (2000, pp. 53-54) suggests (with interpretation and augmentation by the authors):
    a. The application of an inductive approach to best evidence synthesis, where the reviewer immerses him or herself in the data and that the nature of the data guides the selection of subsequent data analysis procedures.
    b. The adoption of an exploratory data analysis perspective where data may be displayed in charts and graphs to supplement, explain, or extend the narrative.
    c. That study inclusion criteria be conceptual as opposed to only methodological.
    d. In the initial phase (contextual narrative) of conducting the literature synthesis, "an inductive and interpretive approach should be used" (p. 54) to set a full and detailed context, followed by a presentation of study effect sizes.
    e. An interpretive, analysis of the effect sizes, given the "stage setting" of the contextual narrative, with explanatory narrative to round out the best evidence synthesis.

2. It would be expected that the EBR report would include a full treatment of the independent, moderating, and dependent variables so that the best evidence synthesis would have academic (by summarizing and extending the relevant literature) and practical (by deriving practical research-based principles that improve practice) utility.

3. A best-evidence synthesis by Bertles, Papania, & Papania (2010) illustrates a well-executed best-evidence synthesis.
   a. The authors fully described the methodology in Appendix A (pp. 58-66) of the report document, which included a detailed explanation of study inclusion criteria.
   b. Based on the literature synthesis, the authors developed a framework for embedding sustainability in organizations (p. 14) which included four dimensions "fostering commitment," "clarifying expectations," "instilling capacity for change," and "building momentum for change" (p. 14).
   c. Next, they identified specific practices for implementing and achieving each dimension; thereby, producing a literature synthesis which extended and clarified the relevant literature and provided research-based principles (strategies) to improve organizational practice.

IV. The Evaluation Research Process, Plan and Report
A. The Research Process (Presented as a Review)
1. Frame the Research Question(s)
   a. <u>Understanding the Research Purpose</u>: The researcher is faced with issues, opportunities, or problems. The purpose (a problem, issue, or opportunity) is summarized in a paragraph or two. It is wise to consult with colleagues and/or supervisor to ensure that the description of the dilemma is complete and accurate. This is an iterative process which requires significant thought and continuous refinement until the description is "exceptionally tight."
   b. <u>Define the General Research Question</u>: The research purpose is then transformed into one general question. There are numerous categories this question can be organized into. But the point at this step is to ensure that the general research question is accurate and fully defines the purpose. Framing such questions is an iterative process which requires significant thought and continuous refinement until the question is "exceptionally tight." From the general question, comes the specific research question or questions. It is important to note that in many studies the general research question is so well stated that specific research questions or hypotheses are absent.

c. <u>Developing and Refining the Specific Research Question(s)</u>: Research questions define the specific data which must gathered to generate information to answer them and the general research question.
   (1) A specific research question guides the study, reflects its purpose, and is very specific. The data, when converted to information, enables the researcher or manager to make a decision, answer the research question(s), and/or frame further research.
   (2) Measurement items are constructed based on one or more specific research questions or hypotheses; these are the actual items provided to respondents of surveys, judges using rating forms, or interviewers completing interview guides. If a researcher is conducting an observation study, these are the items that comprise the instrument.
   (3) Measurement items may be either pre-designed or custom constructed. Measurement items are based <u>directly</u> on operational definitions and the research question.

2. The next phase is the development of an evaluation research plan. A substantial portion of a plan is the study design strategy, often referred to as the methodology section. This is a description of how the research study is to be conducted. The methodology contains a description of the sampling strategy, research variables, research design, instrumentation to be used, data collection plan, and procedures for conducting the study. The research or grant proposal should also contain a budget and schedule.

3. Once the methodology is agreed upon, the data collection device (also called measure or instrument) is constructed. This involves item writing (i.e., constructing measurement items). It is strongly recommended that a measure be field-tested and refined based on field-test results.

4 Once the instrument is revised, the fourth phase is launched. Data are collected and prepared for data analysis.

5. Data analysis and interpretation comprise the fifth phase. Interpretation involves the application of meaning, i.e., converting data into information. This must be done by one who is knowledgeable about research, statistics, and the research purpose.

6. Data analysis and interpretation are reduced to writing in a report, thus completing this phase.

7. The final stage is when a decision is made concerning the purpose of the research study.

B. The Evaluation Research Proposal May Consist of 9 Sections

1. Introduction: Within this section, the **general** problem, opportunity, or issue (POI) is presented. Discussed are the POI's general relevance and importance, and the consequence(s) of failure to address <u>and</u> the benefits of addressing the POI. This section sets the context for all other sections in the plan. Leading researchers or experts in the field are cited. This is rather a general statement in nature. A problem, issue, or opportunity (POI) is significant if one or more of the following criteria apply: (a) develops new or defines existing knowledge or practice, (b) develops or refines theory, (c) expands theory or knowledge, (d) advances methodology, or (e) evaluates or solves an educational, business, management, or social issue, problem, or opportunity.

2. Purpose Statement (PS): The PS narrows the POI to a specific geographical or organizational locale. Discuss the POI's local importance, consequences, and benefits. The narrative must be logically related to the introduction and the literature review and usually contains tables and figures. The PS should enable a reasonably informed reader to understand the POI. The narrative must be logically related to the context described in the introduction and linked to the introduction and the literature review.

3. Literature Review (LR): The literature review provides (1) a brief summary of the POI's history to serve as a transition from the PS to the LR; (2) a discussion of several relevant causing, enabling, or supporting contributing factors; (3) a presentation of several immediate and long-term consequences, including benefits to those affected by resolving the problem or issue or capitalizing upon the opportunity; (4) an explanation of the program's theory, including any relevant effectiveness evidence of similar initiatives; and (5) the identification and resolution of several solution implementation issues. The literature review must be logically related to the introduction, be an outgrowth of the problem statement, and "set the stage" for the research project. This section should be concise and succinct. Sections "4" and "5" must be the logical outgrowth, i.e., the inevitable outcome, of sections "1", "2", and "3".

4. Research Question or Hypothesis: An applicable research question or hypothesis is explicitly stated. The independent and dependent variables are identified and discussed in a research based context which shows relevance to the research question or hypothesis. This section should be the logical conclusion of the line of thought which began in the introduction, PS and LR.

5. Assumptions, Limitations, Delimitations, and Definition of Terms: Cited are any assumptions; limitations, those parameters not controlled by the authors but which might affect the study; and delimitations, those parameters which might affect the study but are controlled by the authors. Critical terms, including the independent dependent, and moderating variables, are operationally defined.

6. <u>Methodology</u>: This is the "heart" of the research or grant proposal. Described are the project's subjects, variables, research design, instrument(s), data analysis plan, and procedures.

   a. <u>Subjects</u>: Identify the probability or non-probability sampling strategy and briefly describe (i.e., number, demographics, etc.) the sample. Show how the sampling strategy is suitable for the research question or hypothesis and the research design.

   b. <u>Variables</u>: Each study has at least one independent and dependent variable which is explicitly identified and discussed. Moderating and extraneous variables are identified, described, and potential impact explained, and strategies for their control are presented.

   c. <u>Research Design</u>: Identify the research design and any probable operating internal and external validity threats including suspected effects. Show how the design is suitable for the research question or hypothesis and how internal and external validity threats are controlled or not.

   d. <u>Instrumentation</u>: The instrument(s) or other devices used to collect data are precisely described in terms of structure, reliability, and validity. Show how the instrument(s) are suitably reliable and valid. You must show that the instrument is likely to generate the data required to answer the research question or test the hypothesis by discussing your instrument's scoring plan and how that plan will produce said data. An instrumentation copy should be placed in an appendix.

   e. <u>Data Analysis Plan:</u> Appropriate descriptive statistics and inferential statistics must be identified and shown to be suitable for the research question or hypothesis and research design. Descriptive and inferential statistics must enable an informed reader to understand the study's findings. Show how the selected inferential statistical test fits the research design and sampling strategy. If appropriate, a suitable effect size (ES) indices is identified.

   f. <u>Procedures</u>: Here, is outlined (avoid extensive narrative as a reader gets lost in the detail) how the research project will be conducted from start to finish. An introductory paragraph sets up the outline. Discussed are: how (1) subjects will be identified; (2) data will be collected, (3) data will be analyzed (very, very briefly); (4) informed consent will be obtained; (5) compliance with human subjects' protection regulations will be effected; and (6) data will be reported. A concluding paragraph ties together the entire section. Procedures must be explicitly clear, logically sequenced, aligned with Standards 6a-6e, and appear to lead to successful project implementation.

   g. <u>Human Subjects Protection</u>: Most school districts, colleges, universities, and organizations have institutional review boards which assess research proposals to determine the degree of risk to human and/or animal subjects. Proposals must be cleared by the institution's or organization's IRB before execution. Copies of IRB forms granting approval are appended to the research or grant proposal.

7. Budget and Schedule: The project's budget is presented, with both reasonable direct and indirect costs identified and justified. The budget must be logically organized to enable reader understanding. A project schedule is presented with key "milestones" denoted by completion dates. The schedule must be realistic, logically organized, and aligned with procedures. For an example of how to construct a budget, see Appendix 6.3.

8. References & Appendices: All references cited in the paper must conform to the APA 6th edition style manual (2010). References should generally be less than 5 years old. Appendices are presented after references. Appendices should be presented in the order cited in the text with relevance explained or self-evident.

9. Abstract: This is written after the paper is completed, and is placed after the title page. An abstract contains a brief description of the project's purpose; its most salient characteristics (e.g., subjects, methodology, etc.) identified; and its importance described. It is usually 100 to 150 words in length. A sample research or grant proposal task description and quality scoring rubric are presented in Appendix 6.4.

C. **The Research Report May Consist of 10 Sections**
   1. Title Page contains the report's title, which should be descriptive of the study; author's affiliation; study sponsor name and location (if any); date of publication or release; and authors, listed by degree of contribution to the study.

   2. The abstract is presented next and should not exceed 350 words. Described should be the study's purpose, primary methodology, and findings. An executive summary of 3-4 pages may be included after the abstract and before a table of contents if the report is long.

   3. Introduction is similar to that of the proposal, but briefer. Report only the most critical information. Blend the proposal's purpose statement into the introduction.

   4. Review of literature is presented next. Condense the proposal's literature review by reporting only the most salient information to the study's purpose and findings.

   5. The research question or hypothesis is presented next. Include any relevant assumptions, delimitations, and only the most critical definition of terms. Blend the discussion of moderating variables from the proposal's methodology into this report section.

   6. In the report's methodology section, describe the study's subjects, sampling strategy, instrumentation, research design, and general procedures. Copies of

the instrumentation, IRB approval, informed consent form, and any generalized communication with subjects should be reserved to an appendix.

7. Within the <u>results</u> section, study findings are summarized, using a judicious combination of narrative, tables and figures. If descriptive statistics are available, they should be reported. It is common practice to organize findings by research question or hypothesis. The data presentation should be sufficient to fully inform the reader, answer the research question or test the hypothesis, and support conclusions, if any. Interpretive and/or editorial comments are not made.

8. In the <u>discussion</u>, the study's findings are interpreted using information from the literature review and any other research information collected since the proposal was completed. The study's limitations, implications for practice and further research, and conclusions are also discussed. Ensure that each conclusion is logically consistent with the prior discussion and findings; number or letter each conclusion so that it corresponds to a specific recommendation, if any are made. Recommendations are expectations of action by a third party; succinctly explain the rationale for each recommendation. Implications are not conclusions or recommendations. Don't repeat study findings or over interpret results; there are usually alternative explanations or conflicting results from similar studies found in the literature. Make a reasonable effort to explain conflicting results. One study proves nothing. Proof is usually a made by preponderance of evidence from a variety of sources, collected over a period of time.

9. All <u>references</u> cited in the report should conform to a standard style manual, e.g., the APA 6th edition style manual (2010).

10. <u>Appendices</u> are presented after references and should be presented in the order cited in the text. If an appendix contains references not reported in the reference list, they should be reported in the appendix.

Review Questions

<u>Directions</u>. Read each item carefully; either fill-in-the-blank or circle letter associated with the term that best answers the item.

1. Document analysis includes:
   a. Reports
   b. Watching subjects
   c. Talking to subjects
   d. All are correct

2. Of these steps presented, which one is completed first?
   a. Determining the data types to collect
   b. Literature review
   c. Formulation of research question or hypothesis
   d. Problem identified

3. Operational definitions are specifically written to
    a. Meet statistical analysis tools' assumptions
    b. Increase the likelihood that an experiment will be published
    c. Explicitly define terms used in the study
    d. Make the research report more readable

4. Which <u>one</u> of the following statements is the <u>least</u> legitimate reasons for studying the effective of various methods of teaching Chinese?
    a. Want to test deductions derived from a language instruction theory
    b. Need to evaluate current methods of teaching Chinese
    c. Lack empirical evidence to support the teaching method you know is effective.
    d. Contradictions and inconsistencies exist in the literature base.

5. A research study is generally based on potential contribution to
    a. General knowledge   c. Professional practice
    b. Theory   d. All of the above

6. Which <u>one</u> of the following is the <u>most</u> sufficient justification for studying drug use in the workplace?
    a. Will determine which drugs and the extent to which each is used
    b. The researcher believes that workplace drug use and abuse is a significant matter facing business today
    c. Determine which drugs are to be targeted first for intervention
    d. Absenteeism and turnover are expensive to business

7. Literature research which has a bearing on the research question should be conducted:
    a. Before the study   c. After the study
    b. During the study   d. Does not matter

8. General references are most suitable for
    a. Locating original research reports
    b. Assessing the status of the research problem
    c. Assessing the quality of previous studies
    d. Solving methodological problems

9. The first step in conducting a literature search is referring to
    a. General references   c. Primary sources
    b. Secondary sources   d. Computer search engines

10. One of the more common problems in starting a literature search is:
    a. Research problem is too vague
    b. Needed key information resources are not available
    c. Information resources are inconveniently classified
    d. Too many studies

11. Which sequence for primary source reading is most recommended?
    a. Read the most recent first
    b. Read the oldest first
    c. Start reading about 12 years back
    d. Start reading at any time within the past five years

12. Which <u>one</u> of the following is <u>not</u> performed by a literature review?
    a. Avoids research duplication
    b. Assists in identifying influencing variables
    c. Assists with the identification of promising research procedures, instruments, references, etc.
    d. Provides the research design

13. The literature review should be mostly based on _____ sources.
    a. Preliminary   c. Secondary
    b. Primary   d. Mix of "a", "b", and "c"

14. The literature review section of a completed study generally should <u>not</u> include:
    a. All references reviewed or read by the researcher
    b. A critical analysis of the research designs and analysis of prior relevant research
    c. A demonstration that the reader understands the problem, issue, etc.
    d. Provide the study's theoretical (if appropriate) and/or empirical rationale

15. A research problem, issue, opportunity, etc. is significant if its results
    a. Provide knowledge about best or enduring professional practices
    b. Develop a new or revise an existing theory
    c. Extend knowledge
    d. All of the above

16. Research problem logic requires that problems, issues, etc.
    a. Be stated as research hypotheses
    b. Be stated as research questions
    c. Be stated as research purposes
    d. Imply empirical research possibility

17. The distinction between a literature analysis and review is that the review excludes
    a. Introduction   c. Discussion & Conclusions
    b. Statement of Problem   d. Recommendations

Selected Answers: 1.a, 2. d, 3. c, 4. c, 5. d, 6. a, 7. a, 8. a, 9. c, 10. a, 11. a, 12. d, 13. b, 14. a, 15. d, 16. d, & 17. d.

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Bertles, S. Papania, L. & Papania, D. (2010). *Embedding sustainability in organizational culture: A systematic review of the body of knowledge*. London, Ontario, CA: Network for Business Sustainability, The University of Western Ontario.

Glass, G.V. (1976). Primary, secondary, and meta-analysis of research. *Educational Researcher*, 5(10), 3-8. Retrieved from http://stat.smmu.edu.cn/history/primary.pdf

Rossi, P. H., Lipsey, M. W. & Freeman, H. E. (2004). *Evaluation: A systematic approach* (7th ed.). Thousand Oaks, CA: Sage Publications.

Slavin, R. E. (1986) Best evidence synthesis: an alternative to meta-analytic and traditional reviews. *Educational Researcher*, 15(9), 5-11.

Suri, H. (2000, September). A critique of contemporary methods of research synthesis. *Prost-Script 1*, 49-55. Retrieved from fttp://www.edfac.unimelb.edu.au/research/resources/student_res/postscriptfiles/vol1/vol1_1_suri.pdf

Appendix 6.1 Data Sources: Evaluation, Social Science, & Business

1. **Evaluation**
    a. Evaluation Associations
       American Evaluation Association: http://www.eval.org/
       American Educational Research Association: http://www.aera.net/
       Canadian Evaluation Society: http://www.evaluationcanada.ca/
       European Evaluation Society: http://www.europeanevaluation.org/
       International Test and Evaluation Association: http://www.itea.org/
       The Australasian Evaluation Society: http://www.aes.asn.au/

    b. Evaluation Journals
       American Journal of Evaluation
       American Educational Research Journal
       Canadian Journal of Program Evaluation
       Educational Assessment Evaluation and Accountability
       Educational Comment, the Journal of Educational Evaluation
       Educational Evaluation Journal
       Educational Evaluation and Policy Analysis
       Evaluation Design and Method
       Evaluation – The International Journal of Theory, Research and Practice
       Evaluation Journal of Australasia (EJA)
       Evaluation and Program Planning
       Evaluation and Research in Education
       Evaluation Review
       International Journal of Research and Method in Education
       The Journal of Educational Evaluation
       Journal of Educational Measurement
       New Directions for Evaluation (very important)
       Practical Assessment, Research, and Evaluation: http://pareonline.net/
       Survey Research Methods
       Studies in Educational Evaluation

    c. Books: Needs Assessment

Altschuld, J. W. (2014). *Bridging the gap between asset/capacity building and needs assessment: Concepts and practical applications*. Thousand Oaks, CA: Sage.

Altschuld, J. W. & Kumar, D. D. (2009). *Needs assessment: An overview* (Book 1). Thousand Oaks, CA: Sage Publications.

Altschuld, J. W. & Eastmond, Jr. J. N. (2009). *Needs assessment phase I: Getting started* (Book 2). Thousand Oaks, CA: Sage Publications.

Altschuld, J. W. (2009). N*eeds assessment phase II: Collecting data* (Book 3). Thousand Oaks, CA: Sage Publications.

Altschuld, J. W. & White, J. L. (2009). *Needs assessment: analysis and prioritization* (Book 4). Thousand Oaks, CA: Sage Publications.

Stevahn, J. A. King, L. A. (2009). *Needs assessment phase III: Taking action for change* (Book 5). Thousand Oaks, CA: Sage Publications.

Barbazette, J. (2006). T*raining needs assessment: Methods, tools, and techniques*. San Francisco, CA: Pfeiffer.

Gupta, K. (2007). *A practical guide to needs assessment*. San Francisco, CA: Pfeiffer.

Kaufman, R. & Guerra-Lopez, I. (2013). *Needs assessment for organizational success*. Washington, DC: Association for Talent Development.

Wambeam, R. A. (2014). *The community needs assessment workbook*. Chicago, IL: Lyceum Books.

    d.   Books: Program Evaluation

Barrett, N. F. (2013). *Program evaluation: A step-by-step guide*. Springfield, IL: Sunnycrest Press.

Chen, Huey-Tsyh. (2004). *Practical program evaluation*. Thousand Oaks, CA: Sage Publications.

Chen, H. T. (2014). *Practical program evaluation: Theory-driven evaluation and the integrated evaluation perspective* (2nd ed.). Thousand Oaks, CA: Sage.

Fink, A. G. (2014). *Evaluation fundamentals: Insights into program effectiveness, quality, and value* (3rd ed.). Thousand Oaks, CA: Sage.

Fitzpatrick, J. L., Sanders, J. R. & Worthen, B. R. (2010). *Program evaluation: Alternative approaches and practical guidelines* (3rd.). New York, NY: Prentice-Hall.

Frechtling, J. A. (2007). *Logic modeling methods in program evaluation*. San Francisco, CA: Jossey-Bass.

Holden, D. J. & Zimmerman, M. A. (2008). *A practical guide to program evaluation planning: Theory and case examples*. Thousand Oaks, CA: Sage Publications.

Kirkpatrick, D. L. & Kirkpatrick, J. D. (2006). *Evaluating training programs: The four levels* (3rd ed.). San Francisco, CA: Berrett-Koehler Publishers, Inc.

Kirkpatrick, D. L. & Kirkpatrick, J. D. (2007). *Implementing the four levels* (3rd ed.). San Francisco, CA: Berrett-Koehler Publishers, Inc.

McDavid, J. C. & Hawthorn, L. R. (2005). *Program evaluation and performance measurement*. Thousand Oaks, CA: Sage Publications.

McDavid, J. C. & Huse, I. (2012). *Program evaluation and performance measurement: An introduction to practice* (2nd. ed.). Thousand Oaks, CA: Sage.

Mertens, D. M. & Wilson, A. T. (2012). *Program evaluation theory and practice: A comprehensive guide*. New York, NY: The Guilford Press.

Patton, M. Q. (2014). *Qualitative research & evaluation methods: Integrating theory and practice* (4th ed.). Thousand Oaks, CA: Sage.

Posavac, E. J. (2010). *Program evaluation: Methods and case studies* (8th ed.). New York, NY: Prentice-Hall.

Royse, D., Thyer, B. A., & Padgett, D. K. (2010). *Program evaluation: An introduction* (5th ed.). New York, NY: Cengage Learning.

Spaulding, D. T. (2008). *Program evaluation and practice: Core concepts and examples for discussion and analysis*. San Francisco, CA: Jossey-Bass.

Spaulding, D. T. (2013). *Program evaluation in practice: Core concepts and examples for discussion and analysis* (2nd ed.). San Francisco, CA: Jossey-Bass.

    e.   Books: Reference

Cooper, D. R. & Schindler, P. S. (2013). *Business research methods* (12th ed.). Boston, MA: McGraw-Hill Irwin.

Osborne-Daponte, B. (2008). *Evaluation essentials: Methods for conducting sound research*. San Francisco, CA: Jossey-Bass.

Patton, M. Q. (2011). *Essentials of utilization focused evaluation: A primer*. Thousand Oaks, CA: Sage Publications.

Rossi, P. H., Lipsey, M. W. & Freeman, H. E. (2004). *Evaluation: A systematic approach* (7th ed.). Thousand Oaks, CA: Sage Publications.

Stufflebeam, D. L. & Shinkfield, A. J. (2007). *Evaluation theory, models, and applications*. San Francisco: Jossey-Bass, CA.

Stufflebeam, D. L. & Coryn, C. L. (2014). *Evaluation theory, models, and applications* (2nd ed.). San Francisco, CA: Jossey-Bass.

Yarbrough, D. B., Shulha, L. M., Hopson, R. K. & Caruthers, F. A. (2011). *The program evaluation standards: A guide for evaluators and evaluation users* (3rd ed.). Thousand Oaks, CA: Sage publications.

Wholey, J.S., Hatry, H.P., & Newcomer, K.E. (2010). *Handbook of practical program evaluation* (3rd ed.). San Francisco, CA: Jossey-Bass. ISBN 978-0-470-52247-9

2. **Social Sciences**
   a. <u>Internet</u>: There are billions of Web pages on the Internet which are provided by various governments, business organizations, libraries, research institutions, universities, international organizations, individuals, etc.
      (1) You must be careful about "pulling" information off the World Wide Web (WWW or Web) as much of what is published on the Web is more opinion than fact. Generally information provided by governments, libraries, universities, research institutions, international organizations, etc. are reliable for research purposes, but always cite the Web page in a reference list. Most standard writing handbooks (e.g., APA or MLA style manuals) provide citation advice.
      (2) It is best to use a search engine such as Alta Vista, Yahoo, Google, Dogpile, InfoMine, or WebCrawler to frame your research query. The more specific your query syntax, the fewer web pages you will need to sort through to find useful information. Since search engines don't all use the same databases, its wise to use multiple search engines. The syntax conventions often vary by search engine, so it is recommend that you review each engine's directions before starting your search.
      (3) Most university and public libraries allow either limited or full access to their holdings and search engines. It is wisest to start any Web search from a library Web portal.
      (4) Many local governments, all state governments, and the federal government have education related web portals which are rich sources of information.

   b. <u>On-line Database Services</u>
      (1) *EBSCOhost* is a database of databases. It provides abstracts and indexing for over 3,000 scholarly journals and features full text articles for over 1,000 of those same journals. Specific databases include: ERIC, Hoover's Company Capsules, ATLA Religion Database, and Newspaper Source.)
      (2) *ProQuest Research* provides search and retrieval to one of the world's largest collections of information. It includes summaries of articles from over 8,000 publications with many articles being full text.
      (3) *PsycINFO* provides abstracts and indexing to the international journal, book-chapter, and book literature in psychology, education, business, medicine, and law. Over 3,000 journals, monographs, and books are included.
      (4) Educational Resources Information Center (ERIC) <http://www.eric.ed.gov/>.
         (a) The Educational Resources Information Center (ERIC) is a national information system designed to provide ready access to an extensive body of education-related literature. Established in 1966, ERIC is supported by

the U.S. Department of Education's Office of Educational Research and Improvement and is administered by the National Library of Education (NLE).

(b) At the heart of ERIC is the largest education database in the world-containing more than 1 million records of journal articles, research reports, curriculum and teaching guides, conference papers, and books.

(c) The ERIC system, through its 16 subject-specific clearinghouses, associated adjunct clearinghouses, and support components, provides a variety of services and products that can help you stay up to date on a broad range of education-related issues.

(d) Products and services include research syntheses, electronic journals, online directories, reference and referral services, and document delivery.

(5) ERIC Digests < http://www.ed.gov/databases/ERIC_Digests/>
ERIC Digests are short reports (1,000 - 1,500 words) on topics of prime current interest in education. The full-text ERIC Digest database contains 2,575 Digests published through June 2002. The database is updated quarterly; digests added to the ERIC Database during the previous three months are added.

(a) Targeted specifically for teachers, administrators, policymakers, and other practitioners, but generally useful to the broad educational community.

(b) Designed to provide an overview of information on a given topic, plus references to items providing more detailed information.

(c) Produced by the 16 subject-specialized ERIC Clearinghouses, and reviewed by experts and content specialists in the field.

(d) Funded by the Office of Educational Research and Improvement (OERI), of the U.S. Department of Education (ED).

(6) National Center for Educational Statistics (NCES)
< http://nces.ed.gov> NCES is the primary federal government organization for collecting and analyzing educational data on the US and other nations.

(7) United Nations UNESCO < http://en.unesco.org/>.

c.   Specific Online Databases

(1) There are dozens of on-line databases available but most require a fee to use the service. However, many libraries provide free access.

(2) Examples include:

(a) *Academic Search FullTEXT Elite* provides full text articles for over 1,250 social sciences, humanities, general science, business, education, general academic studies, and multicultural journals.

(b) *LexisNexis Statistical Universe Based Edition* is the world's most comprehensive access to statistical information, allowing users to search summaries of statistical publications, then link to the full-text of selected publications on Statistical Universe and government web sites.

(c) *Newspaper Source* provides selected full text articles from 1,432 US and international newspapers.

3. Business
   a. <u>The US Government Census Bureau</u> (http://www.census.gov)
     (1) Census Bureau Reports include:
       (a) *Census of Population*: The US Constitution requires a national census every 10 years. These detailed reports include detailed population demographics (e.g., sex, age, ethnicity, family size, marital status, occupation, income, education, etc.). The Census Bureau regularly updates its 10 year data with estimates so that data are reasonably current.
       (b) *Census of Housing*: The housing census reports housing stock characteristics, mortgage or rent payments, home values, plumbing and air-conditioning features, housing stock age, number of cars owned, etc.
       (c) *Economic Census*: This report is actually a compilation of the censuses of manufactures, retail sales, wholesale sales, and service industries. The manufacturer's census provides data on manufactured goods' shipments by standard industrial classification (SIC) number by producer. The other three provide sales and establishment information by product at the city, county, state, and primary metropolitan statistical area (MPSA).
       (d) *County and City Databook*: Published every five years, included are population, education, employment, income, housing, banking, manufacturing output, and capital expenditures, retail and wholesale sales, and mineral and agricultural output by county.
       (e) There are "specific" studies conducted by the Census Bureau which include:
         (1) *Census of Agriculture*, conducted every year ending in "2" and "7".
         (2) *Census of Construction Industries*, conducted every year ending in "2" and "7".
         (3) *Census of Government*, conducted every year ending in "2" and "7".
         (4) Census of Mineral Industries, conducted every year ending in "2" & "7".
         (5) *Census of Retail Trade*, conducted every year ending in "2" and "7".
         (6) *Census of Transportation*, conducted every year ending in "2" and "7".
     (2) <u>U.S. Department of Commerce</u>
       (a) *County Business Patterns*: This annual publication reports business type and number, payroll, and employment at the county level.
       (b) *State and Metropolitan Databook*: The *Databook* presents population, housing, government, manufacturing, retail and wholesale trade information by state and metropolitan statistical area.
       (c) *Business Statistics*: This bi-annual publication provides data summaries of the monthly series which appear in the *Survey of Current Business*.

   b. <u>State and Local Governments</u>
     (1) Every state and most local governments are able to provide tremendous amounts of information as are local chambers of commerce.
     (2) While the quality of state and local government data sources vary they have improved significantly over the past few years and should not be overlooked.

(3) All states and most local governments have their own web portals such as http://www.myflorida.com which link to many web sites and pages of potentially useful information.

c. On-line Business Database Services
   (1) *H.W. Wilson Omnifile* includes full text articles from 1,342 journals with abstracting and indexing for more than 2,610 others.
   (2) *Dialog Information Services* http://www.dialog.com contains over 5 billion pages of information, with international, multilingual coverage, full text of more than 6,000 journals, including e-Journal linking.

d. Specific Online Databases
   (1) There are dozens of on-line databases available but most require a fee to use the service. However, many libraries provide free access.
   (2) Examples include:
      (a) *ABI/INFORM Global* which features 150 word abstracts and indexing to over 1,000 academic management, marketing, and business journals.
      (b) *Academic Search FullTEXT Elite* provides full text articles for over 1,250 social sciences, humanities, general science, business, education, general academic studies, and multicultural journals.
      (c) H*oover's Company Capsules* provides basic information (e.g., addresses, telephone and fax numbers, sales, stock symbols, sales) on more than 13,500 public and private companies.
      (d) *Hoover's Company Profiles* provides detailed profiles for 3,400 public and private organizations.
      (e) *LexisNexis Statistical Universe Based Edition* is the world's most comprehensive access to statistical information, allowing users to search summaries of statistical publications, then link to the full-text of selected publications on Statistical Universe and government web sites.
      (f) *Newspaper Source* provides selected full text articles from 1432 US and international newspapers.
      (g) *Wilson Business Index* provides full text articles of 255 leading periodicals as well as abstracting and indexing of more than 520 using SIC codes for industries and names of corporations as subject headings.

e. Commercial Information Sources
   (1) *Moody's Manuals* present, annually, balance sheets and income statements for many companies and governments.
   (2) *Standard and Poor's Corporate Research* provides current company financial information.
   (3) *Standard and Poor's Industry Surveys* provide an analysis of all major domestic industries.
   (4) *Standard and Poor's Statistical Service* provides monthly statistical data for several sectors of the economy.
   (5) To Profile Customers, one might use Dun's Market Identifiers (DMI) database of over seven million companies.

(6) To measure product sales and market share, one could use diary panels such as the 16,000 plus monthly household survey of the NPD Group whose printed diaries are used to record product purchases. Store audits & scanners using universal product codes can also be used.

(7) To measure the effectiveness of advertising, one can purchase the services of The Nielsen Company which use people meters in Nielsen households. To assess printed media effectiveness, one might use the Starch Readership Services which conduct tens of thousands personal interviews annually.

f. Other Information Sources

(1) These include business and professional groups, newsletters, (e.g., American Demographics, Research Alert, The American Marketplace, Yankelovich Monitor, etc.) trade association papers (e.g., Advertising Age, Marketing Age, etc.), and directories (e.g., The Directory of Market Research, Reports, Studies, and Surveys, Directory of Industry Data Sources, The Guide to American Directories, etc.).

(2) Specialized government and private publications such as the Federal Reserve Bulletin, the Survey of Current Business, and the Wall Street Journal.

(3) Many information search companies sell CD-ROM databases which are typically quality sources for specialized information.

Appendix 6.2 Framework for Assessing and Evaluating Research Articles

Directions: Virtually all research articles present this information, but it may be organized differently. The first part of each item below tells you what is typically presented in that portion of the article. The second part (in bold) presents question(s) you should ask yourself in assessing (Items 1 to 7) and evaluating (Item 8) an article.

1. Introduction (i.e., usually the first paragraph or two of the article or report, the purpose of which is to put the research into context, typically by citing leading researchers or experts in the field. This is rather a general statement in nature.) **Did the authors provide you with sufficient information to place the study into an understandable context?**

2. The purpose, problem, or question to be considered (i.e., a couple of sentences which inform the reader about what [1] the authors' want to assess, report, or study, [2] what the authors hope to learn from the assessment results, and [3] how they intend to use those results. This statement is more specific than the introduction and may be found within the introduction or the methodology section). **Did the authors clearly state the purpose of the study so that you understand? (They might do this by stating an explicit purpose, research question, or hypothesis.).**

3. Review of relevant literature (i.e., within this section, previous research is summarized and analyzed and the relationship of the present effort to that research is made clear. This section should be concise and succinct). **Was the review of the literature concise and sufficient so that it helped you to further understand the nature of the study, and its relationship to the relevant literature?**

4. Assumptions, Limitations, Delimitations, & Definition of Terms (i.e., cited are any assumptions, limitations [those parameters not controlled by the authors who affected the study] and delimitations [those parameters controlled by the authors but which affected the study). **Were assumptions, limitations, delimitations, and terms so fully described? Where you were able to place the study into a clearer context?**

5. Methodology (i.e., in this section, the authors describe their subjects, variables, instrument(s), research design, procedures, and data analysis plan). The information you are being asked to provide may not be ordered as follows; but it all should be in any quality article or report. If it is not stated, you must say so.

   a. Subjects [here described is the sampling plan (i.e., how subjects were obtained, the type of probability or non-probability sample, and a brief description of the sample demographics)]. **Did the authors explicitly describe their sampling strategy and sample?**

   b. Variables [described here are the independent, dependent, control and extraneous variables, usually in the form of a definition or label]. **Were the study's variables clearly identified and labeled?**

   c. Research design [briefly describe the research design and how internal and external validity threats are controlled or not.]. **Was the research design employed appropriate to the purpose of the study? Where internal and external threats to design validity controlled?**

    d.   Instrumentation [here the instrument(s) used to collect data are generally described in terms of item format, development process, validity, reliability, etc. Instruments may be paper/pencil tests, surveys or questionnaires; computers; medical devices; etc. Were the instruments related to the relevant aspects of the research design?]. **Was the information provided by the authors concerning validity and reliability of the instrumentation used adequate? Were the instruments appropriate to the research design?**

    e.   Procedures [how data were gathered and by whom is described. This should be specific and reasonably detailed to enable other researchers to replicate the author's work**.]. Was the manner in which data were collected adequately described and appropriate?**

    f.   Data analysis plan [here one describes generally how data were to be tabulated and analyzed, the relevant statistical software package might be named, and specific statistical procedures are identified.]; **Was the data analysis plan described and was it understandable?**

6. Results (i.e., study results should be summarized objectively and with little or no interpretation or discussion. Summary devices typically include tables, figures, and/or charts. The results of statistical analyses are presented. The conventions of the style manual or publication guidelines should be used to guide table, figure, and/or chart construction and placement.) **If tables, figures, or charts were used, did they help improve your understanding of the results? Was the explanatory narrative helpful in assisting you in understanding the table, figures, charts, etc.?**

7. Discussion, implications, and conclusions (i.e., the results of the present study are related to those of earlier ones [cited in the literature review], any unexpected results are explained [if possible], implications for further research are suggested, practical applications are suggested, and conclusions [if warranted] are drawn.). **Did the discussion help you understand any implications or conclusions drawn? Are they consistent with your knowledge of previous research and/or your expertise?**

8.   **Over-all, how would you rate this article: Acceptable, Marginal, or Unacceptable. Argue for your conclusion based on your analysis of the above.**

Article Assessment and Evaluation Rating Scale

Directions: First circle either "yes" or "no" to answer the question(s) posed. Next rate your degree of understanding from 1 (Not at all understood) to 3 (No Opinion) to 5 (Well understood), by circling the number that represents your choice.

1. **Introduction**: Did the authors provide you with sufficient information to place the study into an understandable context?

    Yes   No   If yes,   1   2   3   4   5

2. **The purpose, problem, or question to be considered**: Did the authors clearly state the purpose of the study so that you understand? (They might do this by stating an explicit purpose, research question, or hypothesis.).

    Yes   No   If yes,   1   2   3   4   5

3. **Review of relevant literature**: Was the review of the literature, concise and sufficient so that it helped you to further understand the (1) nature of the study and (2) its relationship to the relevant literature?

    1Yes   No   If yes,   1   2   3   4   5

    2Yes   No   If yes,   1   2   3   4   5

4. **Assumptions, Limitations, Delimitations, and Term Definition:** Were assumptions, limitations, delimitations, and terms so fully described that you were able to place the study into a clearer context?

    Yes   No   If yes,   1   2   3   4   5

5a. **Methodology—Subjects**: Did the authors explicitly describe their sampling strategy and sample?

    Yes   No   If yes,   1   2   3   4   5

5b. **Methodology—Variables**: Were the study's variables clearly identified and labeled?

    Yes   No   If yes,   1   2   3   4   5

5c. **Methodology—Research Design:** (1) Was the research design employed appropriate to the purpose of the study? (2) Where internal and external threats to design validity controlled?
    1Yes   No   If yes,   1   2   3   4   5

    2Yes   No   If yes,   1   2   3   4   5

5d. **Methodology—Instrumentation:** (1) Was the information provided by the authors concerning validity and reliability of the instrumentation used adequate? (2) Were the instruments appropriate to the research design?

    1Yes   No   If yes,   1   2   3   4   5

    2Yes   No   If yes,   1   2   3   4   5

5e. **Methodology—Procedures:** Was the manner in which data were collected adequately described and appropriate?

    Yes   No   If yes,   1   2   3   4   5

5f. **Methodology—Data Analysis Plan:** Was the data analysis plan described so that it was understandable?

    Yes   No   If yes   1   2   3   4   5

6. **Results:** (1) If tables, figures, or charts used, did they help improve your understanding of the results? (2) Was the explanatory narrative helpful in assisting you in understanding the table, figures, charts, etc.?

    1Yes   No   If yes,   1   2   3   4   5

    2Yes   No   If yes,   1   2   3   4   5

7. **Discussion, Implications, and/or Conclusions:** (1) Did the discussion help you understand any implications or conclusions drawn? (2) Are they consistent with your knowledge of previous research and/or your expertise?

    1Yes   No   If yes,   1   2   3   4   5

    2Yes   No   If yes,   1   2   3   4   5

8. Over-all, how would you rate this article: Acceptable, Marginal, or Unacceptable. Argue for your conclusion based on your analysis of the above.

    Acceptable   Marginal   Unacceptable   Total Score: _____

    Comments:

Appendix 6.3: Budgeting Basics

Brimley and Garfield (2005, p. 304) define budgeting as, "defining priorities and needs, receiving, and spending funds over a particular period [of time]." The budget development process encompasses these phases: "(1) identifying needs, (2) establishing goals, (3) organizing objectives, (4) building a program in meeting those objectives, and (5) providing a budget to fund those programs." See Table 1 for a comparison of these five phases and research plan section.

Table 1
Relationship: Budgeting & Research Planning

Need Identification	Introduction & Problem Statement
Framing Goals	Research Question
Framing Objectives	Research Sub-questions, if any
Programming	Literature Review & Methodology
Budgeting	Budget and Schedule

Schultz and Johnson (1990, p. 97) describe the budgeting and planning relationship as, "plans are developed to define what will be done and how the tasks will be accomplished. Budgets outline the resources dedicated to the achievement of the strategy [goal/objective]—in other words, the costs that are expected to be incurred in the implementation of the [goal/objective]."

Research and grant costs are classified into two board categories: direct and indirect. The types of costs included in Table 2 are typically direct costs associated with a project and should be forecast based on the project's life span. Each direct cost must be justified in a manner acceptable to the project sponsor and/or funding body.

Indirect costs are incurred by a project sponsor and include administrative, accounting, or other support services. Indirect costs are often referred to as "overhead" costs and vary considerably among sponsors. Frequently, a funding body will permit a sponsor to bill it for overhead costs, typically as a percentage of the total project budget. The project sponsor and funder may negotiate a rate or the funder may mandate a rate. For example, a university department received funding for reading readiness tutoring for at risk elementary students. In addition to the direct services (direct costs) provided by the department to students, the university had costs associated with its internal review of the grant proposal (indirect cost) and will experience costs with the financial management (indirect cost) of grant transactions (e.g., payroll, taxes, purchases, etc.) as well as its general oversight of the project (e.g., department chair's dean, in-house legal counsel, etc.). The grant would be expected to pay for these indirect costs.

We will examine the line-item budget which is commonly used in research planning and grant writing. First a line-item budget will be presented and then dissected. The line-item budget is among the simplest forms of budgeting as it is organized by spending category. See Table 3

Table 2
Line-Item Budgeting

Personnel Expenses	
Positions	Administrators, Teachers, Paraprofessionals, Classified Staff, Secretaries, Coordinators, Drivers, Tutors, Allied Professionals
Salaries	Annual, Monthly, Weekly, Daily, or Hourly rate of pay
Fringe Benefits	Retirement, Insurance (Health, Life, Dental, or Vision), Workers' Compensation, Medicare, Social Security, Relocation Expenses, Bonus (signing or retention), Professional Memberships
Continuing Education	Tuition, Conference Registration Fees, Trainee Salaries, Substitute Staff for Trainees
Consultants	Paid on an hourly, daily, or project basis
Travel Expenses	
Mileage	Flat Rate paid per mile or kilometer
Common Carrier	Airplane, Train, Boat
Meals	Actual cost or maximum cost per meal, usually breakfast, lunch, or dinner
Hotels	Actual cost or maximum amount per night
Per Diem	A flat daily rate, regardless of actual cost of meals and hotel
Miscellaneous	Taxi, Bus Fares, Tolls, Gas or Fuel (Actual Costs), Car Rental
Office Support	
Facility	Actual cost per square foot or meter for space or utilization
Furniture	Desks, Chairs, Tables, File Cabinets, Book Cases, Decorations, Telephones
Utilities	Electricity, Heat, Trash Removal, Cleaning, Water, Telephone and Internet Services
Equipment	Computers, Faxes, Printers, Typewriters, Software, Calculators, Copier (purchase or use), Equipment "set-up" and/or maintenance, Laboratory Equipment
Supplies	Postage, Bandwidth, Consumables (staplers, tape, pens, pencils, paper, ink, envelopes, file folders, holders, paper clips, binders, coffee or bottled water, etc.), Copier charge per page
Educational Materials	
Books	Books, eBooks and eBook Readers, Workbooks, Leaders' Manuals
Audiovisuals	DVDs, Films, VHS or Beta Tapes, Posters, iPods, Software, MP3 Players
Fees	Copyright Use (e.g., author royalty), Software licenses, Test Usage and/or Scoring
Miscellaneous Costs	
Varied	Participant incentives (money, gifts, or food), Drug testing costs, sports equipment, Physical plant modifications (making a building accessible for disabled persons, to house laboratory equipment, or meet life and safety codes) catering, marketing

Case: The Reading Enhancement Program

In the next few pages is presented a fictitious budget for a project designed to assist low performing readers in grades 4-5 to improve their reading fluency and comprehension. Tutors are certified reading teachers. Students will spend 20 minutes in computer mediated instruction, 20 minutes at the direct instruction station, and 20 minutes engaged in small group cooperative learning tasks. Tutors are provided 60 minutes planning time each week. Each tutor is assigned nine students per session which meets two hours weekly for six weeks. In each six week cycle, there are two sessions (Monday and Wednesday or Tuesday and Thursday). There are six cycles. The project employs the fictitious Reading Enhancement Program (REP) curriculum.

The director, a seasoned, mentor teacher is present five days each week during the project. Three supervisors are present during non-instructional times to assist students with

homework, reading, and social skill development. Students are in tutoring four hours each week; they are in supervised study 6 hours weekly. A daily snack is served. Found in Table 3 is the fictitious project's line item budget.

Table 3
Reading Enhancement Program (REP) Budget

Line Item	Item Cost
Personnel: Positions	**$52,542.00**
Director	$13,467.60
Tutors	$26,924.40
Supervisors	$12,150.00
Personnel: Fringe Benefits	**$16,813.44**
Director	$4,309.63
Tutors	$8,615.81
Coordinator	$3,888.00
Project Support	**$18,659.65**
Facility	$5,850.00
Utilities	$1544.40
Equipment	$7,525.00
Supplies	$3,740.25
Travel	**$1,870.00**
Mileage	$950.00
Meals	$240.00
Hotels	$680.00
Continuing Education	**$1,500.00**
Educational Materials	**$4,766.00**
Applicant Indirect Charges [a]	**$17,307.20**
Total Project Budget	**$113,458.29**
[a] $96,151.09 x 18% = $17,307.20	

Tables 3a to 3g profile how the main line item costs (in bold print) were calculated. A superscript small case letter keys typical budget justification text presented at the base of the table for most line items in tables 3a to 3g. The project needs external funding.

Personnel Costs

Three positions are employed by the project: director, tutors, and supervisors. A sponsoring organization or funding agency may mandate how these costs are calculated; a common methodology is presented in Table 3a. Keyed to each position are brief justifications and a description for how salary and fringe benefits are computed. In this example, the project staff is assumed to be school district employees, which typically requires the computation of fringe benefits. It may be possible to negotiate a reduced fringe benefit costs for after school programs; don't assume such is possible.

Continuing education costs may or may not be reported separately. In this case, they were reported in association with personnel costs as training needs and costs were relatively minor.

Table 3a
Personnel

Personnel: Positions	Annual Rate	Hourly	# Hours	# Positions	Project Wages
Director [a]	$55,000	$37.41	360	1	$13,467.60
Tutors [b]	$38,000	$27.70	324	3	$26,924.40
Supervisors [c]	$25,000	$9.00	450	3	$12,150.00
Personnel: Fringe [d]	**Project Wages**		**Fringe Rate**	**Number**	**Project Costs**
Director	$13,467.60		32%	NA	$4,309.63
Tutors	$26,924.40		32%	NA	$8,615.81
Supervisors	$12,150.00		32%	NA	$3,888.00
Continuing Education [e]	**NA**		**NA**	**NA**	**$1500.00**

[a] Director (a seasoned, mentor teacher) will supervise tutors, supervisors, and consultant; manage client recruitment; parent, student, and community relations; tabulate and analyze data; prepare reporting documents to teachers, school, district, and funding organization; and manage the project's financial affairs. The Compensation formula = $55,000/210 contract days/7.0 hours daily = $37.41 per hour. Hours: 10 hours for 36 weeks = 360 hours.

[b] Tutors will deliver instruction in accordance with the instructional models adopted by the project; manage student interaction with the REP computerized instructional software program; and print reports for individualized data driven instruction. Tutors are reading certified. Compensation formula = $38,000/196 contract days/7.0 hours per day = $27.70 per hour. Hours: 9 hours weekly for 36 weeks = 324 hours each.

[c] Supervisors will supervisor students during non-instructional time and waiting for parent "pick-up." Hours: 2.5 hours daily x 5 days x 36 weeks = 450 hours each.

[d] The applicant standard fringe benefit ratio is 32%.

[e] Tutors will receive two days training on a weekend at $150.00 per day by the Project consultant. The director will train tutors for a $600.00 stipend in addition to regular project wages.

Project Support Costs

Presented in Tables 3b to Table 3e are project support costs. Keyed to each category are brief justifications and a description as to how costs were computed. Project support costs for facilities, utilities, equipment, and supplies are discussed. As noted in Table 3b office and tutoring space are assessed by the applicant based on square footage. A play room is provided by the applicant at no charge as is property insurance coverage. If the funding organization had a matching requirement, this would be a common strategy to meet that requirement. However, some funders would expect facility charges such as those in Table 3b to be included in the applicant's indirect charges as is typically the case with property insurance.

Table 3b
Project Support: Facility

Space Type	Sq. Feet	Cost/Sq. Ft.	Total	Quantity	Cost
Office [a]	350	$9.00	$3,150.00	1	$3,150.00
Tutoring [b]	100/Station	$9.00	$900.00	3	$2,700.00
Classroom [c]	600	NA	NA	1	NA

[a] The administrative office space dedicated to the project reflects the proportion of the director and coordinators current office space based on the percentage of FTE assigned to the project. The applicant's space charge is $9.00 per square foot. All applicant facilities meet federal, state, and local fire, safety, and accessibility codes.

[b] Three tutoring computer workstations are required at 100 square feet each.

[c] The applicant will contribute a classroom for use during non-instructional time at no charge to the project. The contribution is valued at $9,900 ($55.00 daily x 5 days x 36 weeks). Insurance charges are not assessed by the applicant.

Found in Table 3c are project utility charges. Keyed to each category are brief justifications and a description as to how costs were computed. Each funding organization or applicant will likely have a method for computing these costs. The approach presented below is one such method. Some applicants will compute utility costs and then apply those costs towards meeting a matching funds requirement or will include them in the applicant's indirect cost assessment.

Table 3c
Project Support: Utilities

Utility	Sq. Feet	$/Sq. Ft.	$/ Week	% Used [a]	Prorated	Wk. Used [b]	Cost
Heating	650	$0.12	$78.00	33%	$25.74	11	$283.14
Cooling	650	$0.12	$78.00	33%	$25.74	25	$643.50
Electricity	650	$0.08	$52.00	33%	$17.16	36	$617.76

[a] Assumes 3 hours of a 9 hour day for project use. Heating, cooling, and electric charges are the average paid by the applicant based on square footage.
[b] Project life span: 36 weeks. No utility costs will be assessed contributed space.

Each project needs equipment which may be either purchased or leased. Equipment expected to last no more than 3 years is usually purchased. Noted in Table 3d are three computer work stations (computer, screen, table, and chair). The applicant is contributing furniture for two learning centers. The applicant is supplying some furniture which may be applied towards a matching requirement. In purchasing equipment, be sure to comply with applicable policies and procedures.

Table 3d
Project Support: Equipment

Equipment	Quantity	Cost Each	Total Cost
Desk Top Computers [a]	9	$500.00	$4,500.00
15" Screen [a]	9	$100.00	$900.00
Computer Table [a]	9	$75.00	$675.00
Computer Chair [a]	9	$100.00	$900.00
Tutor Chair	3	$100.00	$300.00
Printer [b]	1	$250.00	$250.00

[a] Three computers, screens, tables, and chairs are required for each tutoring station. Software will be loaded onto each computer by the applicant under existing licenses at no cost to the project. Contribution is valued at $1,800.00. Tutoring stations will be set-up and made operational by the applicant at no charge to the project. Contribution is valued at $1,200.00. The applicant will contribute two student worktables and 6 student chairs with an estimated value of $300.00 Director office equipment is supplied by the applicant at no charge to the project. Contribution is valued at $1,200.
[b] A dedicated printer is required to meet project printing needs.

Supplies needed to successfully execute the project are reported in Table 3e. In buying supplies, ensure that you comply with prevailing policies and procedures. Included in Table 3e is the amount of supplies thought to be needed given the project's requirements. Some might argue that the project should not provide students with a snack. However, children who are hungry will likely not be motivated to learn.

Table 3e
Project Support: Supplies

Category	Cost per Item	Number	Cost
Copier [a]	$0..03/page	6,000	$180.00
Postage [b]	$0.39/letter	2,000	$780.00
Consumables [c]	$150.00/FTE	1.4	$210.00
Paper [d]	$4.55/ream	15	$68.25
Printer Ink [e]	$12.00/cartridge	6	$72.00
Snacks [f]	$0.25/package	9,720	$2,30.00

[a] Three mailings (introduction, individual report, & project report) to 324 parents at 4 pages each for 3,888 copies. Administrative and support copies are expected to total no more than 2,112.
[b] 972 letters to parents at $0.39 total $379.08. Administrative and support postage is expected to cost no more than $400.92.
[c] There are 1.4 FTE assigned to the proposed project. Applicant consumable estimate is $150.00 per FTE per budget year.
[d] 15 reams of paper are needed to meet project needs.
[e] Six ink cartridges are needed to meet project needs.
[f] 54 students x 5 days x 36 weeks

Project Travel Costs

Presented in Table 3f are the project's anticipated travel expenses. Reimbursing staff mileage for use of a personal vehicle is standard practice; the project does not need to purchase or lease a vehicle nor pay maintenance or insurance charges. Project staff never should be allowed to transport students in personal vehicle without appropriate prior permission. Two days offsite training is required. Meals, lodging, and transportation are allowable expenses.

Table 3f
Project Travel

Category	$/Unit	Total Units	Total Cost
Mileage [a]	$0.38/mile	2,500	$950.00
Meals [b]	$30.00/day	2 days	$240.0
Lodging [c]	$85.00/day	2 days	$680.00

[a] It is expected that 2,500 miles will be driven to support project requirements.
[b] The applicant's maximum daily food allowance while in travel status is $30. (2 days x 4 persons x $30)
[c] Two days hotel are required for training for four persons. (2 days x 4 persons x $85)

Project Educational Materials

Nine software licenses are required as are student workbooks and leader manuals; see Table 3g. The terms of any license should be fully complied with. Do not photocopy copyrighted materials for use to save money. The practice rarely saves much money, looks unprofessional and is illegal. It is also a good idea to order extra copies of items for students as some are likely to be lost or damaged.

Table 3g
Project Educational Materials

Item	Unit Cost	Quantity	Total Cost
REP License [a]	$150.00	9	$1,350.00
REP Student Workbook [b]	$9.00	324	$2,916.00
REP Tutor Manual [c]	$100.00	5	$500.00

[a] *Nine REP software licenses are required for computer assisted instruction.*
[b] *The project is expected to serve 324 low performing readers during the first year. Students will participate for 1 hour, 2 days each week for 6 weeks. Nine students will be assigned to each tutor. Two sessions will run each cycle. Six cycles are scheduled. Each tutor is provided one planning hour each week. One student workbook is budgeted for the director and library.*
[c] *Five tutor manuals are budgeted for the 3 tutors, director, and library.*

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