



STEPS IN CONDUCTING A SYSTEMATIC SCIENTIFIC RESEARCH



STEP 1: SEARCHING FOR A PROBLEM TO INVESTIGATE

The world problem means an issue, a question, a problem, a technique, a difficulty, etc which a researcher aims to study and investigate thoroughly.

“A problem well put is half solved.”

GUIDELINES TO SELECT AND DEFINE PROBLEM

Is the problem important or significant?

What is societal relevance?

Can the problem be stated in question form?

Can boundaries be defined?

Are sources of information available?

Does it interest you?

Do you have the required background to undertake the inquiry under question?

STEP 2: DETERMINING THE PURPOSE

It seeks to answer the following questions:

1. What is the purpose of this research?
2. Who needs the answers?
3. Who will use the answers?
4. What is the benefit of this research?
5. What is the limitation and scope of the research?



Problem:

What are the dietary needs of the elderly in the nursing homes?

Purpose:

To determine the dietary needs of the elderly in nursing homes so as to better satisfy and treat them.

STEP3: GATHERING BACKGROUND INFORMATION ON YOUR TOPIC

Refer to established material

You will report this information in the chapter titled “review of literature” or “background”

STEP3: GATHERING BACKGROUND INFORMATION ON YOUR TOPIC

Literature review is done to achieve two goals:

1. to find already available information about the problem
2. to acquire a good background in the area of the research

HOW TO WRITE LITERATURE REVIEW

What is literature review?

A literature review is *not* an annotated bibliography in which you summarize briefly each article that you have reviewed. While a summary of the what you have read is contained within the literature review, it goes well beyond merely summarizing professional literature. It focuses on a *specific* topic of interest to you and includes a *critical analysis* of the relationship among different works, and relating this research to your work. It may be written as a stand-alone paper or to provide a **theoretical framework** and **rationale for a research study** (such as a thesis or dissertation).

HOW TO WRITE LITERATURE REVIEW

Step 1: **Analyze the literature**

- i. Overview the articles:** Annotated Bibliography. Skim the articles to get an idea of the general purpose and content of the article (focus your reading here on the abstract, introduction and first few paragraphs, the conclusion of each article.)
- ii. Group the articles into categories** (e.g. into topics and subtopics and chronologically within each subtopic). Find common themes in the works and organize them into categories.
- iii. Take notes:**

Step 2: Summarize the literature in table or concept map format

Step 3: Synthesize the literature prior to writing your review

FORMAT FOR LITERATURE REVIEW

1. Establishes research territory
2. establishes significance of the territory
3. establishes the research niche. (briefly reviews the major achievements in the field.)
4. Reviews the chronological development of research in this area (an approach that is useful at times, but not always the best).
5. uses the found weaknesses to justify the project topic and aim.
6. end with a summary and states the research problem with force and conviction.

The need to mitigate this disconnect has given rise to the application of domain adaptation [1, 5], in recognition of objects [19] and events [6, 30]. Lixin et al.[6] employed an adaptive multiple kernel learning approach to minimize the mismatch between distributions from YouTube and consumer videos. Several variations of traditional SVM has been introduced for domain adaptation such as adaptive SVM [30], domain adaptation SVM [1], and domain adaptation machine [5]. However, the major limitation of all these approaches is that they require availability of video labels (or features [2]) from both domains during training.

Final checklist

Selection of Sources

- Have you indicated the purpose of the review?
- Are the parameters of the review reasonable?
- Why did you include some of the literature and exclude others?
- Which years did you exclude?
- Have you emphasised recent developments?
- Have you focussed on primary sources with only selective use of secondary sources?
- Is the literature you have selected relevant?
- Is your bibliographic data complete?
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Critical Evaluation of the Literature

- Have you organised your material according to issues?
- Is there a logic to the way you organised the material?
- Does the amount of detail included on an issue relate to its importance?
- Have you been sufficiently critical of design and methodological issues?
- Have you indicated when results were conflicting or inconclusive and discussed possible reasons?
- Have you indicated the relevance of each reference to your research?

Interpretation

- Has your summary of the current literature contributed to the reader's understanding of the problems?
- Does the design of your research reflect the methodological implications of the literature review?

DEVELOPMENT OF THE LITERATURE REVIEW REQUIRES FOUR STAGES:

Problem formulation—which topic or field is being examined and what are its component issues?

Literature search—finding materials relevant to the subject being explored

Data evaluation—determining which literature makes a significant contribution to the understanding of the topic

Analysis and interpretation—discussing the findings and conclusions of pertinent literature

LITERATURE REVIEWS SHOULD COMPRISE THE FOLLOWING ELEMENTS:

An overview of the subject, issue or theory under consideration, along with the objectives of the literature review

Division of works under review into categories (e.g. those in support of a particular position, those against, and those offering alternative theses entirely)

Explanation of how each work is **similar to and how it varies from the others**

Conclusions as to which pieces are best considered in their argument, are most convincing of their opinions, and make the greatest contribution to the understanding and development of their area of research

STEP 4: PREPARING A RESEARCH DESIGN

Research plan is the military plan of attack you make to conduct your research. It includes the following:

1. information and data collection methodology/tools
2. a plan or procedure with tasks sequentially and logically arranged
3. a schedule of tasks with deadline

OBSERVATION

Observation is a serious and careful examination of object or issue under study.

1. select venue, and obtain permission from the owner
2. arrange access for an appropriate length of time
3. carry a notebook, camera, tape recorder with you.
4. have a clear conception of the phenomena to be observed



5. try to ignore ant preconceived notions or opinions you have in order to be objective and honest

6. record what you perceive. Also, describe in detail what you find.

EVALUATION AND CRITICAL ANALYSIS

Systematic determination of merit, worth, and significance of something using authentic criteria (a set of standards).



EXPERIMENTING

In experiments, events are made to occur under known conditions.

INTERVIEWS

Structured Interviews (standardized/ researcher administered survey):
a quantitative research method commonly employed in survey report.

Semi Structured Interview:

generally has a framework of themes to be explored

QUESTIONNAIRES

- Closed Questions
- Open Questions
- Funnel questions
- Leading questions

1. PHRASE QUESTIONS PRECISELY

Vague questions only elicit answers that you cannot use or will be unable to analyze.
Use valid, quantifiable questions.

Ineffective: Are we open enough hours on Saturdays?

Yes_____ No_____

Better: How many hours would you like us to be open on Saturdays?

4_____ 5_____ 6_____ 7_____ 8_____

2. ASK ONLY ONE QUESTION AT A TIME.

Avoid multiple questions within the same question, since you will not know the exact answer to each question.

Ineffective: What is your overall impression of our customer support and delivery services?

poor___ fair___ good___ very good___ excellent___

Better: (turn the two questions above into two separate queries as follows)

What is your overall impression of our customer support service?

poor___ fair___ good___ very good___ excellent___

How would you rate our delivery service?

poor___ fair___ good___ very good___ excellent___

3. CLEARLY DIFFERENTIATE EACH OPTION IN MULTIPLE CHOICE QUESTIONS

If respondents are not sure of the differences between/among options, they may answer inappropriately because of question overlap or they may skip the question altogether.

Ineffective: When is the best time to call you?

Daytime___ Afternoon___ Weekday___ After work___ Evening___
Night___

Better: When is the best time to call you?

Morning (8:00 a.m.–noon)___ Afternoon (noon–5:00 p.m.)___
Evening (5:00 p.m.–10:00 p.m.)___

4. SUPPLY ALL OF THE NECESSARY OPTIONS IN MULTIPLE-CHOICE QUESTIONS

If you omit an important option, respondents may choose a misleading answer or not answer at all.

Ineffective: Which types of non-alcoholic beverages would you like us to offer?

soda___ juice___ coffee/tea___ milk___

Better: Which types of non-alcoholic beverages would you like us to offer?

soda___ juice___ coffee/tea___ milk___ bottled water___ other (please specify)___

(the “bottled water” and “other” options give respondents a fuller range of answers)

5. DO NOT USE UNFAMILIAR JARGON AND ABBREVIATIONS

Don't assume that respondents will understand the jargon your company or profession uses.

Ineffective: What was your overall impression of the CGSE in this film?

poor___ fair___ good___ very good___ excellent___

Better: What was your overall impression of the computer-generated special effects used in this film to create the global village scene?

poor___ fair___ good___ very good___ excellent___

6. DO NOT ASK INAPPROPRIATE QUESTIONS

Refrain from asking questions about income, education level, or other personal matters such as age, ethnicity/race, gender, disability, religion, or sexual orientation unless these questions give you essential demographic information directly relevant to the topic of your survey.

7. AVOID LEADING OR BIASED QUESTIONS


Do not give your respondents slanted questions that bias their answer and thus the results of your survey.

Ineffective: Were you impressed by this award-winning product?

Yes___ No___

Better: Did you think this was an award-quality product?

Yes___ No___



8. Limit multiple choice and ranking items to five items. The more complicated your list of multiple-choice or ranked items, the more difficult it will be for your respondents

to give a clear and helpful answer and for you to analyze the survey results.

9. Limit rating ranges to a scale of 1 to 5. As with item 7 above, do not complicate your survey by providing a scale with such a wide range of options that respondents are unclear about how they differ or overlap.

STEP5: SYSTEMATIZING, ANALYZING, AND INTERPRETING THE DATA

Systematize: Arrange and organize your data by grouping it into different parts.

Analyze and interpret: use critical thinking skills like,

1. examination
2. analyzing
3. conceptualizing
4. defining
5. inferring
6. understanding facts, opinions, assumptions, etc
7. evaluating



STEP 6: WRITE A REPORT TO SHARE THE RESULTS WITH THE WORLD