DEPARTMENT OF FAMILY MEDICINE

RESEARCH WORKBOOK:*

A guide for initial planning
of clinical, social, and behavioral
research projects

This workbook provides useful questions, suggestions, and approaches to guide and stimulate the creative thinking of the researcher. It provides no answers, no assistance in making decisions, and no technical expertise.

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* Adapted from M.J. Gordon (1978), JFP, 7; 145-160.

JUNE 97
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Steps and Deadlines

Postgraduate Year 3 (PGY3)

1. **Research platform # 1** — **December 1**

   This presentation should include your research question, literature review, rationale for the study and planned methodology.

2. **Research platform # 2 (Section VI - VIII)** — **May 1**

   This presentation should cover your revised research question, detailed methodology and data collection tools that will be used.

Postgraduate Year 4 (PGY4)

3. **Submit proposal to Research Committee** — **June 30**

4. **Complete NIH Human participant course** — **June 30**

   http://phrp.nihtraining.com/users/login.php

5. **Submit proposal to IRB** — **July 30**

6. **Research platform #3** — **February 1**

   In this presentation, you should describe your research process including problems encountered, and preliminary results should be presented.

7. **Research platform #4** — **April 1**

   This will be the final presentation of your research project.

8. **Submit Final paper** — **April 30**

On proper referencing and plagiarism -

Research is time consuming and challenging. As you conduct your research, you will come across many documents and ideas that are relevant to your research project that you may want to use or borrow from. There is nothing wrong with borrowing from the words or ideas of others when you are conducting your work, but when you do you MUST reference your source appropriately. Failing to do so constitutes plagiarism and is not acceptable. The American University of Beirut has a strict anti-plagiarism policy. If you are in doubt about what constitutes plagiarism, ask your research advisor.

I. SELECT A RESEACHABLE QUESTION:

a. Begin by stating a question of great interest to you in a simple, non-technical interrogative sentence.

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b. The research will require access to the following resources:

1. ---------- **4.** ----------

2. ---------- **5.** ----------

3. ---------- **6.** ----------

c. Is the research feasible? □ Yes □ No

d. Define the important terms in your statement of the research question.

Terms	**Definitions**
1. ----------	**1.** ----------
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2. ----------	**2.** ----------
	----------
3. ----------	**3.** ----------
	----------
4. ----------	**4.** ----------
	----------
5. ----------	**5.** ----------

II. SEARCH FOR RELATED WORK:

a. List questions you think that they have been answered by previous research	**Likely sources of information (not necessarily in journals)**
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b. List relevant theories or models	**Likely sources of information**
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c. Other background information you could use.	**Likely sources of information**
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III. JUSTIFY THE STUDY:

a. Who cares about the answer?
b. How important is it to have the right answer?
c. What are the implications of various possible answers?
d. Write a paragraph justifying your study. Consider the questions above but feel free to modify or add to them.

IV. HYPOTHESES:

Hypotheses require the investigator to predict an answer to the research question based on knowledge of the field, logical analysis, and/or anecdotal observations.

a. Initial statement of hypotheses:

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b. General relationships implied by your hypotheses.

---------- is related to ----------

---------- is related to ----------

---------- is related to ----------

c. Can you identify specific alternative relationships or explanations which would serve as competing or rival hypotheses?

V. INSTRUMENTS AND DATA SOURCES:

a. Complete this inventory measurements or counts to be made. Then list your proposed instruments or data sources for measuring or counting.

	Things to be measured or counted	Proposed instruments or data sources	Available?
1.	----------	----------	
2.	----------	----------	
3.	----------	----------	
4.	----------	----------	
5.	----------	----------	
6.	----------	----------	
7.	----------	----------	
8.	----------	----------	

b. For items above for which an adequate instrument is NOT readily available, indicate critical characteristics of instruments to be found or developed.

Proposed Instruments	Critical Characteristics
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c. Instrument reliability and validity:

For each instrument, both of these questions should be addresses:

Reliability: **How closely do repeated observations (by different people, at different times, etc) of the same thing agree with each other?**

Validity: **With that assurance do we know that the instrument is measuring what we believe it is measuring?**

Mark each instrument with an (R?) if you believe reliability is a problem and (V?) if you believe validity is a problem.

VI. RESEARCH DESIGN:

A. SAMPLING:

1. Describe the characteristics of the people (or other subjects) who will be eligible for participation in the study.

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2. Describe the population (beyond your sample) to which you wish to generalize conclusions.

Now review the two descriptions critically and revise either or both descriptions so that they fit together.

3. Sample Size:

Increases in sample size increase the precision of the research. Small samples do NOT of themselves introduce bias. When other design features have been worked out, a research consultant should be able to help you arrive at a reasonable sample size. The most helpful information in this decision comes from the results of similar studies and your estimate of the strength of the relationships you expect to find.

B. DEVELOP THE RESEARCH PROTOCOL:

1. How will you select your sample?

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2. Will you divide your sample into groups? If so, how?

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3. Describe what will happen to each subject (Feel free to use a list, flow chart, or diagram)

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4. Who will gather the data and how?

C. ELIMINATE PROCEDURAL BIAS:

Bias refers to sources of systematic error which may affect study results. Unless adequately controlled, bias may render your results impossible to interpret. With a general protocol in mind, specific attention should be given to each of the following potential sources of bias. The design should evolve as you add controls for the most serious of these.

1. **Effects of Historical Events – Can you anticipate events such as personnel changes, remodeling plans, interference by non participants, etc., which will take place during your data collection phase and which might affect the results?**
   No _____ Yes _____ (If Yes, describe problem)

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2. **Effects of Maturation – If subjects are to be observed over time, are there changes which might result merely by normal development, growth, natural course of illness, etc?**
   No _____ Yes _____ (If Yes, describe problem)

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3. **Effects of Repeated Measurement – If the same measurements are repeated on subjects, are subjects likely to remember past responses, prepare differently for the next session, relax procedures?**
   No _____ Yes _____ (If Yes, describe problem)

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4. **Instrument Decay – Is it likely that test equipment will wear out, observers get bored, protocols get short-cut by investigators, etc?**
   No _____ Yes _____ (If Yes, describe problem)

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5. **Effects of Statistical Regression – If subjects are chosen because they lie at the extremes of a distribution (e.g., high blood pressure, low compliance with therapy), subsequent measurements will tend to be more nearly average, for purely statistical reasons. Are your subjects chosen or assigned to groups on the basis of their "extremeness"?**
   No _____ Yes _____ (If Yes, describe problem)

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6. **Subject Selection – Is there anything in the selection of your sample or assignment of subjects to groups which makes one group of subjects unintentionally different from other groups?**
   No _____ Yes _____ (If Yes, describe problem)

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7. **Loss of Subjects – Subjects lost to attrition may be different from those who remain. Is your study jeopardized by this possibility?**
   No _____ Yes _____ (If Yes, describe problem)

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8. **Investigator Bias – Are you in a position to unintentionally "shade" results to confirm your hypotheses or to influence subjects by your attention, attitude, etc?**
   No _____ Yes _____ (If Yes, describe problem)

VII. IDENTIFY THE LIMITATIONS OF THE STUDY:

After struggling to achieve a design which is feasible and provides control of the most troublesome sources of bias, you may be left with inadequate controls over other sources of bias. Use the space below to identify these.

Potential Sources of Bias Remaining

Even unbiased studies have limitations in their generalizability. To what kinds of people beyond your study sample can you justify generalizing your conclusions? (It may be easier to identify individuals for whom your conclusions do not necessarily apply).

Limitations to Generalizability

VIII. DATA COLLECTION FORMS:

Use the space below to sketch forms you will use to record the data of the study. Alternatively, you may list and describe the forms below and then attach specimens.

IX. REPORTING RESULTS:

Use the space below to sketch summary data tables and/or graphs which you would expect to use in presenting your results. You may include simulated results of the kind you hope to find.

X. STATISTICAL ANALYSIS:

Design and analysis are two sides of the same inferential coin. Always seek competent consultation in the design phase or there may never be any analysis worth doing.

You may begin to organize the analysis by listing below all of the variables considered in your design. Separate the variables into three categories described.

A. Demographic variables which describe characteristics of subjects such as age, sex, race, previous hospitalizations, etc.

B. Variables of the study under the control of the investigator, such as type of instruction given, therapy options, duration of treatment, or other exposures or treatments to which the investigator can assign subjects.

C. Outcome variables or effects potentially related or caused by A and B above, such as adherence to instructions, speed of recovery, or client satisfaction.

XI. DISCUSSIONS, INTERPRETATIONS, OR CONCLUSIONS:

FORMAT OF PROPOSAL

The proposal should be about 2 – 4 pages. It should be structured as follows:

- Background/Introduction: This should include a brief literature review, rationale and objectives of the study. Make sure your research question is stated clearly.
- Methodology: Describe the steps that you will take to do the study. This should include the study design, sample selection, process of data collection and data analysis. Pay special attention to the ethical implications.
- Timeline: Using the deadline dates on page 2 of this workbook and your rotation schedule set a realistic timeline for the different steps of your research project. This will help you stay on track, finish on time, and give each part of the project that time it deserves.
- References: All references sited in the text should be included in this section. You can use any of the standard accepted styles as long as they are complete and consistent.
- Appendices: Include copies of questionnaires, any data collection tools, and consent forms in this section.

FORMAT OF FINAL REPORT

The report should not be longer than 3,000 words and should be double space. It should be structured as follows:

- The introduction should include a literature review, rationale and objectives of the study. The literature review should be structured to support the rationale.
- The methodology section should describe the study design, sample selection, data collection and data analysis clearly.
- The results should include all the pertinent findings from your research.
- The discussion includes your reflections on the results, recommendations for policy, practice or future research, and study limitations.
- References can be in any of the standard accepted styles as long as they are complete and consistent.

AMERICAN UNIVERSITY OF BEIRUT – INSTITUTIONAL REVIEW BOARD
APPLICATION FOR EXEMPTION FROM IRB REVIEW

PRINCIPAL INVESTIGATOR:

Name: _____ **Signature:** _____ **Department:** _____

TITLE OF PROPOSAL: _____

_____

_____

CO-INVESTIGATORS: (Attach extra sheet if necessary)

Name	**Signature**	**Affiliation**

DATE OF SUBMISSION TO INSTITUTIONAL REVIEW BOARD: _____

STARTING DATE OF STUDY: _____

EXPECTED DATE OF END OF STUDY: _____

Check the box corresponding to the category which best describes the proposed research:

☐ Research involving normal educational practices such as i) research on regular and special education instructional strategies, or ii) research on the effectiveness of or comparison among instructional techniques, curricula, or classroom management methods.

☐ Research involving the use of educational testing, survey procedures, interview procedures or observation of public behavior where the information obtained is recorded in such a manner that human subjects cannot be identified, directly or through identifiers linked to the subject

☐ Research involving collection of existing data, documents, records or specimens if these are publicly available or if this is done in a manner such that the subjects cannot be identified directly or indirectly.

☐ Research involving taste and food quality evaluation and food acceptance.

☐ Research and demonstration projects designed to evaluate public benefit or service programs

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APPROVALS	**Name**	**Signature**	**Date**
Department Chairperson:			
Chairperson of the IRB:			