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Topics for Preliminary exams in Research Methods

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Topics for Preliminary exams in Research Methods:

Quantitative Research Methods:

- 1) Be prepared to describe and discuss the overall logic of the scientific process. You should be familiar with and able to discuss the logic and processes that make up the components of what has been variously described as “the wheel of science” or Wallace’s wheel. These include such concepts as: inductive logic, deductive logic, hypotheses, empirical generalizations, measurement, sample summarization, parameter estimation, concepts, concept formation, propositions, proposition formation & arrangement, scaling, instrumentation, observation, tests of hypotheses, logical inference.
- 2) Be prepared to describe, explain, and discuss the importance of various preliminary issues that may affect the ultimate outcome of research such as the identification of researchable topics, clear research problems, and well written problem statements.
- 3) Be able to discuss the discrete steps that a researcher might carry out in conducting a quantitative research project.
- 4) Be prepared to discuss the conduct of literature reviews in sociological research with regard to the different purposes served by literature reviews, the various types of literature reviews, and the different kinds of documents (or chapters) where one might expect to encounter those different types of reviews.
- 5) Be prepared to describe and explain the steps that one might follow in conducting a successful literature review and the things that a researcher should make note of and record as they search and review literature.
- 6) Be prepared to discuss the importance and qualities of good research designs.
- 7) Be prepared to explain and discuss the importance of issues relating to the design of research such as:
 - the purposes of research (exploratory, descriptive, explanatory),
 - nomothetic vs. ideographic explanation
 - causality and the criteria for establishing causality
 - internal and external validity & threats to validity
 - random assignment & random selection
 - units of analysis
 - the ecological fallacy
 - the reductionist fallacy
 - the element of time in research (cross-sectional studies vs. longitudinal studies)
 - the process of conceptualization

- the process of operationalization
- populations & sampling
- choice of research methods
- data processing
- data analysis

8) Be prepared to describe and discuss the nature of various different research designs such as:

- cross-sectional studies
- trend studies
- cohort studies
- panel studies
- case studies
- pretest, post-test, control group classical experiments
- Solomon four-group experimental design
- quasi-experimental designs
- field experiments

9) Be prepared to explain and discuss the uses, advantages, and disadvantages of unobtrusive research methods such as content analysis, the use of existing statistics, administrative data sets, and secondary data.

10) Be prepared to describe and explain and discuss the importance of concepts relating to measurement such as:

- The 4 levels of measurement (nominal, ordinal, interval, ratio)
- reliability
- face validity, content validity, criterion validity, construct validity
- variables and attributes
- indices
- scales
- latent variable

11) Be prepared to describe, explain and discuss issues and concepts relating to data and data sets such as:

- coding
- formatting
- cleaning
- codebooks
- data dictionaries

12) Be prepared to describe, explain and/or use basic statistical concepts such as:

- the normal distribution
- the mean, mode, and median
- standard deviations
- percentiles
- Z scores
- central tendency
- descriptive statistics
- confidence intervals
- inferential statistics
- statistical significance
- correlation
- statistic vs. parameter
- random variable
- experimental variable
- sampling distribution

13) Be prepared to describe, explain the logic of hypothesis testing including null hypothesis, alternative hypothesis, test statistic, statistical significance, significance level, and types I and II errors.

14) Be prepared to discuss the use of sampling in social research, to explain the overall goals of sampling, and to explain sampling related concepts such as: sampling frame, sample size, simple random selection, systematic selection, quota sampling, snowball sampling, sampling with and without replacement, sampling proportionate to size, clustering, stratification, and multistage selection.

15) Be prepared to describe the two basic kinds of error that occur in samples (sampling error & bias), to explain why each of those kinds of errors occur, and how each kind of error can be affected by aspects of the sample such as sample size, clustering, stratification, and the response rate.

16) Be prepared to discuss the qualities that make good survey questions reliable measures, describe the pitfalls researchers who are writing questions want to avoid, and explain the measures researchers might take to help insure that their questions are good.

17) Be prepared to describe and discuss the circumstances when social researchers might employ different data collection instruments and modes of data collection; such as in-person interviewing or self-administered questionnaires that are administered either through the mail, by telephone, over the internet, or in-person, and; be able to explain the advantages and disadvantages of the different methods and modes.

18) Be prepared to calculate simple basic statistical analyses, such as the mean, the standard deviation, or Z scores and to interpret those analyses.

19) Be prepared to explain the basic assumptions that underlie the use of common parametric statistical techniques such as correlation, regression, and ANOVA (For example, what kinds of data and what qualities must your data have in order for these techniques to be appropriate?).

20) Be prepared to interpret and explain the various coefficients and statistical tests that are provided by computer generated statistical outputs for analytical procedures that use categorical or grouped data such as cross-tabulations t-tests, and ANOVA in terms of statistical significance, strength of relationship, and nature of relationship.

21) Be prepared to interpret and explain the various coefficients and statistical tests that are provided by computer generated statistical outputs for analytical procedures that use interval or ratio level measures such as correlation and multiple regression in terms of statistical significance, strength of relationship, and nature of relationship.

22) Be prepared to explain what is meant by “data reduction” and discuss the different techniques available to analysts for data reduction.

23) Be prepared to perform an analysis of categorical data in which you may need to make appropriate decisions about collapsing categories, calculate a chi-squared test of significance, interpret your test, and explain why the chi-squared test is either a goodness-of-fit test, a homogeneity test, or a test of independence.

24) Be sure that you understand and can explain the meaning of the following terms:

- Zero order correlation
- Multiple correlation coefficient (R) (and also R^2 (coefficient of determination) and adjusted R^2)
- Partial correlation
- Semi-partial (part) correlation
- Regression
- Regression (b) coefficients
- Beta coefficients
- F test
- t test
- significance level
- dummy variable

Some sources to study for quantitative research:

You should probably start by studying all of the materials from your research methods class. You might want to look at some additional sources. If you search you will see that there are a lot of sources for information and many books about quantitative research. You don't need to read them all, but it would be good to review one or two basic methods texts and a basic statistics text. Here are a few books that might be useful. Remember that earlier editions for some of these books that may still be very serviceable may be available at a relatively low cost.

- 1) "The Literature Review" by Lawrence A. Machi & Brenda T. McEvoy, Corwin Press, 2009.
- 2) "Multivariate Statistical Analysis, 2nd edition" by Sam Kash Kachigan Radius Press, 1991.
- 3) "Statistics for the Behavioral Sciences 5th edition" by Jaccard & Becker, Wadsworth, 2009
- 4) "Survey Research Methods, 4th edition" by Floyd J. Fowler, Jr. Applied Social Research Methods Series, Sage, 2009.
- 5) "The Logic of Science in Sociology" by Walter L. Wallace, Aldine Publishing Company, 1971.
- 6) "The Basics of Social Research" by Earl Babbie, Wadsworth Publishing 2008
- 7) "Quantitative Research Methods in the Social Sciences" by Paul S. Maxim, Oxford University Press, 1999
- 8) "Social Research Methods: Qualitative and Quantitative Approaches 5th edition" by W. Lawrence Neuman, Allyn and Bacon, 2003
- 9) "Foundations of Behavioral Research" by Fred N. Kerlinger, Holt, Rinehart & Winston, 1973
- 10) "Applied Social Research: A tool for the Human Services" by Monette, Sullivan, & DeJong, Brooks Cole, 2011

Evaluation Research:

1. Be prepared to discuss both formative and summative evaluations and be able to offer examples that illustrate the purposes, designs, and methods that are likely to be associated with each.
2. Be prepared to discuss and explain the nature, use, and importance of program theory in evaluation.
3. Be prepared to discuss and explain the use and importance of logic models in evaluation.
4. Be able to discuss the meaning, purposes, and methods for needs assessments.
5. Be able to discuss the meaning, purposes, and importance of evaluability assessments.
6. Be prepared to discuss how evaluations may be focused and to offer examples of different evaluation models.
7. Be prepared to discuss and offer examples of the various elements of evaluation projects and how evaluations may be designed.
8. Be familiar with the characteristics of basic research designs that may be used for conducting impact assessments and be prepared to discuss the limitations and constraints on the use of those designs along with their implications with regard to the validity of evaluation results.
9. Be familiar with the various kinds of social, political, and practical constraints that evaluators may face as they design and conduct evaluation projects and be prepared to discuss ways in which those constraints might be addressed.
10. Be prepared to discuss and offer examples for the use of qualitative, quantitative, and mixed research methods in evaluation research.
11. Be prepared to discuss the various roles that evaluation researchers might play with regard to their clients and to the programs they evaluate, and; to discuss the various issues that evaluators may face in those roles.
12. Be prepared to discuss the relevance and importance of evaluation research to various kinds of stakeholders other than their direct clients, how such stakeholders might influence evaluation projects, and the kinds of issues that evaluation researchers may expect to face with regard to such stakeholders.
13. Be prepared to identify and discuss the varied, sometimes competing, and sometimes unique ethical concerns that program evaluators may face, and; to debate possible resolutions for those concerns.

14. Be able to analyze a brief program description and develop a plan that describes what you would do if you were asked to design and carry out an evaluation of that program.

Some sources to study for evaluation research:

You should definitely study all of the texts, readings, and notes from the evaluation research course. There are a lot of books about evaluation on the market that might be useful. Here are a few additional references that may be useful.

“Rossi, Lipsey, and Freeman, 2004, “Evaluation: A Systematic Approach 7th edition” Sage.

This is a good basic text on evaluation that and is a valuable reference. It would be a worthwhile book to have this in your library. You might also look for a copy of one of the earlier editions.

“The Program Evaluation Kit,” Edited by Lynn Lyons Morris.

This is a collection of 9 brief books from Sage that were intended as guides for evaluation practitioners. The 9 volumes have various authors and include: 1) Evaluators Handbook, 2) How to Focus and Evaluation, 3) How to Design a Program Evaluation, 4) How to Qualitative Methods in Evaluation, 5) How to Assess Program Implementation, 6) How to Measure Attitudes, 7) How to Measure performance and Use Tests, 8) How to Analyze Data, and 9) How to Communicate Evaluation Findings. All of the books in this series may be useful, but the volume titled “Evaluators Handbook” may be particularly helpful because it provides an overview that touches on many aspects of an evaluator’s work.

Stephen Issac & William B. Michael, 1990, “Handbook in Research and Evaluation, 2nd edition,” EdITS publishers.

This is a fairly brief book. The first chapter presents a good summary of evaluation models and frameworks. Much of the rest of the book provides information that applies to evaluation and also research more generally. There may be a more recent edition of this text.

Bamberger, Michael, Jim Rugh and Linda Mabry (2012 - 2nd Edition) *RealWorld Evaluation: Working under Budget, Time, Data and Political Constraints*. Thousand Oaks: Sage.

Knowlton, Wyatt and Cynthia Phillips (2009) *The Logic Model Guidebook: Better Strategies for Great Results*. Los Angeles: Sage.

Qualitative Research Methods:

1. Be able to discuss the processes and steps involved in setting up and conducting qualitative fieldwork with regard to issues such as site selection, gaining access, entering the field, observations & interviewing, field notes, and leaving the field.
2. Be prepared to discuss the concepts of validity and reliability as they apply to qualitative research as well as the methods that qualitative researchers use to insure or enhance validity and reliability.
3. Be prepared to discuss different purposes and different research designs for which qualitative research methods may be employed.
4. Be prepared to discuss the different types of triangulation and also the different purposes for which triangulation might be used.
5. Be prepared to discuss the sampling issues that arise in qualitative research and be able to explain different types of sampling that are used in qualitative research such as: internal sampling, theoretic sampling, time sampling, and snowball sampling.
6. Be prepared to discuss data analysis within the context of qualitative research and explain how data analysis in a qualitative research process differs from data analysis in a quantitative research process.
7. Be able to discuss the uses of existing literature and theory in qualitative research and to explain how existing literature and theory might be used differently by researchers engaged in qualitative studies than by researchers engaged in quantitative studies.
8. Be able to discuss the nature, sources, and the range of different kinds of materials that might constitute data for a qualitative study.
9. Be prepared to describe and explain effective techniques for recording field notes.
10. Be able to explain the use of codes and coding in qualitative data analysis. For example be able to explain coding related concepts such as: open coding, axial coding, selective coding, and analytic memos.
11. Be able to explain how the methods for interviewing research subjects that are employed in qualitative research are likely to differ from those employed in interviews conducted for quantitative research.
12. Be prepared to discuss grounded theory and the logic, processes, and methods involved with developing grounded theory.

13. Be prepared to discuss circumstances in which qualitative methods are particularly appropriate & also circumstances in which they may not be appropriate.
14. Be prepared to identify issues that may present problems for qualitative research, such as reactivity, and discuss both the nature of the problems they present and techniques that can potentially be used for addressing them.
15. Be able to identify the major ethical issues likely to arise in the context of qualitative research and discuss how qualitative researchers might best address the ethical obligations that they incur.

Some sources to study for qualitative research:

You should probably start by studying all of the materials from your qualitative research class. You might want to look at some additional sources. If you search you will see that there are a lot of sources for information about qualitative research. Here are a few that might be useful.

Robert Bogdan & Sari Biklen, 1982, "Qualitative Research for Education: an Introduction to Theory and Methods." Allyn & Bacon. (There may also be newer editions of this book available.)

Lawrence Neuman, 2003, "Social Research Methods: Qualitative and Quantitative Approaches, 5th edition," Allyn & Bacon.

John Creswell, 2009, "Research Design: Qualitative, Quantitative, and Mixed Methods Approaches, 3rd edition," Sage.

Glaser & Strauss, 1967, "The Discovery of Grounded Theory: Strategies for Qualitative Research," Aldine Transaction.

Birks & Mills "Grounded Theory: A Practical Guide," Sage.