

Study Guide for PhD Comprehensive Examination  
Last updated January 20, 2022

## **Introduction**

This list of topics and overview is designed to assist you with preparing for your doctoral comprehensive examination. It should not be considered a definitive guide, however; you should consult your class notes and required readings from all courses taken. You may also discuss the examination with RMS faculty members.

## **List of Topics**

### **Qualitative Research**

Think through the differences between quantitative and qualitative research methods. Be prepared to know which ones ought to be used in which settings and for what purposes. Also, reflection on the strengths and weaknesses of both qualitative and quantitative methods.

You ought to have some idea about the purpose of qualitative research and how and when it might be utilized. In addition, knowing what qualitative can and cannot do for advancing understanding and knowledge is also important.

There are numerous styles of qualitative research. You ought to become knowledgeable regarding at least three different approaches.

Think through the objectives, strengths and weaknesses of qualitative methods (e.g., ethnography) versus quantitative methods (e.g., survey) in conducting empirical research on educational issues. In comparing the various approaches, be prepared to discuss the affordances and limitations of each for particular research contexts and topics. For example, In what considerations would lead a researcher toward narrative instead of ethnography, etc.

Qualitative research has its own ways of assessing whether a study has been done well or not. That said, there are differences among qualitative researchers in regard to matters of validity, etc. You should have some knowledge about this overall topic.

In addition to the styles of qualitative research taught in the Introduction to Qualitative Research course, some advanced courses taught you about community-based research and arts-based research, among other possibilities. Reflect on these methods in terms of their aims, strengths, weaknesses, and data collection and data analysis strategies.

Be prepared to discuss the application of qualitative research methods to a research topic of interest to you.

### **Mixed Methods Research**

Describe mixed methods designs and how qualitative and quantitative data are integrated within each design.

Discuss conditions when may be best to use one type of mixed methods design over another and provide real life examples.

Discuss the application of issues of reliability and validity in mixed methods.

### Program Evaluation

Explain how evaluation must be responsive to context using specific examples

Describe theories of program evaluation from the perspective of multiple program evaluation theorists.

Apply program evaluation theories to real life contexts (stakeholders, approach, methods, uses, values, etc.).

### Research Ethics

Articulate and challenge an assumption or prevailing practice in the eight domains of responsible conduct of research (i.e., research misconduct, human subjects, conflicts of interest, data management practices, mentoring, collaboration, authorship, and peer review).

### Quantitative Research Design

Discuss the conditions facilitating statements about causation.

Discuss strategies that can be used to ensure internal and external validity in experimental, quasi-experimental, single-subject, and correlational studies.

Discuss the ways that the design of experimental, quasi-experimental, single-subject, and correlational studies minimize internal and external validity threats.

Describe the basic steps associated with conducting a meta-analysis.

Differentiate between fixed/random/mixed effects models in meta-analysis.

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Explain coding, effect size aggregation; study selection issues; adjustments to aggregate; effect size due to missingness, file drawer effect in meta-analysis and the ways they affect the validity of meta-analysis results.

### Measurement

Discuss philosophical differences, assumptions and limitations of classical test theory, the Rasch model, and the three-parameter model.

Describe the process with which a research can use to assess the quality of an instrument via psychometric/biometric/edumetric indices (e.g., reliability, validity). Discuss the types of evidence that can be used to support reliability and validity.

Describe the process with which a researcher can use to assess the structure of an instrument via IRT and classical test theory.

Discuss the debate regarding validity as a bifurcated, tripartite, and unitary construct.

## Statistics

Discuss the issues around statistical hypothesis testing (pro and con). Explain how null hypothesis testing is related to the mandate for use of effect size and confidence intervals.

Differentiate the following data analytic approaches regarding purpose, condition of use, types of hypotheses being tested, model assumptions, advantages/limitations, and provide examples of applications: Correlation and regression, ANOVA, discriminant function analysis, logistic regression, path analysis, structural equation modeling, hierarchical linear modeling, canonical correlation, multivariate analysis of variance, survival analysis, and latent growth curve analysis.

Describe the conditions that would lead the researcher to use one statistical analysis approach compared to another:

- HLM versus canonical correlation
- SEM versus ANOVA/Regression
- HLM versus Latent Growth Curve Modeling

Discuss the implications of identifying variables as fixed or random, and using fixed, random, and mixed models in statistical analyses.

Describe three SEM model identification statuses and major model fit indices. Explain model identification issues and solutions to them.

## **Examination Overview**

### **Format**

- The examination takes place over two days (a Friday and Saturday) typically in October or April.
- Each day students answer 3 out of 6 questions over a 5-hour period (9AM-2PM).
- Each day's examination contains two sections:
  - Section A: Quantitative research design, measurement, statistics, ethics
  - Section B: Qualitative research design, mixed methods, program evaluation, ethics
- Students answer at least 1 question from each section.

### **Evaluation Criteria**

1. The response is directed to the question as stated.
2. The response to the question is a complete discussion of it.
3. The response is accurate in all respects.
4. The response is logically organized and developed.
5. The response reflects depth of thought consistent with graduate-level work.
6. Accurate documentation from pertinent primary sources is presented when necessary.
7. The response reflects research methods and statistics as a whole and not fragmented reporting of facts and names.

### **Grading Procedures**

- Students are de-identified for blind grading purpose (each student is assigned a comps identification number).
- Each question is read by 2 RMS professors and awarded a grade of honors, pass, conditional pass, or fail.
- The comprehensive examination receives either Honors, Pass, Conditional Pass, or Fail.
  - Honors = at least 4 questions receive an honors grade and (if applicable) the other 2 questions receive a pass.
  - Pass = no more than 2 questions receive honors or conditional pass; other questions receive a pass.
  - Conditional pass = up to 5 questions receive conditional pass or fail, in which case the questions have to be rewritten within 3 weeks after consultation with a RMS professor. The question(s) are then regraded.
  - Fail = all 6 questions receive a conditional pass or fail, in which case the student is given one more opportunity to take the examination. If the student doesn't pass the second time, he/she would be advised to transition out of the program.