

KEY CONCEPTS

applied research	dependent variable	mixed methods research
basic interpretative studies	descriptive research	narrative inquiry
basic research	dichotomous variable	operational definition
case study	document analysis	phenomenological studies
categorical variable	ethnography	positivism
constant	ex post facto research	qualitative research
constitutive definition	experimental research	quantitative research
constructs	experimental treatment	quasi-experimental research
content analysis	grounded theory	survey research
continuous variable	historical research	variable
correlation research	independent variable	

EXERCISES

- Based on the title of each study, classify the following research as *basic* or *applied*:
 - The Effect of RNA (Ribonucleic Acid) Injections on the Transfer of Skills from Trained Animals to Untrained Animals
 - Outcomes of a Remedial Arithmetic Program
 - Conditioning as a Function of the Interval between the Conditioned and Original Stimulus
 - Teaching Geometry to Cultivate Reflective Thinking: An Experimental Study
- In a study designed to determine the effect of varying amounts of sleep deprivation on the learning of nonsense syllables, identify the following:
 - What is the independent variable?
 - What is the dependent variable?
- Classify the following variables as *categorical* or *continuous*:
 - Achievement
 - Phonics method of reading versus look-say method of reading
 - Spanish speaking, English speaking, French speaking
 - Muscle prowess
 - Music aptitude
- The statement “Math achievement will be measured by the score made on the mathematics subtest of the Iowa Tests of Educational Development” is an example of which of the following?
 - Hypothesis
 - Theoretical principle
 - Constitutively defined construct
 - Operationally defined construct
- Suggest a research study for which a mixed methods design would be the most appropriate.
- Which research method (*experimental*, *ex post facto*, or *survey*) would most effectively give you answers to each of the following questions?
 - Do children who eat breakfast get better grades in school?
 - Does a unit on proper nutrition change children’s breakfast-eating habits?
 - How many children in school report that they do not have breakfast at home?
 - Does the institution of a free breakfast program at school make a difference in the achievement of students?
- Based on the titles, classify each of the following studies according to the research methodology most likely used:
 - Gender-Based Differential Item Performance in Mathematics
 - Improving Math Skills of High School Students
 - College Students’ Views and Ratings of an Ideal Professor
 - Effect of Early Absence of Father on Scholastic Aptitude
 - An Alternative High School: An In-Depth Study
 - An Analysis of Social Studies Textbooks Used in Russian Middle Schools to Determine How America Is Portrayed
- Give an example of how basic research in the biological sciences has improved the practice of medicine.

9. Give an example of how basic research in learning has improved the practice of teaching.
10. Give an example of applied research completed in your field of interest. List other areas in which additional research needs to be done in your field. What variables might be investigated in such studies?
11. What research methodology do you believe would be the most appropriate for investigating each of the following research questions?
 - a. How do parents conduct home schooling?
 - b. Does collaborative learning promote achievement in the college classroom?
 - c. What is the relationship between vocabulary and reading achievement in the primary grades?
 - d. Do parents support character education in the middle school curriculum?
 - e. What is the relationship between teachers' undergraduate background (education versus liberal arts) and certain measures of competence in the classroom?
 - f. How did educational reforms of the junior high school lead to development of the middle school?
 - g. What is the influence of family composition on children's conformity to the student role?
 - h. What kind of education do students receive in a church-sponsored Christian high school?
 - i. What is the extent of drug use among students in a suburban high school?
12. How would you operationally define science achievement?
13. The following is an abstract from the journal *Exceptional Children* (O'Connor, White, & Swanson, 2007):

Abstract: This research evaluated two methods to improve the reading fluency of struggling readers. Poor readers in grades 2 and 4 with (n=17) and without (n=20) learning

disabilities were randomly assigned to one of two fluency practice variations or to a control group. Students in the treatments practiced reading aloud under repeated or continuous reading conditions with an adult listener in 15-min sessions, 3 days per week for 14 weeks. For students in the treatment conditions, growth curve analyses revealed significant differences in fluency and reading comprehension over students in the control. We found no significant differences between practice conditions.

Consider the following elements in this study:

- (1) poor readers, (2) students in grades 2 and 4, (3) students with and without learning disabilities, (4) reading aloud with an adult listener or not, (5) repeated or continuous reading conditions, (6) reading fluency growth, and (7) reading comprehension.
- a. Which are categorical independent variables?
- b. Which are continuous independent variables?
- c. Which are categorical dependent variables?
- d. Which are continuous dependent variables?
- e. What independent variable did the researchers actively manipulate?
- f. What was the population of interest?
14. Consider the following characteristics of a research study. Indicate whether each one is most likely (1) quantitative research or (2) qualitative research.
 - a. Researcher is objective and detached from participants
 - b. Develops hypotheses after data have been collected
 - c. Uses induction to analyze data
 - d. Uses large representative samples of individuals
 - e. Uses narrative description

ANSWERS

1. a. Basic
b. Applied
c. Basic
d. Applied
2. a. Amount of sleep deprivation
b. Number of nonsense syllables learned
3. a. Continuous
b. Categorical
c. Categorical
d. Continuous
e. Continuous
4. d

5. Answers will vary.
6. a. Ex post facto
b. Experimental
c. Survey
d. Experimental
7. a. Ex post facto
b. Experimental
c. Survey
d. Ex post facto
e. Qualitative
f. Qualitative
8. Answers will vary.
9. Answers will vary.
10. Answers will vary.
11. a. Qualitative
b. Experimental
c. Correlational
d. Survey
e. Ex post facto
f. Historical
g. Ex post facto
h. Qualitative
i. Quantitative (survey)
12. Answers may vary; an example: "Science achievement is the score on the science subtest of the Iowa Test of Basic Skills."
13. a. 2, 3, 4, and 5
b. None
c. None
d. 6 and 7
e. 5
f. 1
14. a. 1
b. 2
c. 2
d. 1
e. 2

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