Introduction:

Experimental research is frequently portrayed as the standard against which all other research strategies should be judged. People who adhere to the postpositivist system of inquiry are likely to see the experimental strategy as the essence of scientific research. However, many people argue that the experimental design is either inappropriate or insufficient for research about certain social or cultural phenomena.

Defining Characteristics:

◧. Treatments (Independent Variables): The research looks at the impact of one or more specific identifiable variables on the studied phenomenon. These variables are always manipulated or controlled.

◧. Outcome Variables: Apart from the input variables, there are also certain outcome measures/ variables.

◧. Unit of Assignment: The experiment is applied to a specific 'unit of assignment' (the model in which the conditions are tested).

◧. Comparison/ Control Group: Most experimental studies measure the impact of treatments against a comparison or control group. Sometimes the control condition is defined as one to which the treatment is NOT applied. Sometimes different treatments are compared against each other.

◧. Causality: The combined purpose of all previous features is to credibly establish a cause-efect relationship. However, 'causality' is not always established at a uniform level. Experimental research in environmental technology (such as a metal roof, for example) is more likely to take causality for granted than research in socio-cultural aspects. Causality, we begin to see, is more achievable where...

... laboratory settings control relevant variables.

... variables are inert (not likely to change, except as a consequence of the treatment).

... explicit theories specify expected effects.

... instruments are calibrated to measure expected effects.

With social behaviors, researchers are more explicit about how they have met basic requirements (more, richer, deeper explanation). They also emphasize conditions and limitations of any causal interpretation.

Experimental versus Quasi-Experimental:

There is a very important distinction between experimental and quasi-experimental research. This distinction rests on the manner in which the units of assignment are selected. Comparability is more precisely established in experimental research, through random assignment. In contrast, the quasi-experimental research design is often employed in field settings where people or groups cannot be randomly assigned for either ethical or practical reasons (in such cases, the goal becomes 'rich variety'). Random assignment plays an important role in experimental research when there is reason to believe that the units of the assignment are not completely equivalent. (which would be typical of socio-cultural analysis). This way, any observed differences can be credibly attributed to the treatment. Experimental research based on inert materials does not require such randomization procedures Comparability of test units is assumed because either the same materials are used in various models, or the same physical model can be reused in different contexts. In quasi-experimental research, the assignment is non-random, focusing on finding groups comparable in as many respects as possible (there should be no obvious indicators that the groups are substantially non-equivalent).

Diagramming Experimental Research:

Experimental researchers diagram particular details using the following coding system:

R= random assignment

X= experimental treatment
O= observation of outcome variables

Typically, various treatments lead to various observations, which are compared amongst each other (note that 'random assignment' is an optional first step in any of these):

R⇒ X1⇒ O1
R⇒ X2⇒ O2
R⇒ X3⇒ O3
R⇒ X4⇒ O4

Sometimes, comparable observations occur before and after a treatment:

O1⇒ O2⇒ X⇒ O3⇒ O4

Tactics:

Experimental research can involve a wide variety of tactics. The experimental setting can range from a highly controlled laboratory to less well controlled field site. The treatment conditions can range from highly-calibrated physical manipulations to categorical, nonphysical conditions. Finally, measurement of the outcome variables can range from the precise calibration of a physical change to descriptive behavioral responses.

Strengths and Weaknesses:

Of all the research strategies, the experimental is the most controversial. While it has the potential for establishing causality and generalizing results to other settings and phenomena, it has been criticized for the following:

- Efficacy/ Accuracy: Most real-life settings and socio-cultural phenomena are far too complex to be reduced to a small set of treatment and outcome variables. Moreover, the laboratory setting is not absolutely neutral (it exerts its own effects).
- Misapplication: Biases or oversights can inadvertently influence the results. Differences are highlighted, while similarities are hidden (for example, too often studies done on white populations are generalized to all groups).
- Ethical concerns: Research subjects are left in a powerless position. Treatments are often applied to subjects without their consultation.

Recommended Readings:

Donald Campbell, 'Experimental and Quai-Experimental Designs for Research' (1966)