

Module 6: Knowledge Research Assessment

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Philosophy Research

Philosophical research, even before it had a name, existed and it centered on thinking, logical thinking in particular. According to William M.K. Trochim's Research Methods Knowledge Base (2006), to understand research philosophy, one must grasp the premise that all research is at the core based on notions about how the world is perceived and how we can best understand it using logic, inductive or deductive. The "how" part is at the center of philosophical debate, with many modern day philosophers' schools of thoughts being summed up through two main schools of thought, positivism and post-positivism.

Empiricism, Positivism, the Scientific Method, and Post-Positivism

It hasn't always been this way. In fact as early as the 11th century, the Persian philosopher Avicenna (and later author John Locke) would argue that the mind is a "blank slate" with no experiences (Mastin, 2008). In other words everything we know, originally comes from things we experience through our senses (empiricism.) Overtime, this line of thinking eventually gave way to a new theory, positivism, which goes a step further in saying that true knowledge can only be gained through the scientific method and empirical data. In general, the scientific method is a process used to understand phenomena through developing a hypothesis, experimenting, and collecting data/determining results so that we are able to make predictions about the future, but as author Tov G. Jakobsen (2013) explains with positivism, the researcher should be "more concerned with general rules than with explaining the particular." In this way, both positivism and empiricism are directly connected to quantitative research which uses observations (including sensory related ones) and numerical based findings to make generalizations.

Post-positivism research denies that reality comes only from what we can observe or measure and embraces the idea that reality to one is not reality to another and a researcher's own beliefs, values, and personal experiences effect their own view (Lodico, Spaulding, and Voegtle, 2010) and the goal should be to simply describe the experience. The goal is not to generalize, but to look at specific phenomena, in-depth and usually from a qualitative perspective This brings in the concern and importance of objectivity as well as the challenges of obtaining it. If reality is based on personal experiences, even those of the researcher, can objectivity be achieved? Possibly. As Trochim (2010) explains, one emphasis of post-positivism is that while using multiple measures and observations can be beneficial in research, each measure/observation possess different types of error, and therefore triangulation is absolutely necessary if reality is to be achieved.

Other Philosophical Developments

Although early positivist and post-positivist research methods are not typically used in isolation in present times, other theoretical frameworks have developed from these early philosophical models which continue to impact researchers today. One such theory that stems from positivism, scientific realism, functions under the premise that purely quantitative research should be used to answer research questions and establish cause and effect relationships. (Lodico, Spaulding, and Voegtle, 2010). When it comes to objectivity, scientific realists believe that it is possible, but researchers must remained detached and have very little interaction with participants, meaning qualitative methods of research would be out of the question.

Even so, qualitative research does have a place in modern day studies and certain methods, such as social constructivism encompass such strategies. As Lodico, Spaulding, and Voegtle (2010) explain, social constructivists believe that different persons bring different

conceptual frameworks and reality is constructed according to our own experiences and in order to really describe a research participant's reality, the researcher must interact with the participants (a direct opposite view from that of scientific realists.) This leads to using qualitative methods that have no place in realist based studies. Two final theories that must be considered to understand current research practices are the advocacy-liberatory framework and pragmatism. The first is similar to social constructivism in that it believes in the possibility of multiple realities. But as Lodico, Spaulding, and Voegtle (2010) explain, researchers using advocacy-liberatory methods believe that research should be morally based and help those groups that have little social power. Pragmatism differs from all those previously discussed in that it is not focused on how many realities there are or what methods should be used, but instead on finding a means to an end or in essence, what works in a particular research study or situation. Pragmatism gives way to mixed method approaches such as action research.

Connections to Theoretical and Conceptual Framework

It is important to remember that the ones discussed above can be an integral part of the research process. Theoretical framework, or the philosophical basis on research takes place, is a step past the epistemology I describe here. Another component is conceptual frameworks which focus not on theories but specific methodology that will help answer the questions asked by the researcher. Although both are similar in the sense that they both have the goal of simulating research, there are key differences between the two. The purpose of a theoretical framework is to test theories while making generalizations and also predicting future occurrences while a conceptual framework builds a possible course of action (Lodico, Spaulding, and Voegtle, 2010). The two go hand in hand and are important parts of the research process.

Core Concepts for Research Design

All great research studies start with a question, some with a hypothesis, and many with a problem. In reality it depends on the purpose of the study as well as the research design. Most traditional, quantitative studies start with a question and a hypothesis whereas qualitative studies usually begin with a phenomena that needs to be explained or described. Problems can be addressed using either or often mixed studies.

The methods also determine whether other core concepts will be a part of the study. This includes variables, the population and who will be included in the sample. Quantitative methods almost always include carefully selected variables which are simply the names given to variances that need explaining (this leads back to the problem or question.) Qualitative studies, which usually do not include data driven methods, will not include variables. Instead, things will simply be described as they are. The population (the main focus of the scientific study) will be selected similarly (based on the question and purpose) however the sample (actual subjects that take part in the study) is selected differently depending on the method being used and the study particulars. For example, with quantitative studies, random selection is usually used, whereas with qualitative studies, purposeful sampling is more appropriate (Lodico, Spaulding, and Voegtler, 2010.) The sample is especially important as conducting a research study on the wrong subset can effect external validity.

This concept, validity, is one of the most important in research, as an invalid research study is worthless. When considering validity, it is usually centered on one of two types, external or internal. External validity deals with generalization to a larger population (group) or the lack thereof. This is especially true with quantitative based studies that have the goal of generalizing. Internal based validity is dependent on flaws in the study itself and may be affected by several things including subject size and variability, timing, maturation, history, and task sensitivity (Lodico, Spaulding, and Voegtler, 2010.) Connected to the concept of validity are assumptions and limitations. Limitations stop researchers from being able to present their studies as valid while assumptions are critical parts of the research study that are mostly out of the researcher's control. For example, if a researcher was conducting an action based, mixed approach study on the RTI process at his school, he would assume that the RTI program would continue to exist. If for some reason, it was cut, the study would be irrelevant.

Another part of any successful research project is the purpose, which in statement form is a vital part of any research study, since it "explains to the reader what the goal of the study is, as well as what hypothesis will be tested and what types of studies or literature will be referenced" (Rozny, pg. 2 2016.) Rozny goes on to explain that without the purpose clearly stated, a reader may get lost in the data or technical jargon or maybe skip reading the study all together. Another function of the purpose statement is that it allows for a deeper investigation of the topic by the researcher and also narrows the focus so that the researcher does not waste time in literature review or data collection on irrelevant information.

This next step, a literature review, provides an overview of any sources relevant to the researcher's study and is used to demonstrate that this particular study fits under a larger umbrella of research (Lodico, Spaulding, and Voegtler, 2010.) There are several benefits to this part of the research process including the fact that a literature review can help create a rapport with the audience as well as help avoid accidental plagiarism. An important note though is making sure that the literature review is of good quality. This means that the researcher should

follow these steps recommended by the UNC-Chapel Hill writing center (2014) which include finding models, narrowing the topic, consider whether sources are current, and the writing the review, which requires finding a focus, constructing a thesis statement, and organizing the review appropriately.

After this portion, the actual findings are reported. The way this is laid out depends greatly on the type of methods that are used. For example, quantitative studies would never be written in narrative form only like qualitative studies often are. Instead the data can be presented in chart, table or text form. Graphs can also be used to show relationships and trends. As mentioned, qualitative findings are usually written as a narrative using descriptive writing.

Other Approaches to Research

Although quantitative and qualitative are the most well-known designs, they are not the only ones. Mixed method approaches also exist, one particular being action research. Action research is an especially important approach because it can bring quick solutions to educational problems (Lodico, Spaulding, and Voegtle, 2010). This is one of the greatest advantages of action research, it can help tackle problems head on and in a short period of time. Also, it has a best of both worlds feel in that the best strategies from both quantitative and qualitative methods can be combined to create a successful project. Other advantages include the fact that it helps educators to grow, including the researchers themselves. Those conducting the research are able to solve problems for their organizations while reflecting on their own practice. Because the researchers are personally committed, they are much more involved in the research and making sure the project is completed. This can be a double edged sword, as there is a greater possibility for error and internal validity issues since the researchers may have pre-established notions of not only what the problems are but also the solutions. This can lead to an invalid study and no viable solutions. Because of this, program evaluation is especially important.

According to Trochim (2008), program evaluation is the systematic acquisition and assessment of information to provide useful feedback and includes four major evaluation strategies: scientific-experimental models, management-oriented systems models,

qualitative/anthropological models, and participant-oriented models. Even more important is the types of evaluations with the most basic distinction being summative and formative. Trochim (2008) lists formative types as process evaluation, needs assessment, and implementation evaluation while summative types include outcome evaluations, impact evaluation, and meta-analysis. There are advantages and disadvantages to both. Formative evaluation data is collected throughout, while summative is summarized at the end of the research project.

In conclusion, philosophical research is based on a long line of theories, many steeped in history and social based philosophies. Positivism, post-positivism, scientific realism, pragmatism and advocacy-liberatory frameworks all play an important part in the history and current workings of research and encompass many intricate ideals such as the importance of objectivity, making sure research has needed components (such as a quality literature review), and program evaluations. An in-depth knowledge of the workings of research will help with my future endeavors as an educational researcher.

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