

Research philosophy / paradigm report for First Researcher

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Research philosophies and paradigms

This report displays recommended philosophy / paradigm that can be employed in your future research and knowledge creation. Research philosophy can be thought of as underlying and guiding principles or roadmaps that a research is based upon. Philosophy is a multi-dimensional concept that is linked to personal ideas about the world, entities, how they interact and exchange knowledge with each other.

Research philosophies are ideologies or stance that a researcher takes during research undertaking. These guide the research in choosing a strategy, roadmap, research sources and methods of obtaining the required knowledge from the sources. The report can assist you with recommending a philosophy or more that that is closer to your ideologies based on answers, which you provided during the questionnaire.

The report is based on a consolidated framework of the work of Denzin and Lincoln (2018) and Saunders et al. (2015) and derived using three methods namely; Machine Learning (ML), Matching and Natural Language Processing (NLP) and will show recommended research philosophies with the following components:

- Ontology - ideas about what exists and can be known in the world and even whether it is important to know about this existence.
- Epistemology - the feasibility and extent to which knowledge can be acquired, for example can we know anything for certain. And if it possible to obtain knowledge what means of acquisition can be used and how can we justify this knowledge.
- Axiology - the influence that a researcher's personal values may have on the outcomes of research. This also includes ethical behaviour of researchers during knowledge creation.

Machine Learning

This section of the report employs decision tree algorithm to train a model. Training data is categorised and labelled into the following widely used research philosophy classes:



The model then takes a vector of user answers as input and assigns a class closest to these answers. Decision trees work by asking questions at each node, depending on the user's answer take a path down the tree. The following is a decision tree produced from the training data:

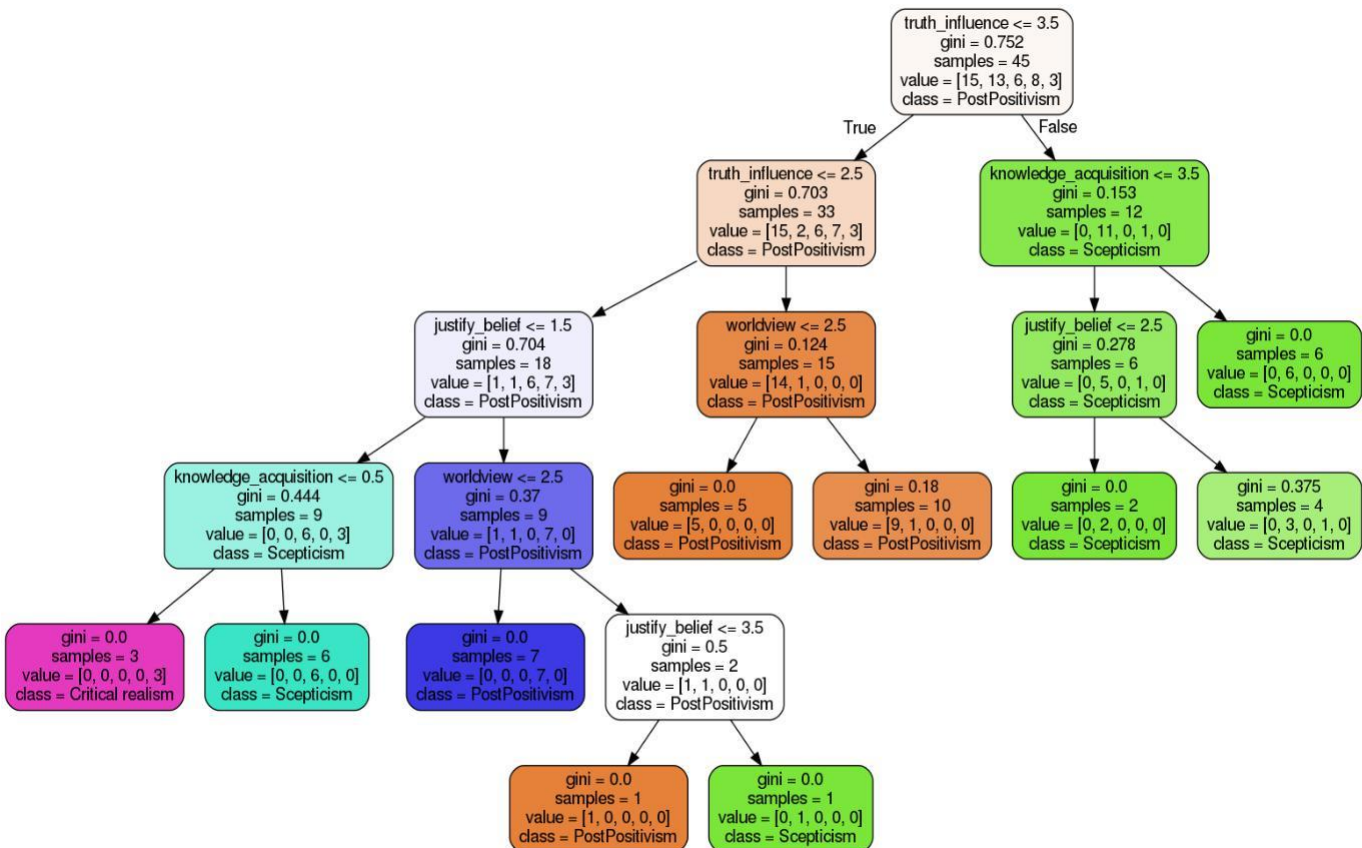
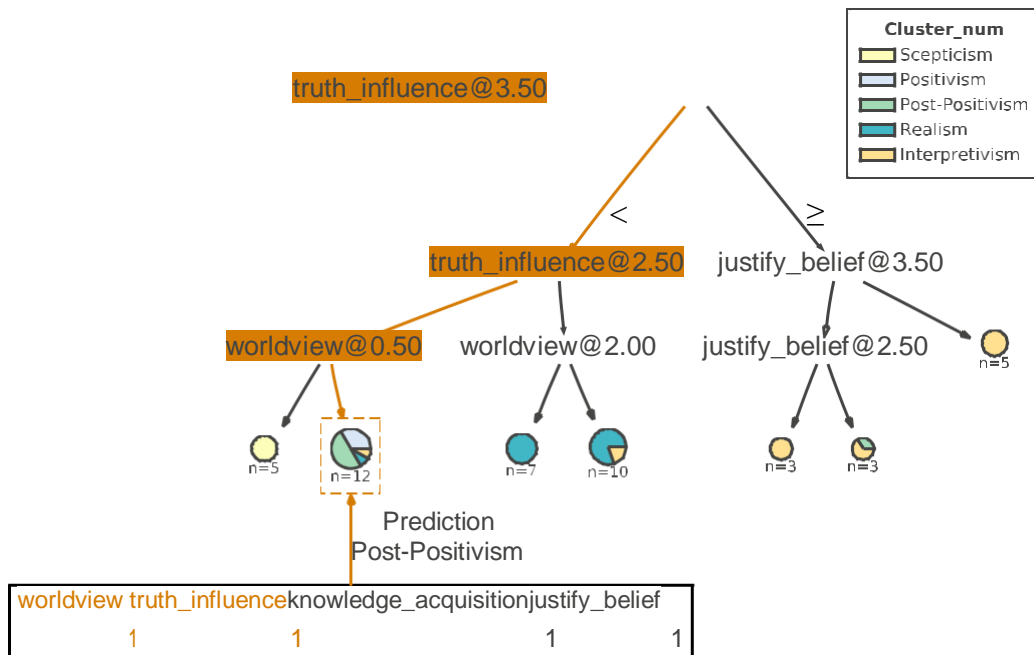


Figure 1: Decision tree based on training data

The following diagram shows a tree based on your answers. The orange arrow follows your personal path down the tree until a research philosophy class is assigned. Your scores are also shown at the bottom of the tree.



Recommended cluster

Positivism

Description	Positivism is the philosophy of science that information derived from logical and mathematical treatments and reports of sensory experience is the exclusive source of all authoritative knowledge, and that there is valid knowledge (truth) only in this derived knowledge.
Ontology	One version of the truth, real existing substance, certainty and tangible matter, external and independent to the individual. There is one defined true situation that exists and is it fixed, measurable, and observable Observed through our external senses, by means of scientific experiments.
Epistemology	All observers reach same conclusion. Fact finding research hypothesis and proofs. Theories can be tested and expanded using scientific methods. Fixed, stable, observable, and measurable.
Axiology	Independent of individual options, beliefs and influence, free from bias. The ability to not be influenced by personal feelings or opinions in considering and representing facts. Bias lead to error

Matching scores

While machine learning recommends a cluster of philosophies for you, matching seeks to determine a ranking among all the philosophy clusters. This was done by asking you to rate the same philosophy statements for each cluster. The scores for each cluster are displayed below.

Philosophy	How many versions of the truth can there be in a given situation?	How can reality or truth be influenced?	How is knowledge acquired i.e., how do we know what we know?	How can one's belief be justified?	What is the role of ethics and values in research?	Cluster score
Scepticism	3	3	3	3	3	15
Positivism	3	3	3	3	3	15
Post-Positivism	3	3	3	3	3	15
Realism	3	3	3	3	3	15
Interpretivism	1	1	1	1	1	5

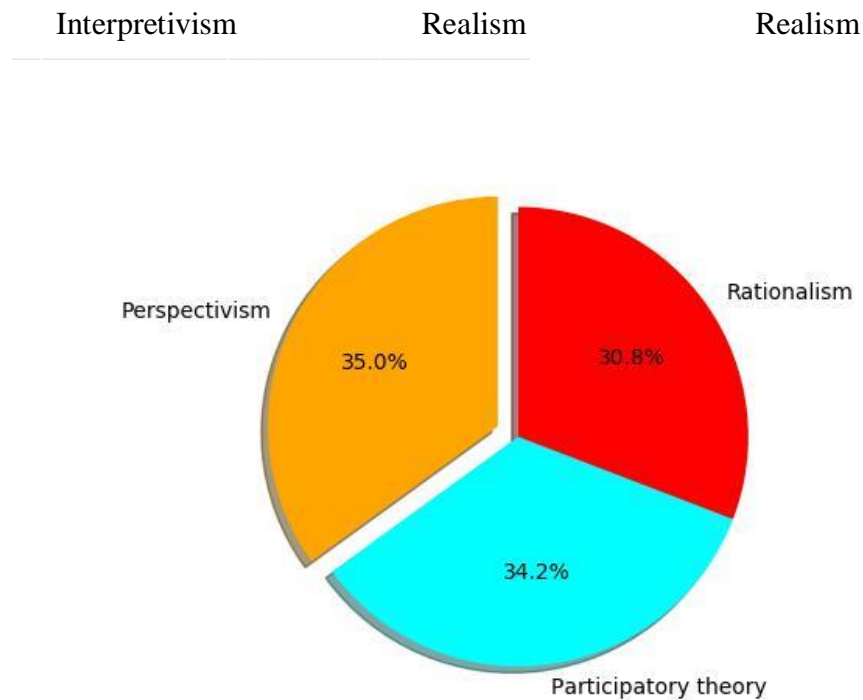
Completely Disagree = 1 Disagree = 2 Neutral = 3 Agree = 4 Completely Agree = 5

Natural Language Processing

Natural Language Processing (NLP) - This section of the report delves deeper into the philosophy clusters to recommend individual philosophies. By using Natural Language Processing algorithm on user input captured in the questionnaire, for classification into research philosophies and paradigms. This classification is based on the created Research Paradigm and Philosophies (RPP) categories corpus. The RPP corpus gets tokenized, stemmed, lemmatized and then used to train the classification algorithm. The Bag of Words (BoW) model is used to calculate a score for each given RPPs category in the corpus. The same model is also used to calculate a score for the user input. A comparison of the user input's score against the corpus category scores yields the three topmost RPPs that are closely linked to a researcher's worldview. The results are presented in a pie chart showing the degree to which a researcher is aligned to a particular RPP as below:

The graph below illustrates the top three recommended Philosophies / Paradigms

RMI Clusters:



Tokenizing

Tokenizing refers to the process where the input string is broken down into individual words, phrases or even sentences, referred to as tokens, separated by a whitespace. Special characters, especially punctuation marks, and other symbols are ignored in this process. The tokens are used as input for the Stemming and Lemmatization processes of NLP. The tokens are checked for the number of occurrences within the corpus and then score of each word noted. The scores are used to tally up the vectors for each class or category of the corpus, to be used later when comparing values between input data and corpus, which assists in classification.

Tokenized Response

['Single', 'External', 'scientific', 'methods', 'scientific', 'methods', 'community', 'or', 'our', 'parents', 'multiple', 'through', 'articles', 'and', 'books', 'to', 'guide', 'research', 'direction', 'to', 'guide', 'research', 'direction', 'personal', 'beliefs']

Lemmatization

Lemmatization refers to the processes of changing a word back to its base form in relation to the context in which the word appears. Inflected forms of a word are grouped together and treated as a single item for analysis purposes. The WordNet lexical database is used to lemmatize the tokens using the WordNetLemmatizer algorithm. These lemmatized words, or tokens, are used to compare with words, or tokens, in the RPP corpus and each word found gets scored for that particular category. At the end of the process the scores are tallied, with the highest score representing the topmost RPP that is recommended for a user.

Lemmatized Response

['Single', 'External', 'scientific', 'method', 'scientific', 'method', 'community', 'or', 'our', 'parent', 'multiple', 'through', 'article', 'and', 'book', 'to', 'guide', 'research', 'direction', 'to', 'guide', 'research', 'direction', 'personal', 'belief']

Named Entity Recognition (NER)

Named Entity Recognition refers to the process in information extraction that seeks to locate and classify named entities in text into pre-defined categories. NER is used in Natural Language Processing (NLP) of a user's input to identify the components that make up the research philosophies and paradigms. The section that follows shows the identified entities in a user's response together with the respective labels.

Named Entities

['Single | Ontology', 'External | Ontology', 'scientific | Epistemology', 'scientific | Epistemology', 'multiple | Ontology']

Recommended research philosophies and paradigms

Philosophy/Paradigm	Description	Ontology	Epistemology	Axiology
Perspectivism	Perspectivism (German: Perspektivismus) is the term coined by Friedrich Nietzsche in developing the philosophical view (touched upon as far back as Plato's rendition of Protagoras) that all ideations take place from particular perspectives.	Reality is knowable; but it is interpretable otherwise, it has no meaning behind it, but countless meanings. Truth is a matter of perspective, not fundamental reality	Access to the world through perception and experience. Reason is possible only through one's own perspective and interpretation. Human experience. Perspective cannot be eliminated. Knowledge is perspectival. Reality is knowable through individual interpretation	Researchers need to be flexible, not trapped by one set of values or the illusion of value free knowing, but able to move from one valuational perspective to another, and from these many points of view, assemble our picture of the world
Participatory theory	Participatory theory, vision or framework is a conceptual framework which attempts to bridge the subject-object distinction. According to Jorge Ferrer, the kernel of this participatory vision is a turn from intra-subjective experiences to participatory events in our understanding of transpersonal and spiritual phenomena.	Meaning is enacted through the participation of the human mind with the world. Meaning is not found solely outside of the human mind, in the objective world, waiting to be discovered	Meaning is neither solely objective nor solely subjective. Nature becomes comprehensible to itself through the human mind. establish the truth through reasoned arguments	Partly influence by both human values and the external world
Rationalism	In epistemology, rationalism is the view that regards reason as the chief source and test of knowledge or any view appealing to reason as a source of knowledge or justification.	Truths based on logic, reasoning and historical principles. Dependent on authorities and ancient principles	Knowledge advances through educated guessing, reasoning and experience, deductive reasoning in the quest for knowledge, theory guides practice, Causal understanding, formulate principles	Experience and historical principles