

# Research Tool Design: Constructing Research Tools as Catalyst

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## *Abstract*

*The purpose of this paper is to examine research tool from the analytical exploration of existing literature and views on research tool design. The paper explores and analyzes research tool in relation to research types and philosophical paradigm. Tool is explored from the restricted sense of data collection of any form on the one. On the other, tool is seen in wider range of methods, techniques and strategies of inquiry to move beyond limitation. Study design involves systematic reviews of existing literature on tool design. Secondary data and information are collected from journals, books and publications related to research methodology. Research tool design is identified as both a study design and a procedure of data collections in many forms from diverse fields.*

**Key words:** Tool design, research types, methods, framework and philosophical paradigm

## **Basic intellectual operations**

Research tool is fundamental to any research type ranging from natural science to social sciences. Social science researchers do not rely upon only a particular research tool. In the wider social science context, methods and approaches such as content analysis, linguistic discourse analysis, case study, ethnography and theoretical, etc. are carried out with the help of research tools. Diverse fields of knowledge have already developed various tools to address issues in text and context (Bazerman, 2004, pp. 1-10). Within the context of ethnography, unstructured interview guide, observation and recording are defined as a tool to conduct research (Nunan, 2010, pp. 54-55). Tool is not a singular; rather,

there are tools with diverse structures and functions. Yet, according to nature and range of research topic and analysis leading to expected finding, researcher must develop a research tool. Research tool design is the plan to select a tool and reconstruct selected tool to make overall procedure for more logical and valid research (Kumar, 2011, p. 138). Research tool design is the innovative part of research design which involves selecting topic, method, philosophical paradigms, analytical technique, strategies of inquiry and interpretation (Creswell, 2011, p. 3). It directs researcher to be constructive in contextualizing personal experiences in relation to audience in the larger social context. Without proper tool design researcher cannot offer the

world concrete findings either by providing new insight into existing knowledge or by making a new discovery (Gibaldi, 2004, pp. 3-5). Tool design contributes to total procedure of formulating topic and applying theoretical framework for the original finding and discovery. Since contemporary social science research is more intertextual in its methodology and practice (Bazerman & Paul, 2004, p. 84-90) for the study researchers have to develop a tool as a catalyst for making research solid and result oriented.

### **Developing tools**

Before using tool, researcher needs to discuss whether tool is developed by researcher oneself, or it is developed by someone else. If tool is borrowed from others, researcher needs to discuss sources and construct validity and reliability. It is also essential to plan for testing to improve format by incorporating people's comments in the final revision.

All research types involve tools, methods or techniques. Primary and secondary data collection methods are employed in research (Creswell, 2011, pp. 11-18). Research tool and tool design do not mean anything in isolation. Both research tool and tool design are complementary to each other. In the mean time, they are the basic constitutive elements of overall research project in relation to philosophical views. With knowledge of research type and topic researcher formulates a tool to collect data, and conduct interview for analysis (Kumar, 2011, p. 164). Then it is contextual to argue that tool is not limited to a set of instrument for questionnaire guide and any controlled guideline. But tool is both a conceptual and a theoretical frame work that helps to explain cultural facts. Since it is difficult to assert what tool includes

and excludes researchers need to conceptualize and construct research tool from the perspectives of research type, topic and philosophical views.

### **Developing tools from the prespectives of research types**

Contemporary social science researches involve three major research types such as quantitative, qualitative and interdisciplinary approach. Quantitative research emerged during 18<sup>th</sup> and 19<sup>th</sup> centuries and continues up to the present (Creswell, 2011, p. 12). It is controlled, deductive and lab based. It is objective in its procedure to verify theory. Qualitative research is defined as a modern approach to research. Modern thinkers have developed it against rigidity of positivist deductive reasoning. Qualitative research is subjective, uncontrolled, and open-ended. It is flexible in its procedure to construct theory out of context. However, in the complex territory of social science studies quantitative and qualitative types overlap each other (ibid. p. 13). Distinction is only quantitative is closed and qualitative is open-ended. Interdisciplinary research is not completely new, but it is mixing of quantitative and qualitative. In sociology and anthropology interdisciplinary research is called discourse analysis, in literary studies it is known as postmodern; in economics it is called mixed method (Sharma, 2013-14, p. 109). It is also named multidisciplinary method and synthetic operation in history (Ali, 2008, pp. 92-93). Whatever one may call it, interdisciplinary approach supports researcher to construct tool and use it without restriction. Researcher is free to include many methods to make tool appropriate and limit tool to certain methods to make procedure reliable. Researcher's job does

not come to an end with selection of research type. Researcher may choose any research method from among many existing research discourses. Moreover, researcher should focus on what philosophical views can be contextual for the analytical interpretation.

### **Developing tools from the perspective of philosophical paradigms**

Philosophical paradigm implies a set of belief which provides people a basic lens to see the world and humanity. Researcher can consider four philosophical views; as Creswell has defined them, such as postpositivism, constructivism, advocacy, and pragmatism. Postpositivism is derived from 18<sup>th</sup> and 19<sup>th</sup> century sociological imagination. It uses deductive logic and controlled experiment. As it focuses on closed question and structured experiment, quantitative research employs postpositivism (Creswell, 2011, p. 7). Constructivism offers an idea that human beings are active actors in creating meanings out of their experiences and involvement in a specific historical context. Constructivists do not consider postpositivism as a relevant logic to comprehend the world. Instead, they believe that researchers can use personal perception to construct meanings. Constructivism is useful in qualitative research. Advocacy or participatory views is social change oriented. It is rooted in political event. It is concerned with empowering marginalized groups. Both qualitative and quantitative are handy tools in advocacy to achieve goal of social transformation. Pragmatism is more recent philosophical trend rooted in American philosophers Richard Rorty, John Dewey and others. Pragmatism does not focus on a particular belief and event. Pragmatists argue that circumstances

determine meanings and perception. Perception and truth are never absolute. Meanings are relative. Pragmatists claim that postpositivists are wrong to assert that absolute truth is possible. Interdisciplinary approach, postmodern approach, discourse analysis, postcolonial discourse and cross cultural theories share pragmatism. Interdisciplinary and postmodern researches combine quantitative and qualitative types (Abbas, 2005 xxv). Even cultural studies use an interdisciplinary orientation to offer reliable map of cultural artifacts in the wider historical dialogue.

### **Developing tools from the perspective of quantitative data collections**

Both quantitative and qualitative researches employ methods of collecting data from diverse fields for analysis. Quantitative research contains survey and experimental designs. In survey design researcher should suggest whether the survey will be cross-sectional by collecting data at one point in time or whether it will be longitudinal by collecting data over time (Creswell, p. 146). At the same time researcher should specify form of data collection. Researcher can use self-administered questionnaires; interviews: structured record interviews to collect information from different fields such as finance, school and others. Researcher can also use structured observations. The data also involves creating an internet survey. Questions are close-ended with predetermined approaches. Even answers are close-ended to verify the theory.

### **Applied research tool analysis**

Binary Opposition and Western Madness: one of the historical facts is that west has expressed its unlimited madness by being crazy for

hierarchical thinking and doing. Postcolonial critic Edward said, deconstructionist Jacques Derrida, and feminist critic Judith Butler are widely noticed scholars who claim that west has created dichotomy between west and rest through logic of binary opposition. Binary opposition is western strategy to dominate others by creating layers of hierarchies among people and cultures. Binary refers to male versus female, day versus night, good vs. bad, spiritual vs. material, leaders vs. people, democracy vs. extremist and so on. In fact, binary is constructed in language which does not have natural origin and meaning. West asserts that west is the best by renationalizing the story of binary opposition from the ancient to the present.

### **Tool design**

To collect information on the story of binary opposition in western history researcher can design three techniques such as observation, interviews and publication. Shakespeare's *Tempest* will be observed to see how white man vs. savage is constructed in literature.

Observation procedure: Prospero and Caliban would be at the centre of researcher's observation and their relationship would be closely read in terms of master vs. slave, cultured vs. savage, rich vs. poor and god father vs. sinner.

Three university teachers from English and non English background will be interviewed to trace their views on western tendency to create discourse of their superiority.

Interview procedure: the following three questions will be asked to each teachers

- A. What do you think is west mad for being superior in history?

- B. West vs. non west is creation of western ideology. Explain it critically in one paragraph.

- C. Are common people aware of western madness in all sphere of living?

Derrida, Butler and Said's publications will be read to gather their details on western madness and binary opposition. Said's *Orientalism*, Derrida's Deconstruction Philosophy and Butler's *A Cyborg Manifesto* will be thoroughly examined for reliable information.

Procedure for publications: reading on Said's *Orientalism* will focus on how the west has created east as other for its identity. Derrida's deconstruction will be read to gather details on linguistics in relation to western ideals which are only signs without exact representation of natural reality. Butler's *A Cyborg Manifesto* will provide insights into western reality myth as discourse of inequality and injustice.

### **Designing tools from the perspective of qualitative data collection**

Qualitative research employs five major study designs such as case study, ethnography, grounded theory, phenomenology, and narrative. Ethnography is derived from anthropology and sociology. It is natural setting based research which opposes tradition of quantitative types guided by rigid pattern of survey and experimental designs (Nunan, 2010, p. 53). Ethnography involves primary and secondary data collections. Primary includes observation, interviewing, questionnaires, participant and non-participant. Secondary includes documents, government publications; earlier records, personal records and client histories, but all of these methods do not prove absolute information (Kumar, 2011, p. 139).

Observations are of two types; participant and non participant. If researcher participates in the activities of group without their knowledge that they are being observed, the observation is participant. But non-participant remains passive and keeps on researching. Interview involves an interviewer reading questions to respondents and recording their answers. In ethnography interview is unstructured and flexible. Questionnaire is a written list of questions, the answers to which are recorded by respondents. Respondents read questions and interpret what is expected (ibid. pp. 44-45).

### **Applied tool design analysis**

#### **Mid-western University English Department: A cross-cultural practice**

Truly thinking Mid-western university English department is offering cross-cultural practice on education. Cross-cultural practice would make both teachers and students more open-minded and familiar with diverse disciplines. Ultimately, such practice can liberate teachers and students from disciplinary boundary to comprehend world and life from open-ended perspective governed by political contexts.

### **Tool design**

Research paper will derive details from field research based on interviews with English teachers and master level students of MU. Procedure of interview: teachers and students will be interviewed randomly in their class by considering their interest and knowledge of existing courses from first to fourth semester. They will be asked the following questions:

- Do you think course you are teaching and learning is based on cross disciplinary methods?

- What can you expect from this course?
- Do you feel uneasy with this course? Why? Why not?

Paper will also involve observation. Researcher will observe the courses from first to fourth semester. Observation will develop list of all disciplines to gather examples on cross-cultural practice.

### **Reconstructing tools from an interdisciplinary approach**

Interdisciplinary research has gained popularity in the contemporary social and health sciences through its matrix of both quantitative and qualitative methods. Since qualitative and quantitative approaches do not address complexity of social issues in isolation, researchers have found interdisciplinary approach appropriate to address complexity. Interdisciplinary reading is rooted in cultural studies, communication studies and discourse analysis. It brings together both quantitative and qualitative methods of data collections. With focus on pragmatism, interdisciplinary research observation, interviews such as face to face, internet based interview and focus group, documents such as minutes of meeting, newspaper, journal, audio-visual such as photograph, video tape, art object, computer and film.

### **Applied tool design analysis**

#### **Democracy: Mass deception in Nepal**

Since 1950s democracy has become very much popular among leaders and institutions of all kinds in Nepal. All political parties have defined democracy as the social system with equal opportunities and justice. But in Nepal democracy has come to be the industry of mass deception. Democracy has promoted few individuals and families in politics, beauracracy

and business. The rest of the Nepalese are compelled to digest rhetoric of politicians from B.P. Koirala to Prachanda. People cannot live by leaders' words. Leaders' words are not filled with facts. Rather people need to grasp that politicians are able to deceive them through the sea of words. Even new politicians of new generation are not loyal, honest, and truthful. But they are loyal to sea of words for achieving position.

### **Tool design**

To collect data researcher can use both quantitative and qualitative data collections such as observation, interviews, documents and publications.

Observation procedure: researcher can observe historical reality from 1950s to the present to see what kinds speeches are being offered by major politicians to make people help them for abolishing local regime. It can be observed what people get after abolition of regime.

Researcher can conduct interviews with people who are with events from 1950s onwards. Five well experienced common people from five development regions can be interviewed. Two neutral media personalities can be interviewed. Three international intellectuals and two historians can be interviewed. Randomly five common people from agriculture sector, three people from business field, three from NGO and INGO sectors, five from Dalit community and five from ethnic communities can be interviewed. Questionnaires can include the following produce:

Questions should be set according to level of respondents. Questions can be read to them and their responses can be recorded in movie camera. They can be asked to provide their response in written form. Those who cannot do so can be assisted in writing by researcher himself.

Thirdly, researcher can consult books on the story of democracy in Nepal. Books by local and foreign writers can be collected. Historical books and articles related with changes in Nepal can be collected from the *Kantipure National Daily*. Theoretical documents about democracy, capitalism and globalization can be read to trace how democracy in Nepal is mimic cry of western and other forms of discourses.

### **Problems**

Each tool described above is adequate in itself. Tool is not singular item, but there are many tools within each research type. During and after research is completed researcher should evaluate reliability of used tool.

### **Ensuring validity and reliability of a research tool**

Researcher must establish validity and reliability of a tool to show readers that research as a final product is worth reading. Importance of validity and reliability is more desired in quantitative than in qualitative. Validity implies a situation in which research findings are in accordance with the tool to find out the objectives. Quantitative uses two methods to ensure validity of a tool; ensuring logical link between the objective of a study and questions used in a tool and the statistical analysis to present links (Kumar, 2011, p. 180). In qualitative, validity is judged by the degree of respondent concordance with the findings. Reliability of a tool refers to its ability to show consistency in measurement. Quantitative uses test and retest to find out accuracy of a tool externally. Internal accuracy is measured by split-half technique. Qualitative uses dependability and conformability to measure reliability.

## Concluding considerations

Research tool is not only concerned with different methods of collecting information from various sources. Tool is not a unified concept. Rather tool is to be conceptualized in relation to research types, study design and philosophical views. In more restricted sense, tool is a technique to collect data. A researcher depends upon tool to shape and reshape entire procedure from beginning to end, tool is a catalyst to research design.

### *About the author*

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