

Chapter 13

Combining Research Paradigms to Improve Poor Student Performance

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ABSTRACT

The aim of this chapter is to demonstrate the advantages of combining methods from different research paradigms. Positivism, interpretivism, and critical social theory are presented as major paradigms in Information Systems research. The chapter demonstrates the use of methods representative of these three research paradigms in a single research setting. The main problem in the research setting is the poor performance of students in a specific module of their academic programme. This problem is addressed by initiating an action research project using methods representing different research paradigms in the different phases of the project. The argument for using mixed methods is presented by providing information on research paradigms, discussing the problem environment, describing the research process, and finally, reflecting on research paradigms and their application in this environment.

INTRODUCTION

The chapter seeks to contribute to the discussion on the use of mixed methods in Information Systems (IS) education research. Various authors, such as Mingers (2001), Bryman (2006), and Symonds

and Gorard (2010) describe the combination of methods related to traditional research paradigms in a single research project. The objective of researchers from different schools of thought differs in terms of research outcome and in terms of generation of knowledge. Some researchers have

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objective measuring as their main objective where understanding might be the motivation for others. On the far end of the spectrum some researchers has participative change and emancipation as their main objective. This chapter begins with an explanation of research paradigms to illustrate different perspectives of researchers in order to create sensitivity towards the complexity of mixing methods from different paradigms.

This chapter describes a problem situation where methods from all three typical research paradigms, namely Positivism, Interpretivism, and Critical Social Theory, are used to address a problem. The problem under investigation is the poor performance of university engineering students in a module on computer networking. The research team used a combination of methods in an action research project to effect changes to the teaching environment in order to improve the performance of these students.

The argument for using mixed methods is presented by providing information on research paradigms, discussing the specific problem environment, describing the research process and finally reflecting on research paradigms and their application in this environment.

BACKGROUND

Brief information on research methodology terminology is provided in order to clarify the position of the research team. Research approaches are then discussed in terms of paradigms. A short discussion on research paradigms, mixed methods, and research quality follows.

The usage of the terms qualitative and quantitative research is sometimes confusing. Some authors such as Bryman (2006) use it to distinguish between research approaches while others such as Myers (1997) use it to distinguish between the natures of the data used. In terms of the first group, one can distinguish between qualitative and quantitative research as:

Quantitative purists believe that the observer should be objective and separate from the entities that are observed. They should remain emotionally detached and uninvolved. This is in accordance to the positivism paradigm described in the following section.

Qualitative purists reject this and argue for idealism, humanism, and hermeneutics. They are characterised by a dislike of detached writing and prefer detailed and rich description (Johnson & Onwuegbuzie, 2004). This is in accordance with the interpretive paradigm described in the following section.

In terms of the group focusing on the nature of the data (Denzin & Lincoln, 2003; Myers, 1997; Straus & Corbin, 1998; Oates, 2006) the following distinction is given:

Quantitative research is used to study natural phenomena and include experiments and numerical methods. It is data based on numbers/values. This is the main type of data generated by experiments and are primarily used by positivists, but can also be used by interpretivists or critical researchers.

Qualitative research, on the other hand, uses quantitative data, for example interviews, documents, observations and stories, usually to understand and explain social occurrences. The emphasis is on processes and meaning that cannot always be measured in terms of quantity, amount or frequency. It includes words, images, and sound.

In this chapter the term qualitative refer to textual data and quantitative refer to numerical data. The assumptions regarding the validity of data are handled in terms of research paradigms rather than type of data. A short discussion on research paradigms, mixed methods, and research quality follows.

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