

Chapter 5

Using Data, Description, and Graphics to Enrich Your Mixed Methods Study

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ABSTRACT

Systems of organizing, displaying, and presenting data in studies focusing on educational research have traditionally included statistical tables and figures such as charts and graphs. This chapter provides a discussion of utilizing multiple visual methods for displaying data in an educational mixed methods study that goes beyond tables and charts. The chapter does not go into construction of visual methods but offers suggestions and ideas for graphic illustrations such as icons, emojis, or photographs to display results. The chapter calls attention to application opportunities for researchers to reflect upon prior to submitting research proposals and IRB applications.

INTRODUCTION

Many research papers in the social sciences include five basic parts: (1) introduction, (2) review of literature, (3) methodology, (4) analysis, and (5) conclusions or recommendations. There are numerous sources for research methodology (Creswell, 2018; Creswell & Plano Clark, 2018; Leedy & Ormrod, 2015; Onwuegbuzie, 2007; Merriam, Yin, 2018) each with specific information on particular designs, concepts, and strategies regarding what to include within each part of the study. Furthermore, much has been written about data analysis, which is specific to the type of research

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being conducted (quantitative, qualitative, or mixed methods). Depending on what questions the researcher is seeking to answer, in terms of quantitative or qualitative data, there is much to choose from in the literature. There is one aspect of social science research, however, which remains underdeveloped, especially in the educational fields, and that is visual data presentation.

It is safe to say that graphics have been used to visually communicate stories since humans began etching on cave walls (Samuels & Samuels, 1975). One of the first recorded uses and publications of bar chart data graphics can be traced back to the 18th century economic work of William Playfair (Ajay, 2017; Symanzik, Fischetti, & Spence, 2009). In this application, numerical data are represented by lines and special orientation rather than mathematical units. And throughout the history of commerce, charts and graphs have been used to represent all sorts of data especially related to transportation of commodities. According to Ajay (2017) “Data visualization is the presentation of data in pictorial or graphical format to understand information more easily and quickly” (p. 197). Data visualization is used in many disciplines and has many applications for presenting information, especially online.

In the field of psychology, the use of visual methods research has increased over the past thirty years (Reavey, 2011). In that same time period, educational research has relied on more traditional methods for data collection such as observation, artifact collection, and interviewing; and more traditional ways of data presentation such as tables and narrative. In traditional educational qualitative research interviews are conducted using auditory capturing devices, usually electronically, and then transcribed into text. After the transcript has been checked for accuracy against the audio source, the text is ready for analysis. Miles and Huberman (1994) “define qualitative analysis as consisting of three concurrent flows of activity: data reduction, data display, and conclusion drawing/verification” (p.10). In educational research much of the literature displays this type of narrative reporting. One concept that has been around since the end of the last century in multiple disciplines, but is still gaining traction in education research, is visualization of data through the use of infographics. Tufte’s (2001) work on quantitative data visualization provides numerous examples of viewing data in graphic ways. Data visualization is commonly used in helping people understand “big data” (Mashey, 1998). In the online world of today, we view data visually presented to represent everything from weather patterns to stock market trends. In K12 through higher education teachers rely on infographics and visual data to display student achievement in meaningful and unambiguous formats. It is therefore important for researchers in educational fields to learn new and different ways to visually present data.

This chapter is not intended to deliver instruction on how to create graphics, rather it is a discussion of possible applications of and alternatives to traditional data presentation for both qualitative and quantitative research. In order to demonstrate

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