

Chapter 18

A Study on the Application of Technology for Quantitative and Qualitative Analysis in Language Research

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ABSTRACT

A number of statistical packages were developed by software developers and companies to assist English language teaching (ELT) researchers. This chapter focuses on the role of technology in assisting ELT researchers in the form of online survey tools and data analysis software packages, and it provides an introduction to the application of widely used software packages. Analysis of the research over the past five years, and the role of technology to frame its findings, shows the vital and unavoidable significance of technology for the promotion of English language teaching research. The present analysis revealed the significant role of SPSS software for enhancing the quality of ELT research in a scientific manner. The study analyses various statistical techniques used and the various software that offers these techniques according to need. It also suggests the best software for ELT research and explains the features of these software packages.

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INTRODUCTION

“Thanks to modern technology, we now can deliver every text in every research library to every citizen in our country, and to everyone in the world. If we fail to do so, we are not living up to our civic duty.” The words of Robert Darnton (n.d.) are quite true in today’s world. We cannot think of a nation’s development without recognizing the value of technology. Thus, the knowledge to use technology is essential. The vital role of technology lies in assisting the journey of unravelling knowledge. Researchers aim to contribute to the upliftment of society. This tech century has made research easy and popular by crossing the limits of physical barriers. Statistics and its applications are a handmaiden for research. It is a branch of mathematics that deals with the collection, analysis, and interpretation of data. The assumptions and findings of a research study are made credible and valid by the analysis, synthesizing, and testing through the application of various statistical functions (Abebe, Daniels, McKean, & Kapenga, 2000). As statistics assist research, technology assists researchers to perform statistical analysis through its functions. The relevance of the available software packages lies in the application of these statistical analyses in the various streams of research. Irrespective of the stream, statistics is mandatory for analysis of data. It might be commerce, business, language teaching, education, mathematics, science, or engineering. It is not easy to learn all these analysis tools manually by a person who is not related to the field statistics. A social science researcher will be able to analyse and confirm his or her hypothesis statistically through the software packages offered by technology. In today’s world, researchers cannot imagine creating a thesis without using a computer; from letters to figures, it is technology advanced. Technology also plays a key role in promoting interdisciplinary studies. Research analysis is one of the unavoidable areas where technology plays a vital role in both social sciences and educational research.

There are a number of software packages developed by various tech companies and developers that are available for data analysis. SPSS, AMOS, Process Macro, Microsoft EXCEL, and R programming, are some of the statistical analysis software packages available for social science research. SAS, MATLAB, Axiom, and Cadabra, etc., work well for mathematical studies, and SUDAAN software is best used in the environmental and health science fields. Graph Pad Prism is often used in analysing biotechnology data. Origin and Chemdraw software packages are well suited to chemistry and Mendeley and endnote Reference Manager Software works well for reference sections. There are also some other leading software packages suitable for use in these research areas. If a study is qualitative in nature, software such as, NVivo, atlas.t, and hyper research, etc., can make the analysis process easier. This paper analyses the role of software packages in English language teaching (ELT) research, with application examples. English language teaching research, in

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