ISSN: 2688-8653

Mixed Methods: New Trends in Applied Linguistics Research Methods

Xinshu Li[1, a], Chenglian Bao[1], Siyu Wu[1]

[1]Henan University of Technology, Zhengzhou, China

[a]1904584546@qq.com

Abstract

In the 21st century, qualitative research has been a rising trend in applied linguistics research in China, breaking the previous situation of absolute dominance of quantitative research. Influenced by developments in social science research, especially educational research, the use of quantitative or qualitative research alone is not the best option in some research areas, and does not even contribute to more authoritative research findings. Within this context, mixed methods (integration of quantitative and qualitative) have emerged. Based on previous research findings, this paper firstly reviews the trends in the use of applied linguistic research methods in China over the past 30 years, from 1978 to 2015; secondly, the differences between quantitative and qualitative research are presented in terms of definition, sampling, data collection and analysis and the trend of the shift from quantitative to qualitative are analyzed; thirdly, the factors to be considered in mixed methods research design are pointed out, including priority, sequence of data collection, stage of integration, and principles of integration; finally, the advantages of mixed methods are described, and suggestions are made that the focus of applied linguistics research methods should shift towards qualitative methods in China and that researchers should increase their understanding of qualitative methods in order to facilitate the proficient application of mixed methods. The study is intended to provide a thorough comprehension of mixed methods and to be a reference for its future application and practice.

Keywords

Applied linguistics; research methods; mixed methods; mixed methods design.

1. Introduction

Mixed methods are receiving increasing attention in the field of social science research. There is also a trend towards mixed methods in the field of applied linguistics[3]. *The Handbook of Mixed Methods Research*[17], published in 2010, mapped the growing importance of mixed methods in the field of science. Use of mixed methods has also emerged and occupied a more prominent place in foreign language teaching research at home. Zhang Pei studied five foreign linguistics journals at home and found that of the 1350 applied linguistics articles published from 2000 to 2010, 139 used mixed methods, accounting for 22% of the total 639 empirical studies in applied linguistics[12]. Wen Qiufang collected 520 empirical articles from the journal *Foreign Language Teaching and Research* from 2001 to 2015 and classified them into research methods, with the result that the quantitative method accounted for 79.61%, the mixed method accounted for 12.94% and the qualitative method accounted for 7.45%. Zhang Pei, using data from empirical research papers published in four mainstream English-language journals in applied linguistics from 2000 to 2018, examined the current state of mixed methods in applied linguistics research, showing that 45 empirical studies explicitly used mixed methods in the period 2010 to 2018[8]. Zhang Pei investigated the application of mixed methods in empirical

ISSN: 2688-8653

studies on language teaching between 2003 and 2012 and found that out of 314 empirical studies on language teaching, there were 74 mixed methods studies, making up about 23.6% of the empirical studies[10]. The above studies fully illustrate that the mixed method, as an independent research design and research strategy, has been established in applied linguistics research, and that its academic status and research usage are beyond doubt, and that it may become the mainstream of applied linguistics research methods in the future. Consequently, a well-rounded, detailed and in-depth study of mixed methods is necessary and meaningful.

2. Review of Trends in Research Methodology Use at Home

2.1. Trends Between 1978 and 1997

Gao Yihong has conducted a statistical survey of the research methods used in the academic papers published in *Foreign Language Teaching and Research, Modern Foreign Languages, Foreign Language Research and Foreign Language World* during the period 1978 to 1997[18]. According to their findings, the use of research methods in this period can be roughly divided into two stages (see Table 1). The first phase was dominated by non-empirical research, accounting for 94%, some of which was based on personal experience and reflection and some on the introduction of foreign theories; empirical research accounted for only 6%, and all of which was descriptive analysis. The second phase showed a gradual development of empirical research, reaching 16%, with the quantitative method accounting for 14%, significantly more than the qualitative method at 2%. It can be seen that it was not until the end of the last century that a small number of empirical studies emerged, and they were dominated by quantitative methods.

Table 1. Trends in domestic research methods between 1978 and 1997.

Phase	Non-empirical research	Quantitative method	Qualitative method	Total
1978-1987	516(94%)	33(6%)	0(0%)	549
1988-1997	794(84%)	132(14%)	19(2%)	945

2.2. Trends Between 2001 and 2015

Wen Qiufang identified the research methods of 255 empirical research articles in *Foreign Language Teaching and Research*, focusing on three time periods, 2001-2005, 2006-2010 and 2011-2015, and the results showed that the quantitative method accounted for 203 articles, with 79.61%; the mixed method accounted for 33 articles, with 12.94%; and the qualitative method accounted for 19 articles, with 7.45%[15]. (See Table 2) Compared to the previous century, three main characteristics of the domestic research methodology are apparent: firstly, the general trend is towards an absolute predominance of quantitative methods, much higher than qualitative and mixed methods; the number of quantitative methods has continued to grow, with 75% in the first period; 77.63% in the second period, and 84.11% in the third period, an increase of 6.5%. Secondly, the qualitative method has increased to some extent over the last century. From only 2% in 1988-1997 (see Table 1), it increased to 8.33% in the first period of the new century, and 7.89% and 6.54% in the next two periods. Overall, the use of qualitative methods has increased in the 15 years of the new century, but remains marginal. Thirdly, there are more mixed methods than qualitative studies, accounting for 12.94% of empirical studies, which also indicates the gradual increase in the status of mixed methods in academic research.

ISSN: 2688-8653

Table 2. Trends in domestic research methods between 2001 and 2015.

Phase	Quantitative method	Qualitative method	Mixed methods	Total
2001-2005	54(75%)	6(8.33%)	12(16.67%)	72
2006-2010	59(77.63%)	6(7.89%)	11(14.47%)	76
2011-2015	90(84.11%)	7(6.54%)	10(9.35%)	107
Total	203(79.61%)	19(7.45%)	33(12.94%)	255

3. Qualitative and Quantitative Research

3.1. Differences Between Qualitative and Quantitative Research

The difference between qualitative and quantitative is often understood as the difference between, for example, the literal and the numerical, the subjective and the objective, the specific and the universal, etc. In the following, the difference between quantification and qualitative will be explained in terms of definition, sampling and data analysis.

3.1.1. Differences in Definition

In defining quantitative and qualitative research methods, we refer to Niglas' definition: The study is quantitative if it

makes use of structured numerical data and statistical analysis techniques and qualitative if the argumentation is not based on numbers and calculations but on the substantial analysis of unstructured data[7]. It can be said that the essential difference between qualitative research and quantitative research lies in their theoretical drive. The main theoretical drive of qualitative research is to discover, and its fundamental approach is induction; while the main theoretical drive of quantitative research is to verify, and its fundamental approach is deduction. In his explanation of induction and deduction, Bryman highly summarizes them as follows: induction is where the data comes first and the theory comes second, while deduction is where theory (hypothesis) comes first and data and results come second. In other words, when the researcher first formulates a hypothesis and then tests it through data collection, analysis and interpretation, the main approach of such research is deduction, and the main method used is quantitative research[2].

3.1.2. Differences in Sampling

Sampling strategy is a very significant element of research design and is directly related to the quality of the study. The quality of research does not depend only on whether the methods and instruments are appropriate, but also by the appropriateness of the sampling strategy. The sampling strategy adopted must take into account factors such as the purpose of the study, the means of data collection, and the research methodology. The sampling strategy must be appropriate to all these factors for the study to be valid. With regard to qualitative research, it can be argued that it is the data obtained by purposeful sampling that is meaningful for analysis and interpretation and that makes the research meaningful. Random sampling is a standard strategy in quantitative research and is designed to generalise the findings. Qualitative research itself does not and cannot aim at generalisability in a statistical sense, but emphasises specificity and idiosyncrasy. Random sampling is not an appropriate strategy for qualitative research because it is not consistent with the nature and purpose of qualitative research. Furthermore, the use of qualitative sampling in the quantitative part of a mixed methods study, or quantitative sampling in the qualitative part, both would render the study invalid. This is true for mixed methods, let alone for purely qualitative or quantitative studies, where the use of a completely inconsistent sampling strategy would lead to the loss of meaningful research and unconvincing conclusions. The choice of sampling strategy must therefore be matched to the research method used.

ISSN: 2688-8653

3.1.3. Differences in Data Collection and Analysis

An example is used here to illustrate the difference between qualitative and quantitative in terms of data collection and analysis. In one study of teacher-student conversation in an English speaking classroom, for example, the author states that both classroom observation and classroom audio recording were used, but the only data produced were 40 minutes of audio transcripts and no observational data[13]. Observation is the primary method of ethnography, but ethnographic observation requires the researcher to spend long periods of time in the lives of the people being studied. If, as in this case, the analysis is based entirely on 40 minutes of classroom transcripts, it is questionable whether such observations can be defined as ethnographic, even if the author made them in a real classroom for 40 minutes, and without any data being generated. At the same time, it is even more debatable that the means of data collection, as in this case, is more typical of qualitative means, while statistical analysis is used without any trace of qualitative. However, it should be noted that there should be a tendency to match each other between data collection and analysis, and it is not advisable to carry out purely quantitative analysis of qualitative data or purely qualitative analysis of quantitative data; precisely because both qualitative and quantitative studies have their own norms and principles in terms of data collection and analysis, such as audio and video recording are the data collection methods commonly used in qualitative studies, while statistics are representative of quantitative studies, the choice of method should therefore be based on the questions of what research questions to answer, what research objectives to achieve and what research findings to be made. Just as in the sampling of qualitative and quantitative research, we mentioned the issue of matching, it is still necessary to pay attention to the issue of matching during the data collection and analysis phase. In short, the degree of matching determines the validity of the research findings.

3.2. Transformation from Quantitative to Qualitative

In the 21st century, with the prevalence of cultural constructivism in the field of foreign language education, qualitative research is considered to be the most suitable for the study of human-centered educational issues due to its strengths in exploring the complex social and cultural activities of human beings and their inner development, as well as focusing on the process of development of events and their internal causes. And qualitative research provides better opportunities for the researched to participate in the research process, which is crucial because these opportunities can influence the outcome of the research. The positive engagement between researcher and researched as a way for them to co-construct knowledge is a core feature and value of qualitative research that is not present in quantitative research, therefore a shift from quantitative to qualitative has occurred in the applied linguistics research methods to adapt to the needs of new academic research. It is worth noting, however, that the shift from quantitative to qualitative does not mean that qualitative has replaced or will replace quantitative, but rather that the rise of qualitative methods has changed the dominance of quantitative research and provided an alternative way of thinking about research. Quantitative research was once the only acceptable form of academic research in the field of second language acquisition, and qualitative research is now challenging it[6]. In short, this shift has driven the development of qualitative and the flourishing of mixed methods. Researchers have become more proficient in qualitative research and, based on their proficiency in using qualitative research methods, are then able to combine qualitative and quantitative methods, and their use of mixed methods is a natural fit.

ISSN: 2688-8653

4. Mixed Methods in Applied Linguistics Research

4.1. An Introduction to Mixed Methods

Zhang Pei has explored the essence, philosophical basis, design types and quality standards of mixed methods at home[9], but other scholars have explored less about mixed methods. The following section will take the current explorations of mixed methods as a basis, briefly outline the basic elements of mixed methods, and make relevant suggestions for the research design of mixed methods, in the hope of promoting the development of mixed methods.

4.1.1. Origin of Mixed Methods

It has been argued that mixed methods are not new, as many areas of the social sciences have seen a combination of qualitative and quantitative data collection in the first 60 years of the 20th century. However, mixed methods as a separate research strategy from quantitative and qualitative research occurred in the 1980s, this period is often considered to be the beginning of contemporary mixed methods research. The mixed methods developed rapidly after 2003, thanks to the publication of *Handbook of Mixed Methods in Social & Behavioral Research*[10]. The concept of mixed methods first appeared in *Language Teaching Research* in 2004, and in 2012 it first appeared in *The Modern Language Journal*[8]. The findings of Zhang Pei's study show that a total of 45 empirical studies published between 2010 and 2018 explicitly used the concept of mixed methods[8], showing a significant development in the establishment of the concept of mixed methods in the field of applied linguistics, indicating that mixed methods as an independent research design and research strategy has begun to be well established in applied linguistics research. This establishment is also evidenced by the fact that specialised mixed methods literature is beginning to be cited by applied linguistics researchers to underpin their research design and statement of research methodology.

4.1.2. Definition of Mixed Methods

Defining mixed methods is itself a controversial issue, and Johnson proposes an umbrella definition based on an analysis and synthesis of 19 definitions offered by 21 leading scholars in the mixed methods field: mixed methods research is a research strategy that integrates elements of qualitative and quantitative methods, such as philosophical perspectives, data collection, data analysis and means of interpreting results, to expand the breadth and depth of the phenomena being studied by the researcher or research team[4]. Obviously, this is a broad definition in which the integration of qualitative and quantitative elements can be a mixture of different levels, degrees and contents, from the worldview down to the analysis and deduction means. According to Tashakkori, a mixed method approach is one in which the researcher uses both qualitative and quantitative methods of data collection and analysis in a single research project, integrating the results and interpreting their meaning[16]. Simply put, mixed methods is a research strategy in which the researcher integrates both qualitative and quantitative elements in a study.

4.1.3. Purposes and Rationales of Mixed Methods

As mixed methods research continues to develop, more detailed descriptions of the purposes and rationales for mixing have emerged in the literature. Bryman uses empirical research as a source to analyse and summarise the 16 purposes and rationales of mixed methods[1]. They are as follows:

a) Triangulation or greater validity - quantitative and qualitative research be combined in order to corroborate mutually.

b) Offset - to offset their weaknesses to draw on the strengths of both.

c) Completeness - comprehensive account of the area of enquiry.

d) Process - qualitative research provides insight into the process.

ISSN: 2688-8653

e) Different research questions - they can answer different research questions.

f) Explanation - one is used to help explain findings generated by the other.

g) Unexpected results - two unexpected results arise, both of which can be effectively combined; one unexpected results occurs and can be understood by the other.

h) Instrument development - qualitative research is used to develop questionnaire and scale items to produce better wording or more comprehensive closed answers.

i) Sampling - situations in which one approach is used to facilitate the sampling of respondents or cases.

j) Credibility - enhances the integrity of findings.

k) Context - qualitative research providing contextual understanding coupled with either generalizable, externally valid findings or broad relationships among variables.

l) Illustration - use of qualitative data to illustrate quantitative findings.

m) Utility - combining the two approaches will be more useful to practitioners and others.

n) Confirm and discover - qualitative data to generate hypotheses and using quantitative research to test them.

o) Diversity of views - combining researchers' and participants' perspectives.

p) Enhancement or building upon quantitative or qualitative findings - making more of or augmenting either quantitative or qualitative findings.

Based on Bryman's detailed elaboration of the purposes and rationales of mixed methods, it is clear that the strengths of the mixed methods are manifold, and that a sound mixed methods research design is the basis and prerequisite for a convincing research conclusion. For this reason, the following is a detailed description of the factors that need to be considered in mixed methods research design, which will hopefully provide some inspiration to researchers in research design for mixed methods.

4.2. Research Design for Mixed Methods

4.2.1. Priority

One of the first factors that researchers need to consider when designing a mixed methods study is the preference between the qualitative and quantitative components, or the distribution of proportionality between them. A central issue is whether the mixed methods researcher can give equal importance to the qualitative and quantitative study, or whether one of them should dominate. Morse's "theoretical drive" may answer the above questions. The "theoretical drive" expresses the general direction of a research. She argues that the ultimate goal of all research can be classified as either discovery or verification. By "theoretical drive" we mean the fundamental way in which the researcher thinks about the research topic as a whole, which is either inductive (aimed at discovery) or deductive (aimed at verification)[5]. Although researchers often go back and forth between induction and deduction in the course of their research, the overall direction or general idea of the research is one of the two. It can be argued that each individual study in fact has such a theoretical drive, or primary drive, which determines the overall goal of the study. Because of it, there must be a distinction between primary and secondary methods in mixed methods. In other words, the difference in the status of quantitative and qualitative in mixed methods is inevitable. When the theoretical drive of a study is inductive, the major part of it should be done by qualitative research; when the theoretical drive is deductive, the major part should be done by quantitative research. It is worth noting, however, that Morse asserts that an imperative for the success of mixed methods is that the researcher must first identify the theoretical drive of his or her research, and that, driven by the theoretical drive, research design for mixed methods will either be dominated by qualitative research or by quantitative research.

ISSN: 2688-8653

4.2.2. Sequence of Data Collection

Scholars of mixed methods research have largely agreed on the sequence of qualitative and quantitative data collection, which can be divided into two types: simultaneous and sequential. In the sequential type of research design, either the qualitative approach comes first or the quantitative approach comes first. Notably, the order of sequence is related to the researcher's intention: if quantitative data collection occurs before qualitative data collection, the intention is to test the variables in a large sample first, and then explore a few cases in depth and detail. Conversely, if qualitative data collection occurs before quantitative data collection, it is intended to explore the issues carefully before putting the results into a large sample to draw generalisations. Morse argues that in this type of design, whichever of the quantitative and qualitative methods dominates the overall study usually proceeds first[5]. It should be noted that the researcher can cycle the process of qualitative and quantitative information or data collection. Researchers could, for example, begin with an interview-based qualitative study, followed by a questionnaire-based quantitative phase, followed by another qualitative phase, with more interviews to dig deeper into the issues presented in the previous quantitative study. Therefore, in addition to the two basic types of mixed methods data collection sequences, researchers can use a variety of data collection sequences, such as qualitative-quantitative-qualitative, quantitative-qualitative-quantitative, qualitative-quantitative-qualitative-quantitative, and so on, depending on the actual needs of their research.

4.2.3. 4Stage of Integration

Based on research and analysis of recent literature, Zhang Pei concluded that the integration of qualitative and quantitative data can be carried out in the following stages of the research process: research question stage, for example, both qualitative and quantitative research questions are raised simultaneously; data or material collection stage, for instance, the open-ended questions appear in the research questionnaire; data or material analysis stage, such as quantitative analysis of qualitative content; and data or material interpretation stage, like comparing and validating the results of qualitative data analysis with quantitative data analysis[14]. The most typical and common qualitative-quantitative integration occurs at the data analysis and interpretation stage. The qualitative-quantitative integration is also not limited to a single stage of the research process, but can occur at multiple stages. Identifying the stages of qualitative and quantitative integration is not an easy task, and it may change depending on the purpose of the study or the perception of the researchers of research stages. A different choice of integration stage may produce different research findings, so researchers should carefully consider their research objectives and then select the most suitable, the most effective and the most compatible integration stage with their research.

4.2.4. Principles of Integration

Morse's theoretical drive, mentioned earlier, advocates that the paradigm basis of the primary or core method in a mixed method should be sufficiently respected. This does not mean, however, that the paradigm principles of the main method are followed in the application of the auxiliary method, but that the results obtained through the use of the auxiliary method are integrated into the results obtained by the main method, providing modifications and adding details to the latter. Zhang Pei asserts that the integration of qualitative and quantitative components within a mixed method should not be an unprincipled integration, but rather the respective paradigm, principles of the method should be maintained, in the sense that the proportionality between the method and its paradigm basis should be given respect[11]. The quantitative part of the mixed methods should adhere to the principles of quantitative research, while the qualitative part should adhere to the principles of qualitative research. As an example, although the theoretical drive of the overall study are inductive, that is, qualitative research is dominant, the sampling of the supplementary methods should abide by the principles of

ISSN: 2688-8653

quantitative research, otherwise the validity of the overall study will be compromised. In short, in mixed methods research, a high degree of matching between methods and paradigms and principles should always be preserved for enhancing the effectiveness of the overall research.

4.3. Advantages of Mixed Methods

A synthesis of relevant scholars' studies and introduction of mixed methods, this paper draws the advantages of mixed methods into the following two points: firstly, as compared to traditional purely quantitative research, qualitative research in mixed methods allows researchers to focus on research questions about the life, school and work experiences of the people being studied, helping to spread out the data, dig deeper into the research, and gain insights and interpretations of human experience and cognition; providing an important way for researchers to appreciate the complexity and dynamics of the experience; offering opportunities for studying human experiences, interactions and relationships; creating greater possibilities for enhancing the depth and breadth of the research. Furthermore, in contrast to purely qualitative research, quantitative research in mixed methods enables the results of qualitative research to be placed in different contexts, thereby considering the broader implications of qualitative findings as well as validating and generalising qualitative research findings. It is therefore safe to assume that mixed methods integrate the strengths of quantitative and qualitative research, while avoiding the weaknesses of each, and that a reasonable mixed methods research design can be positive in terms of improving the validity of research findings.

5. Conclusion

Since the 21st century, domestic empirical research in applied linguistics has grown rapidly, with qualitative research showing an upward trend. Although its share is limited, it has a place in domestic applied linguistics research. In recent years, there have been calls from the academic world for the strengthening of qualitative research, arguing that it has own distinct advantages and should occupy a larger share in the research field. Inevitably, there will be difficulties and challenges in the development of qualitative research. In this regard, we should raise awareness, eliminate prejudices, avoid the drawbacks of a uniform academic paradigm, and promote the diversity of academic research methods. Moreover, quantitative researchers should broaden their horizons, increase their knowledge of qualitative methods and gain a rational insight into the strengths and weaknesses of qualitative methods. Furthermore, researchers who are good at qualitative methods should be added to the review team of journals, so that they can propose effective revisions to qualitative articles and cultivate a team of people who are familiar with qualitative methods and can conduct qualitative research, thereby promoting the use of qualitative methods. Finally, quantitative researchers should set aside the influence of the original quantitative research paradigm, avoid using the discourse of quantitative research to evaluate qualitative research, and engage in a fair dialogue with qualitative researchers with a more open listening attitude. As our comprehension of qualitative research gradually deepens, we will naturally become skilled at integrating qualitative and quantitative research, helping mixed methods to move towards rich, deep and colourful, becoming a new trend in applied linguistic research methods in the future.

References

[1] Bryman, A. 2006. Integrating Quantitative and Qualitative Research: How is it done [J]. Qualitative Research (6): 97-113.

[2] Bryman, A. 2004. Social Research Methods (2nd ed.) [M]. Oxford: Oxford University Press.

ISSN: 2688-8653

[3] Hashemi, M. R. Reflections on mixing methods in applied linguistics research [J]. Applied Linguistics, 2012, 33(2): 206-212.

[4] Johnson, R. B., Onwuegbuzie, A. J. & L. A. Turner. 2007. Toward a Definition of Mixed Methods Research [J]. Journal of Mixed Methods Research (1/2): 112-133.

[5] Morse J. M. Principles of mixed methods and multimethod research design [A]. Tashakkori A., Teddlie C. Handbook of Mixed Methods in Social & Behavioral Research [Z]. Thousand Oaks, CA: Sage, 2003: 189-208.

[6] Magnan, S. S. 1997. Book review: Research design: Qualitative and quantitative app roaches. The Modern Language Journal, 81:256-257.

[7] Niglas, K. 2010. The multidimensional model of research methodology: An integrated set of continua[A]. In A. Tashakkori & C. Teddlie eds. Mixed Methods in Social & Behavioral Research (2nd edition.) [C]. Thousand Oaks: Sage.

[8] Pei, Z., NianYi, L., & Huijuan, L. (2021). Mixed methods in applied linguistic research: concept establishment and application areas. Foreign Languages and Literature, 2, 62-72.

[9] Pei, Z. (2017). Mixed methods in applied linguistics research. Beijing: Foreign Language Teaching and Research Press.

[10] Pei, Z. (2014). Mixed methods in applied linguistic research. Foreign Languages in China, 2, 80-87.

[11] Pei, Z. (2013). Qualitative research in applied linguistics in the new century. Journal of Tianjin Normal University (Social Science), 5, 57-60.

[12] Pei, Z. (2013). Theoretical drive and mixed methods design. Foreign Languages in China, 2, 90-93.

[13] Pei, Z., Xinxin, Z. & Ziyu, H. (2013). Types of qualitative research methods in applied linguistics: 2000-2010. Foreign Languages and Their Teaching, 1, 66-69+95.

[14] Pei, Z. (2010). Paradigmatic foundations and design elements of mixed methods research. Foreign Languages in China, 4, 98-103.

[15] Qiufang, W., & Lin, L. (2016). Trends of research methods used in applied linguistics in and outside China: 2001-2015. Modern Foreign Languages, 6, 842-852+874.

[16] Tashakkori A, Teddlie C. Handbook of Mixed Methods Research (2nd ed.) \C\. Thousand Oaks: Sage, 2010(forthcoming).

[17] Tashakkori, A. & J. W. Creswell. 2007. Editorial: The New Era of Mixed Methods [J]. Journal of Mixed Methods Research (1): 3-7.

[18] Yihong, G., Lichun, L., & Wangjun, L. (1999). Trends in Applied Linguistics Research Methods in China and the West. Foreign Language Teaching and Research, 2.