

A Critique of Applying Quantitative and Qualitative Methods to English for Academic Purpose Writing Research and Pedagogy

1. Introduction

Quantitative and qualitative research methods can be regarded as two prevailing approaches in the field of educational research. As Husén and Postlethwaite (1985) once stated in *The International Encyclopedia of Education*, the paradigm war in the research of education has long existed. One is the positivist research paradigm, which holds that there is a fixed concrete reality that could be quantified objectively. The purpose of research is to establish and test hypothesis through analyzing different variables. The other is the interpretivists' view, which argues that reality is something constructed. The focus of research is to dig out "why" people are engaged in particular behaviors or actions. Rubin and Rubin (2012) state that:

"Positivists assume that reality is fixed, directly measurable, and knowable and that there is just one truth, one external reality. In contrast, naturalistic researchers assume that reality constantly changes and can be known only indirectly, through the interpretations of people; they accept the possibility that there are multiple versions of reality. People who are uncomfortable with such uncertainty are more likely to choose the quantitative paradigm with its assumptions of a single, measurable (countable) and knowable truth; people who can tolerate uncertainty are more likely to favor a qualitative paradigm with its acceptance of multiple perspectives of truth and constantly changing reality" (p. 14).

For a quite long time, the default research model in different disciplines of education is the quantitative model. However, a shift to qualitative model can be observed after the 1960s (Hammersley and Traianou, 2012). Recently, the combination of the two approaches, the mixed methods research has become the new trend. As a subarea of educational research, English for Academic Purpose Writing Research and Pedagogy also has witnessed similar changing trends in terms of its research methodology. In this study, a critical discussion on the merits and limitations of utilizing quantitative and qualitative methods in EAP writing research and pedagogy will be presented respectively. Then, the benefits of the combination of those two approaches in current EAP writing research will be discussed before coming to a conclusion.

2. English for Academic Purpose Writing Research and Pedagogy

Writing is the fundamental basis upon which one's work, learning, and intellect can be assessed in university. Hyland (2011) once claims that to learn how to write in an effective way in an academic context is of great importance. Because it is not only a way to assess students' content knowledge in academic disciplines, but also an approach that can help students to become members of a discourse community as well as to gain new knowledge. However, despite its significance, it is by no means an easy task. Especially for those who need to write in a second language. It is fair to say

that they are struggling to meet the criteria of a qualified academic writing. The significant and difficult nature of this specific field attracts a lot attention from linguistic and pedagogical researchers.

Broadly speaking, as an important subarea of research in foreign language teaching and research, research on EPA writing and pedagogy involves studies on academic related writing practices and academic texts. It starts around 1960s and has experienced a shift from the product-oriented focus to process-oriented focus (Xu, 2015). In the product-oriented researches, the studying focus is on the writing product. Written texts are seen as something that can be analyzed on their own. Researchers study the stylistic feature, cohesion devices, patterns of thematic progression, interactive meaning and register in the EPA discourses without considering the writer, reader or environment. In the process-oriented studies, the main research focus is around the writers' strategies used in EAP writing practice as well as their cognitive processes. These studies either seek to describe a particular phenomenon, for example, the interpretation of feedback, or are causal-comparative in that they examine how some areas of the writing process differ for writers of L1 and L2. Key factors in the EAP writing process and key features of writers' identity construction are also included in this process-oriented strand.

In a nutshell, research on English for academic writing starts from analyzing the students' academic language needs and ends at the actual practice of academic texts writing. It also plays a vital role in supporting classroom teaching and language assessment. Comparing with other types of language teaching & learning research, research on EPA writing is more teaching driven--its goal is to better serve the need of education (Jiang, 2019).

3. Quantitative Research Methods in English for Academic Purpose Writing Research and Pedagogy

Quantitative research is usually defined along the notion that data are collected and presented in a numerical form that is suitable for mathematical analyses (Aliaga and Gunderson, 2002). The philosophical foundation of quantitative research is positivism, which holds that knowledge and meaning exist beyond the human mind; reality is something that can be observed and discovered; researchers and research objects are independent entities and only replicable research findings are valid (Gong, 2013). According to Hartas (2010), this research approach emphasizes on the manipulation and control of variables, and aims at establishing cause-and-effect relationships through testing hypothesis. In other words, quantitative research is usually driven by hypotheses and applies deductive logic while seeking regularities in human lives by "separating the social world into empirical components called variables" (Payne and Payne, 2004, p. 180). It targets at discovering the causal relationship among different variables while achieving research objectivity.

3.1 Advantages

Advantages of applying quantitative approaches to EAP writing research and pedagogy are multiple. To start with, quantitative approaches are usually considered as being able to bring about more objective and valid findings. In practice, quantitative research approaches in EAP writing research and pedagogy follow the following steps:

- (1) choosing the right theoretical framework

- (2) defining and selecting different research variables and explaining the possible relationships among the variables.
- (3) designing research plan and choosing research tools
- (4) collecting data and testing hypothesis through data analysis
- (5) generalizing findings

This systemic and scientific procedure avoids individual subjectivity and thus, the findings tend to be regarded as more objective and valid. For example, in their study on the usage of stance makers in academic papers, Chen and Qin (2019) draw empirical evidence from three self-established corpora and adopt a quantitative analysis to distinguish the usage of stance markers in English academic journal articles written by Chinese scholars and native English scholars. Because of the well-designed research plan and valid data processing and analysis, the findings are quite truth-worthy and valid. In research *Analysis of E-mail Genre: A New Perspective to EAP Writing*, Amirian and Tahririan (2003) contrast the electronic messages with the parallel corpus of conventional letters to find where do the key differentiating factors lie. The statistical tests revealing the differences reinforced the validity of the findings.

Another merit of the quantitative approach is that the findings are more likely to be generalized. For it usually involves the random selection of a large sample, the findings can go beyond the participant group to the overall demographic being studied at. Take the report given by Biber, Conrad & Reppen etc. (2004) as an example, in their analysis of the *TOEFL 2000 Spoken and Written Academic Language Corpus*, they point out that by using the large sample corpus together with some management & diagnostic tools, “many insights can be gained as to the language demands that are faced by students in U.S. university settings”.

The last advantage is that data collection and analysis occur rapidly when adopting the quantitative approach. Because the data in quantitative research usually engage in surveys or real-time gathering, few delays would occur in the collection of data. Plus, some statistical software such as *SPSS*, *Origin*, *Lancaster Stats Tool online* make data analysis less time consuming. Thus, comparing with qualitative approach, it is more effort-and-time saving.

3.2 Disadvantages

Despite the above the strengths, the quantitative method has shortcomings too. Although quantitative research methods fit in well with the laboratory under controlled conditions, it is difficult to measure human behavior in social science settings. Not to mention the difficulty of providing deeper underlying meanings and explanations through this approach. For example, AlHassan and Wood (2015) measure the effectiveness of focused instruction of formulaic sequences in enhancing L2 learners’ academic writing skills. Although through quantitative data analysis, a statistically significant increase in the frequency of the target formulaic sequence is traced in students’ academic writing after the focused training period. Still, the study failed to provide an insightful and detailed explanations for the success of the focused instruction. Blaikie (2007) points out that quantitative approach often finds it hard to explain how the social reality is shaped and maintained, or how people interpret their actions and others. That accounts for why in most quantitative EAP writing studies, researchers tend to only investigate the features of writing texts, variables such as register, lexical bundles and the use of tense and leave out reasons behind the feature patterns. It is something difficult to provide or explore with a quantitative approach.

A second limitation of quantitative research method is that it tends to take “a snapshot of a phenomenon” (Schofield, 2007). Quantitative information offers an

overview of the target groups while may not be able to guarantee the possibility of being able to identify the core subjects and needs. Plus, there is always a risk that false correlations may be drawn and some specific aspects could be overlooked. Sometimes when a large sample quantitative research is conducted – the focus is easily put on the overall information of the sample and some other key important features may be neglected by the researcher. In the study conducted by Lou (2013), the features of shell nouns used in Chinese graduates' theses are compared with those used in native speakers' EAP writing. The different usage is taken as the difference between Chinese EFL graduates' writing and native speakers'. However, it is worth noting that the target samples are chosen from Chinese linguistic majors, while the reference samples are from native speakers studying humanities. This specific difference in discipline may also play a role in explaining the different usage of shell nouns: the difference cannot be solely attributed to the L2 user or native speakers' difference.

Lastly, the tendency is high that the quantitative research paradigm overlooks the respondents' experiences and perspectives, because there lacks a direct connection between researchers and the participants when collecting data. For example, the study of Wang (2015) involves 40 students as participants. Wang attempts to study the impacts of lexical chunks teaching on participants' IELTS academic writing ability. Without any gathering of feedbacks on the new lexical chunks teaching form from participants, Wang only relies on the statistical analyses of the scores and the number of the lexical chunks used by the participants to reach his findings. Actually, in teaching academic writing to L2 learners, subjective understandings need to be incorporated. It is argued that "dialogue with learners can provide valuable insights otherwise unavailable to teachers" (Basturkmen and Lewis, 2002). Her study fails to elicit any of the participants' perceptions. As a result, it is justifiable to say that her research findings are limited in terms of pedagogical suggestions.

In spite of the above shortcomings, a large number of studies in the field of EAP writing research and pedagogy adopt the quantitative research method and approach. Especially with the development of corpus linguistics, more and more EAP writing studies now use corpora to elicit large scale quantitative findings.

4. Qualitative Research Methods in English for Academic Purpose Writing Research and Pedagogy

As the name indicates, qualitative research is the analysis and exploration of the quality of a certain object or social phenomenon. Non-random sampling, subjectivity and small sample size distinguishes qualitative research from quantitative research. In the *Handbook of Qualitative Research*, Denzin and Lincoln (2005, p. 3) describe qualitative research as involving "an interpretive naturalistic approach to the world. This means that qualitative researchers study things in their natural settings, attempting to make sense of or interpret phenomena in terms of the meanings people bring to them". It is a process to explore questions with the aim of generating an in-depth and interpreted understanding of the social world. It focuses more on "why" rather than "what". Through collecting non-standardized data and analyzing texts rather than statistics, it generalizes descriptive findings about the objects or social phenomenon under study. The most patent benefit is its capability to provide complex textual descriptions of how people actually experience a given research issue and emphasizes on how people make sense of something. So, this approach is usually associated with various research techniques: in-depth interview, ethnographic research, focus group, case study etc. Being multiple perspectives in nature, qualitative research

approach also has its positive and negative perspectives.

4.1 Advantages

There is a considerable amount of benefits of using qualitative research approaches in conducting social and behavioral studies. First, a prominent advantage of qualitative research is the ability to provide rich, descriptive data of the participants' feelings, opinions, and experiences. As a result, the deep meanings behind actions can be interpreted by the researchers. In addition, using the collected data and inductive method, theories can be proposed. Twagilimana (2017) examines to what extent feedback practices are meaningful to the expected learning process through qualitative case study methodology. Data are collected through student scripts, observation of classes and interviews of all lecturers involved. Findings reveal that the evaluated students are less likely to make rightful use of assessment to improve their writing. Because from the feedback practices, it is observed that they are confused about the lecturers' expectations as well as the key features of an academically acceptable text. So, the study suggests to open more room for a "dialogue of participation" with students to make sure that they can get familiarized with the strategies which they are expected to acquire. Qualitative research can contribute to the understanding of the complex features of EAP writing ability.

Second, comparing with quantitative methods, qualitative methods are more flexible. Greater adaptation and spontaneity of the interaction between the researchers and the study subjects are allowed. For example, open-ended questions are used in qualitative methods and participants are free to respond in their own way, which means they have their word to determine what is consistent for them. Participants have the chance to respond in greater detail than is the case with quantitative methods. In turn, researchers have the opportunity to respond quickly to what participants express. As a result, the complex issues can be easily figured out. In their research of student's perceptions of EAP writing instruction and writing needs across the disciplines, Leki and Carson (1994) investigate former ESL students' perceptions of the relationship between the writing instruction and the actual writing tasks. In their answers to open-ended survey questions, ESL students also describe their perceptions of their ongoing writing needs beyond the ESL writing curriculum, which is something unexpected by the researchers before the conduction of the research. Also, Asaoka and Usui (2003) conduct a longitudinal qualitative study to investigate the problems and solutions identified and figured out by Japanese students when completing the writing homework. Journals, oral interviews and questionnaire are used for the evaluation of learner's writing problems, all of which provide researchers with possibilities to analyze students' strengths and weaknesses in detail. As a result, optimal and specific techniques to guide along students' writing process are given.

Finally, interpretivism nature of qualitative research makes qualitative study an ideographic research: the research of individual cases. So, the source of knowledge in this approach is the meaning of different events. In EAP writing pedagogy research, the qualitative research techniques make it possible to analyze the students' behavior, teacher behavior, and all other influences on behavior in classrooms.

4.2 Disadvantages

Despite the patent advantages of qualitative approach in EAP writing research, the limitations are also obvious. Firstly, the findings from qualitative approach are usually given less credibility and attention. For the findings are less generalizable. Pure qualitative research may also leave out certain the social and cultural constructions of the variables being studied, which makes policy-makers in educational institutions rely less on qualitative teaching research findings. For

example, in terms of devising a new EAP writing syllabus, the policy makers may demand quantitative research instead of qualitative research.

Second, the collection of qualitative data is generally more time-consuming than quantitatively data collection. Plus, it is more complex and expensive to conduct qualitative data interpretation. One consequence is that it is highly dependent on the skills of the researcher. For example, we may find that a lot of high-quality qualitative EAP writing case studies are either conducted by experienced writing teachers or prestigious pedagogical researchers. As it has already been pointed out that case study research has a high degree of flexibility that is not offered by qualitative methods. It is more demanding for a beginner researcher and the cost of conducting such studied is high. For instance, a lot of researches on the writing process involve coding of data and categories for data coding are not that straightforward. The coding of the data would cost a lot of human effort and money. And due to different coding schemes, those researches cannot report reliability.

Last, as it has been discussed earlier, the smaller sample in qualitative research will result in the difficulty of generalizing research findings. A lot of qualitative research in EAP writing are case studies, the results of which do not wish to claim wider generalization to other contexts. So, the generalizability of case study findings is frequently criticized in the scientific community. But that doesn't mean that qualitative findings cannot be generalized at all, it's just to what extent generalization is possible.

Although the above drawbacks exist with the qualitative research methods, it is still a popular method in EAP writing research. Also, according to Darlington and Scott (2003, p.18), the issue of generalizability seems not to be a big deal- "If one considers the unit of attention as the phenomenon under investigation, rather than the number of individuals, then the sample is often much larger than first appears". In addition, Labaree (2004) argues that no educational research should be considered as generalizable. Because there are way too many contextual variables that can influence the findings.

5.Trending Research Method in English for Academic Purpose Writing Research and Pedagogy

Having paid attention to the merits and limitations of the quantitative and quantitative research approaches, it is still hard to reach a conclusion on which approach is the best in EAP writing research and pedagogy. In fact, quantitative research and qualitative research approaches are not opposed to each other, instead, they are interrelated and complementary. As long as one's advantages are used to overcome the other's limitations, more comprehensive research results will be achieved.

It is delightful to notice that there is a growing tendency for using a mix-research method in EAP writing research. For example, in the investigation of how the linguistic and cognitive features of L2 learners' writing change over the course of an EAP writing training program, Mazgutova (2015) adopts a mixed methods approach to gain a more nuanced comprehension of the change of the students' writing skills. Both quantitative and qualitative data are collected. The qualitative findings couple with the quantitative results, showing that students have experienced huge improvement on the EAP program. The combination of two approaches makes the study both valid and comprehensive. On the use of discourse markers in personal and argumentative papers, Alghamdi (2014) conducts a quantitative and qualitative analysis on the use of discourse markers in personal narrative and argumentative

papers. Storch and Tapper (2009) study the impact of an EAP course on postgraduate writing based on quantitative and qualitative data. Not only are the exact feature of improvement in students writing are found, reasons for the enhancement are also dug out. It is justifiable why more and more studies are adopting both approaches in their EAP writing researches—they complement each other perfectly. As

6. Conclusion

Quantitative and qualitative research originates from different ontological, epistemological, and methodological systems. The study critically discusses the strengths and weaknesses of two important research paradigms in foreign language education and research on the ground of EAP writing research and pedagogy. It is found that adopting quantitative approach in EAP writing research can guarantee the findings to be more objective, generalizable and valid. Because they are usually draw from a large size of sample and are based on empirical observation. Another merit is the comparatively faster data collection and processing with the help of some statistical processing tools. However, the disadvantages of this approach involve difficulties in providing deeper and in-depth explorations of meanings behind variables. Sometimes there are risks that false correlations would be drawn due to some specific aspects being overlooked by the researcher. As to the advantages of using qualitative research method, findings include: a better presentation of rich and descriptive data; more flexible research process; deeper insights into certain issues in EAP writing. Disadvantages are that smaller sample size would make the results less reliable or less generalizable and policy makers may not refer to qualitative research findings for policy making. In short, the quantitative approach pursues the scientific universality of research conclusions, and the qualitative emphasizes the local specificity and subjective constructivity of research findings. Finally, the article continues with the realizations that the current dominant research in EAP writing research is the combination of both approaches. The use of these two complementary research methods in one study can help us study the same problem from different aspects and angles, so that more comprehensive and accurate research conclusions can be drawn. In short, the combination of the two methods helps us to better conduct researches in EAP writing. Finally, it can be argued that the study has met its purpose as it is concerned with the critical demonstration of benefits and shortfalls of using each research method and approach. Still room for a deeper and more in-depth analysis is left with this study.

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