On Research Methodology in Educational Contexts: Foundational Reviews and Methodological Orientations for Junior Researchers

منهجية البحث العلمي في السياق الأكاديمي: أسس وارشـادات للباحثين المبتدئين

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Abstract:

In the broadest sense of the word, research is a systematic process undertaken to gain plausible solutions to problems or to discover and interpret new facts for the advancement of knowledge. For highly informed and principled decisions to be made, researchers must be cognizant of the sound philosophical underpinnings from which the corresponding methodologies and methods of their study operate. For the sake of offering methodological orientations for beginner researchers, this article provides a theoretical framework that voices and dissects the tightly interwoven and mutually informative rudiments that frame what is methodologically known as educational research. This encompasses the different research paradigms, approaches, designs, data collection methods, data analysis procedures in tandem with the appropriate sampling techniques that are most commonly adopted in the academic arena.

Keywords: Beginner researchers; educational research; interdisciplinary studies; methodologies; methods; philosophical underpinning

ملخص:

يعرف البحث العلمي بأنه وسيلة للاستعلام والاستقصاء المنظم والدقيق نظرا لاحتوائه على عدد من الإجراءات المنظمة التي ينتهجها الباحث بغية الوصول الى حلول واقعية تعالج المعضلات العلمية والمجتمعية. يستخدم البحث العلمي بغية انشاء حقائق جديدة أو للتأكيد على نتائج لأعمال بحثية سابقة أو لدعم مبرهنة أو تطوير نظريات جديدة. ومن الجدير بالذكر أنه من أجل دراسة موضوع معين بجميع جوانبه ومن ثم تحقيق الهدف المنشود من تلك الدراسة، وجب على الباحثين اتباع جملة من الخطوات المنهجية والتي يتم من خلالها انتقاء الأساليب والمناهج المناسبة لكشف كل ما يحيط بإشكالياتهم العلمية من غموض. يهدف هذا المقال الى تقديم خلفية نظرية والتي يتم من خلالها تسليط الضوء على أساسيات ومكونات البحث العلمي الأكاديمي والتي تشمل نماذج البحث العلمي، ومناهجه، واستراتيجياته بالإضافة الى تقنيات جمع وتحليل البيانات وكذلك الاستراتيجيات المتبعة لاختيار العينة من مجتمع البحث.

الكلمات المفتاحية: الإجراءات المنظمة، الباحث، البحث العلمي، الخطوات المنهجية، المناهج المناسبة

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1. Introduction

Research is a process that demands vigilance and thoughtfulness throughout the entire recursive scientific cycle. To the fullest extent, it must be principled, controlled, rigorous, verifiable, valid, empirical, critical, and ethical. It is worth-emphasising that conducting either a circular, inductive (i.e., qualitative) or a linear, deductive (i.e., quantitative) research study stipulates observing meticulously a plethora of steps that lead to the right research findings. By the same token, proper choices in the research methods make, in all likelihood, the research findings scientifically credible, reliable, and/ or trustworthy. Nevertheless, poor methodological choices are most likely to make the research results contestable and doubtful as well. In light of this, the methodological aspect of any scientific endeavour must faultlessly conform to the scientific standards and conventions that govern what is methodologically known as research. The aim of this literature review paper article is to provide a theoretical background that underpins the foundations upon which a study's methodological part rests. More particularly, this paper will caste light on the preeminent research paradigms, approaches, designs, data-collection methods, data analysis procedures in tandem with the relevant sampling techniques that are oftentimes adopted in the realm of educational research.

2. Research paradigms, Approaches, and Designs in educational research

2.1 Research Paradigms

The decision of selecting the right philosophical framework to investigate a certain phenomenon is remarkably driven by the prerequisites ascribed to the study per se, instead of the obdurate insistence of adhering to one specific outlook to the exclusion of others (Abdul Rahman & Alharthi, 2016). As Lather (1986) explains it, "a research paradigm inherently reflects the researcher's beliefs about the world that s/he lives in [or would like] to live in. It constitutes the abstract beliefs and principles that shape how a researcher sees the world and how s/he interprets and acts within that world" (as cited in Kivunja & Kuyini, 2017, p. 27). By the same token, Abdul Rahman and Alharthi (2016) uphold, "a paradigm is a basic belief system and theoretical framework with assumptions about 1) ontology, 2) epistemology, 3) methodology and 4) methods" (p. 51). Considerably, having a firm understanding of these concepts, which comprise the basic requirements that each research paradigm holds, is worthwhile.

Initially, ontology is a branch of philosophy that investigates the researcher's underlying beliefs and the nature of being and existence. More specifically, it is inherently concerned with the presuppositions that the researcher makes in order to properly conceptualise the nature and the form of reality and what is believed to be known about reality. Besides, epistemology has its etiology in Greek where the concept of "episteme" means knowledge. Interestingly, it pays more heed to the human awareness in conjunction with the comprehension needed to extend the researchers' degree of understandability towards their specialism (Abdul Rahman & Alharthi, 2016; Kivunja & Kuyini, 2017). The third component of a research paradigm is "methodology". Keeves (1997) reveals that methodology summarises the inquiry process and guides the researcher in deciding the kind of data that is significantly needed for his/her study and which data-collection methods will be the most appropriate in meeting the aim that drives the overall research (as cited in Kivunja &

Kuyini, 2017). Finally, methods represent the last component that entails the means by which raw data are collected and, thereafter, analysed. Chiefly, the methods applied in research are principally dictated by the research strategy together with the researcher's theoretical mindset (Abdul Rahman & Alharthi, 2016).

With respect to the types of paradigms, Dörnyei (2007) upholds that the most widely adopted paradigms in scholarly research are the Post-positivism, Constructivism, Transformative, and Pragmatism paradigms. Initially, the introduction of the Post-positivism paradigm, also known as Logical Empiricism or Scientific Method, to research was genuinely energised by the seminal works of two physicists Werner Heisenberg and Niels Bohr, and it was characteristically based on a philosophy called *"Critical Realism"*. Conceptually, the Post-positivism paradigm is labeled as such as it critically symbolises and delineates the way of thinking after Positivism and questions the classical notion of the absolute truth of knowledge. Equally significant, the Post-positivism paradigm can be distinguished from that of Positivism based on whether the focus of the study, which can be either on theory verification or theory falsification. Undoubtedly, the knowledge attainted from a Post-positivism lens is reductionist in nature and is inextricably linked to meticulous observations and measurements of the objective fact that exists "out there" around the world. Furthermore, adopting this philosophical worldview, logical empiricists venture to verify the theories that control the universe so that they can recognisably make sense of it (Creswell, 2014).

Besides, Constructivism, also known as Social Constructivism, is another philosophical underpinning that is straightforwardly associated with the qualitative research approach. The epiphany of Social Constructivism can be retrospectively dated back to the contributions of Berger and Luekmann (1967), and Licoln and Guba (1985) (as cited in Creswell, 2014). For the purpose of discerning how a group of people concretely experience the real world, Social Constructivists resort as much as possible to the participants' subjective viewpoints and to their respective milieus wherein these participants live and work. Crucially, Social Constructivists yearn for manifesting how their introspective backgrounds mold their understanding and how their interpretation proceeds sequentially from their personal, cultural, as well as historical experiences. More importantly, Social Constructivists strive to inductively comprehend and interpret meanings individuals have about the world with the aim of generating a theory/ pattern to that meaning overall (Saou & Hoadjli, 2021).

Another philosophical foundation that is frequently adopted in scholarly research is the Transformative paradigm or Emancipatory research. This sort of paradigms has been primordially developed in view of a couple of groundbreaking philosophies, such as *The Marxist Theory* and *Racial and Ethnic Minorities*. Chiefly, the Transformative paradigm emphasises the idea that social reality is historically bound and that it is permanently evolving, based on social, political, cultural, and power-related factors. Recognisably, Transformative researchers are known for their ability to transform societies by destroying myths, illusions, hardships, and falsehoods. Markedly, the Transformative paradigm lends itself more particularly to qualitative research investigations wherein participants are involved in the inquiry process from problem definition to the findings' dissemination (Chilisa & Kawulish, 2012).

The last philosophical foundation that is commonly observed when embarking on educational research is the Pragmatic worldview. As a research paradigm, Pragmatism grew out of actions, situations, and consequences, rather than out of mere antecedent conditions. As a foundational worldview for mixed-methods research, Pragmatism directs particular attention to the genesis of the phenomenon/ issue itself, prior to applying a variety of pluralistic approaches to gather and analyse loads of raw data pertaining to it. Interestingly, proponents of the mixed-methods research include a postmodern turn that goes in line with social justice in conjunction with political aims (Creswell, 2014). At this point, it must be made clear that pragmatists do not consider the world as an absolute or unconditional unity. For that reason, they deem research as a systematic process that almost always transpires in social, historical, political, and other related contexts.

2.2 The Research approaches

After having decided on the most relevant paradigm to research, the next phase concerns the selection of the corresponding approach that aligns conveniently with the paradigm adopted. Methodically, an approach to a systematic inquiry necessitates designed plans and procedures that span the steps from quite general assumptions to detailed methods of data collection, analysis, and interpretation. According to Creswell (2014), there are three different approaches to research, namely the quantitative, qualitative, and mixed-methods approaches.

As indicated by its label, the quantitative research approach is a process of inquiry that aims to quantify an amount and express it in terms of numerical values (Rajasekar, Philominathan & Chinnathambi 2006; John & Pennink, 2010). Further, while discerning the fundamental properties that characterise the quantitative research, quantitatively-minded scholars, such as Johnson and Onwuegbuzie (2004), contend that "the major characteristics of the quantitative research are focus on deduction, confirmation, theory/hypothesis testing, explanation, prediction, standardized data collection and statistical analysis" (p. 18). Considerably, the quantitative research approach is notably liable to the production of systematic, rigorous, firmly controlled, credible, and replicable results that can universally be generalised to other contexts under the same conditions (Creswell, 2014). Notwithstanding its significant advantages, the quantitative approach has been devastatingly criticised in a number of ways. Brannen (2005) maintain that "the quantitative approach is overly simplistic, decontextualized, reductionist in terms of its generalisation, [...]" (as cited in Dörnyei, 2007, p. 35). Owing to these serious shortcomings, another research approach called the "qualitative approach" has been developed.

Contrastively, the qualitative approach is another framework to research that is usually undertaken in the field of Social Sciences and Humanities. Its growth during the mid-half of the nineteenth century was associated with the ever-growing recognition that every aspect ascribed to language acquisition and use is structurally shaped by social, cultural, and situational factors (Dörnyei, 2007). In this regard, the qualitative research approach aims at exploring, describing, and interpreting subjectively peoples' attitudes, opinions, behaviours, and experiences within a small-sized sample with some sort of flexibility which culminates in responsive changes of the research findings (Kothari, 2004; Dawson 2007; Hesse-Biber, 2010). According to Johnson and Onwuegbuzie (2004), the salient idiosyncrasies allocated to

the qualitative approach are "induction, discovery, exploration, theory/ hypothesis generation, the researcher as the primary instrument of data-collection and qualitative analysis" (p. 18). For Jonker and Pennink (2010), the reason behind undertaking qualitative research investigations centers particularly around outlining the marked variation and diversity of a certain phenomenon, behaviour, or an attitude with a flexible approach in order to bring out as much disparity and discrepancy as possible.

Regardless of its practicality in the field of Social Sciences and Humanities, adherents of the quantitative researchers provide a myriad of points that reflect the inherent drawbacks of the qualitative research approach. The most significant criticism they highlighted is the idiosyncratic nature of smaller samples of participants that does not contribute to the generalisability of the research results. Additionally, the qualitative approach is deemed anti-methodological, unprincipled, fuzzy, and time-consuming. Therefore, gaining a thorough understanding of the strengths, as well as the weaknesses of both quantitative and qualitative research frameworks puts investigators in a position to blend the two approaches together and to use instead what is labelled as the "Fundamental Principle of Mixed Research" (Johnson & Onwuegbuzie, 2004).

Around the late 1980's and 1990's, the mixed-methods form of research was perceived as a novel methodology/ trend that was originated with the introduction of the concept of Triangulation. More significantly, the mixed-methods approach to research is regarded as a form of inquiry that stipulates mixing both quantitative and qualitative data and using different designs which may include a variety of philosophical expectancies. Arguably, this approach is deemed as an ideal form of research, especially if the researcher appears to have a large access to both forms of data (i.e., qualitative and quantitative). The core principle of this approach is the integration of quantitative and qualitative data that may offer an all-inclusive understanding of the problem in question than either approach alone (Creswell, 2014).

One key criterion that characterises the mixed-methods research approach is related to the validity of the research results. Other than that, this form of research is also known for its multidimensional analysis of quite intricate issues. In this regard, researchers are most likely to grasp a number of sophisticated phenomena via converging numeric trends from quantitative data and detailed interpretations from qualitative data. In this regard, numbers can be used to solidify the precision to words and words can be used to add meaningful insights to numbers. Conceivably, this research approach is increasingly expected to reach large groups of people since the results are typically acceptable for a wider range of audience than those of a monomethod study would be (Dörnyei, 2007). When evaluating the attributes of the mixed-methods research framework, Strauss and Corbin (1998) highlight the notable advantages that both quantitative and qualitative approaches provide for each other. They reveal:

> Qualitative and quantitative forms of research both have roles to play in theorising. The issue is not whether to use one form or another but rather how these might work together to foster the development of theory […] The qualitative should direct the quantitative and the quantitative feedback into the qualitative in a circular, but at the same time evolving,

process with each method contributing to the theory in ways that only each can. (As cited in Dörnyei, 2007, p. 43)

Even though adopting both quantitative and qualitative approaches has come to be seen by many research methodologists as an enriching trend, Creswell (2014) warn researchers from the challenges the mixed-methods approach may pose for them. These challenges encompass the need for extensive data collection, the time-intensive nature of analysing both quantitative and qualitative data, in addition to the researcher's familiarisation with both quantitative and qualitative research frameworks.

2.3 The Research strategies

According to Thyer (1993), a research strategy/ design is an outline or a detailed plan of how a scientific investigation is accomplished through operationalising variables, assigning a sample to work on, selecting the data-gathering tools to be used as a basis for hypothesis testing, and identifying the way (s) raw data are going to be accordingly analysed (as cited in Kumar, 2011). On the same train of thoughts, Kumar (2011) considers a research strategy as a procedural plan or scheme adopted by researchers in an attempt to answer their questions validly, objectively, accurately, and economically. While quantitative designs are more specific, well-structured, and can explicitly be recognised and even tested for their validity and reliability, qualitative designs either do not have these distinguishable attributes or have them to a lesser degree (Kumar, 2011). The most commonly recommended quantitative designs are the experimental and the non-experimental designs. On one hand, experimental designs include the true-experimental design and the quasi-experimental design. On the other hand, non-experimental designs entail the correlational design and the causal-comparative design (Creswell, 2014).

Unquestioningly, the primary method of investigations in quantitative research is the experiment. The latter is considered by Kabir (2016) as "an investigation in which a hypothesis is scientifically tested" (p. 271). Categorically, the experimental research can be classified according to whether or not a population is randomly chosen to different treatment groups (Kumar, 2011). The core characteristics of the experimental research design are "control over variables, careful measurement, and establishing cause and effect relationships" (Kabir, 2016, p. 271). According to Marczyk, DeMatteo, and Festinger (2005), the true-experimental design is one in which items of a study are randomly chosen to an experimental group and a control group. Otherwise stated, the true-experimental design comprises at least two groups, namely the experimental group, which receives the treatment, and the control group, whose function is to provide a baseline for comparisons (Dörnyei, 2007). Notwithstanding the fact that the axiom of random assignment is the best way to guarantee both validity and reliability of the research results, it is usually inoperable in the domain of Social Sciences and Humanities. Hence, when the principle of randomisation is unworkable, then the quasi-experimental design may be adopted (Dörnyei, 2007).

Dörnyei (2007) upholds that the quasi-experimental design, sometimes also referred to as the semi-experimental design or the as-if-experimental design, is similar to that of true-experimental in every respect except that quasi-experiments do not assign the study population randomly. However, it is important to underline the verity that this type of designs is usually undertaken in the spirit of the classic laboratory experiment and it emphasises that

the investigator cannot dictate circumstances and that s/he shall observe events as they naturally occur in the real-world situations (Denscombe, 2007).

Another research strategy that is intimately associated with quantitative research is the non-experimental design. The non-experimental design, sometimes referred to as the ex-post-facto design (after the fact), is markedly retrospective in nature. Opting for this type of designs, an experimenter can either describe a group or simply examine the co-existing intersections between pre-existing groups. The members of the groups are, according to Salkind (2010), "not randomly assigned and an independent variable is not manipulated by the experimenter, thus no conclusions about causal relationships between variables in the study can be drawn" (1§). Importantly, the non-experimental research can be further categorised into two different strategies, which are respectively the correlational research strategy and the causal-comparative research strategy (Creswell, 2014).

The correlational research, also called associational research, is a quantitative mode of inquiry that is typically used in survey-based research to test the interplay between two or more variables, and to make predictions (Mackey & Gass, 2005). Moreover, this research strategy is generally conducted to answer three basic questions about two variables. These questions are: Is there an interdependence between the dependent and the independent variable? If yes, then what is the direction of the interdependence? And what is the degree of the magnitude? (Cohen, Manion & Morrison, 2000). Whereas, the causal-comparative research is mainly used to determine and quantify the relationship between two or more variables by observing two groups that are, either by choice or circumstances, exposed to different treatments. More precisely, comparative research looks at two or more similar groups or conditions in order to provide a comprehensive comparison between them. For Bukhari (2011), "comparative research plays a central role in concept formation by bringing into focus suggestive similarities and contrasts among cases/ subjects. It shapes our power of description" (n.p.). Crucially, comparative research studies provide a significant contribution towards inductive discoveries of new hypotheses, as well as to theory generation.

Under the umbrella of qualitative research, the most commonly used designs are the case study, ethnography, longitudinal, phenomenology, and action research. Although case studies are the most widely adopted strategies in qualitative research, they are also prevalent in quantitative research investigations. A case study could be an individual, group, community or a sub-group from the entire population (Kumar, 2011). Oftentimes, case studies are inextricably linked to the longitudinal research approach in which the phenomena being studied are planned at a periodic interval for an extended period of time (Mackey & Gass, 2005). Within a case study, the case selected becomes the rudiment of a holistic, intensive, and in-depth exploration of the specific aspects that a researcher endeavours to find out. Functionally, this design is used either to explore an area where only a few is known or to discover and understand rather than to confirm and quantify. Using this strategy, researchers are not allowed to select a random sample but a case that might supply them with deep information to understand that case in its totality or entirety (Kumar, 2011). One main advantage of the case study is that it has the potential for rich contextualisation that may spotlight the complexities of particular cases in their respective contexts (Mackey & Gass, 2005).

Besides, ethnography is also deemed as a popular qualitative design that has its roots in both Anthropology and Sociology. Notionally, the concept of "ethnography" refers to a sound description of individuals or culture (Denscombe, 2007). For Mackey and Gass (2005), the ethnographic research emphasises groups over individuals, focuses on situating the study within a wider sociocultural context, and seeks to provide an emic and a detailed perspective vis-à-vis the phenomenon in question. Adopting the ethnographic research design, "a researcher studies the shared patterns of behaviours, language, and actions of an intact cultural group in a natural setting over a prolonged period of time" (Creswell, 2014, n.p). The principle of ethnographic research is that holistic approach which culminates in depicting and explaining a specific pattern in relation to a whole system of patterns (Mackey & Gass, 2005).

Phenomenology is also one of the commonly used strategies in qualitative research. "Denscombe (2007) defines a phenomenon as a thing that human beings experience through their senses. In the same vein, he expounds, "phenomenology is particularly interested in how social life is constructed by those who participate in it" (p.78). As a research strategy, phenomenology underscores human beings' experiences that are pure, basic, and raw with the condition that these experiences have not been prone to processes of analysis and theorising. Besides, unlike those research strategies which prefer categorising patterns, measuring them, and theorising about them, phenomenology favours to get a clear picture of the things in themselves as they are experienced by individuals. Therefore, the phenomenologist's main objective is not to analyse and interpret peoples' experiences but to present them in such a form that is faithful to the original (Denscombe, 2007).

Another qualitative strategy to research is known as "The Grounded Theory". The latter is exceptionally adopted by small-scale researchers with the goal of generating theories without testing them either. Fundamentally, the grounded theory research pays heed to the significance of empirical fieldwork, as well as the need to closely associate any explanations with what occurs in practical instances in the real world (Denscombe, 2007). Given that theories should be properly and scrupulously grounded, researchers are expected to be immensely involved in the fieldwork as it is the fundamental section of the work they do. For Denscombe (2007), the grounded theory research does not approach the analysis of data using preordained ways of seeing things. Other than that, it bypasses the use of previous theories and concepts to make sense of the data and, therefore, it is readily open to detect new factors which are of close relevance to an explanation of the area.

Action research is also one of the most frequently used qualitative research designs in educational research. Hopkins (2002) defines the so-called action research as "a substance act with a research procedure; it is action disciplined by enquiry, a personal attempt at understanding while engaged in a process of improvement and reform" (as cited in Costello, 2003, p. 3). In view of this, Denscombe (2007) maintains that action research deals with real-world issues, usually at work and in organisational settings. Undertaking action research, researchers are expected to work more collaboratively with a group of people who are readily open to new ideas and endeavour to reflect them to alternate certain actions in a given context. That is, researchers do not embark on studies on people, but cooperate with them and act as facilitators (Denscombe, 2007).

Apart from case studies, phenomenology, ethnography, and action research, qualitative researchers may adopt another strategy called the "longitudinal research strategy". This strategy is regarded as an ongoing examination of a group of people or a phenomenon over a significant period of time with the aim of gathering normative information, plot trends, or observe the influences of particular elements (Dörnyei, 2007; Marczyk et al., 2005). As Menard (2002) argues, in longitudinal research "(a) data are collected for two or more distinct time periods; (b) the subjects or cases analysed are the same or are comparable (i.e., drawn from the same population) from one period to the next; and (c) the analysis involves some comparison of data between periods" (as cited in Dörnyei, 2007, p. 79). Equally important, the goal of longitudinal researchers hinges on depicting the cases of change and explaining their causal intersections. Up until this point, only the most commonly used quantitative and qualitative research strategies were fairly introduced and discussed. Nevertheless, in case a researcher adopts the mixed-methods approach, then s/he has to strictly observe the tenets of the mixed-methods research strategies (Dörnyei, 2007). According to Denscombe (2007), the mixed-methods strategy to research refers to:

> A research strategy that crosses the boundaries of conventional paradigms of research by deliberately combining methods drawn from different traditions with different underlying assumptions. At its best, a mixed methods strategy is one that uses both qualitative and quantitative methods. (p. 107)

3. Data collection methods, Data Analysis Procedures, and Sampling Techniques

3.1 Data Collection Methods

After having decided on the appropriate research paradigm and approach, researchers should, then, start gathering data from the sample addresses in order to draw on inferences and conclusions for their investigations. For Kabir (2016), data collection is the process of collecting and measuring information on the variables of a study in such a methodical way that enables researchers to answer their questions, test hypotheses, and evaluate outcomes. Several data-collection methods can be used to gather the required information about the sample assigned. Considerably, researchers may, yet not exclusively, conduct interviews, submit questionnaires, conduct focus group discussions, or undertake observations (Kumar, 2011).

Perhaps it goes without saying but it is worth-repeating that the choice of the data-collection methods reckons on the purpose that guides the whole study, the nature of the research questions to be answered and the available resources (Marczyk et al., 2005; Kumar, 2011). In this connection, Kumar (2011) offers a succinct description that highlights the distinction between the data-collection methods used in quantitative and qualitative research works. He acknowledges, "most methods of data collection can be used in both qualitative and quantitative research. The distinction is mainly due to the restrictions imposed on flexibility, structure, sequential order, depth, and freedom that a researcher has in their use during the research process" (n.p.). While quantitative methods adhere to these properties, qualitative methods advocate against them. Among the most widely used data-gathering tools, particularly in case of big inquiries is the questionnaire. Conceptually, methodologists

consider the notion of "Questionnaire" as a misnomer term since questionnaires do not include any, or many, real questions that end up with a question mark. For Kothari (2004):

> A questionnaire consists of a number of questions printed or typed in a definite order on a form or set of forms. The questionnaire is mailed to respondents who are expected to read and understand the questions and write down the reply in the space meant for the purpose in the questionnaire itself. The respondents have to answer the questions on their own. (p.100)

With reference to its classification, Dawson (2007) reveals that there are three main types of questionnaires, namely close-ended questionnaires, open-ended questionnaires, and a combination of both (semi-structured questionnaire). The close-ended questionnaire is most frequently used to generate statistics in quantitative surveys. Moreover, it subsumes various item types through which respondents are asked to choose from ready-made options the right response (s) by encircling, ticking, or by putting an 'X' in the appropriate box. This type of questionnaires is deemed structured and objective since it goes in accordance with quantitative statistical analyses and since the response choices can be numerically coded for ease of analysis (Dörnyei, 2003). Unlike close-ended questionnaires, open-ended/ unstructured questionnaires, are used in qualitative research with the aim of having a holistic comprehension of the issue in question. This sort of questionnaires comprises items that are not accompanied by ready-made response options. Rather, it leaves a blank space for the respondents to jot in their personal answers (Dörnyei, 2003; Dawson, 2007). Finally, researchers may question respondents using a combination of close-ended and open-ended questions (semi-structured questionnaire). Ordinarily, this category of questioning commences with a series of structured questions, with slots to tick or scales to rank, and finishes with a section of unstructured questions for more detailed answers (Dawson, 2007).

Apart from questionnaires, researchers may collect information by means of tests. A test, as Naina (2012) reports it, is a systematic procedure that is used to examine someone's knowledge of something to determine the level of skill that has been reached. Three of the most commonly applied tests are the achievement test, aptitude test, and personality test. On one hand, achievement tests are designed to assess the extent to which an individual has developed a specific motor skill or acquired a particular knowledge. Oftentimes, this mode of testing is administered following some instructions that are designed to teach certain skills to be, eventually, quantified. Ideally, achievement tests are designed to measure the extent to which an examinee has mastered an area of knowledge. Aptitude tests, per contra, are planned to assess what a person is capable of doing or to presume what an individual is able to learn given the appropriate instructions. More specifically, aptitude tests are tailored to measure a person's competence level to perform a certain type of tasks. Further, this form of testing is typically used to assess an academic potential, a career suitability, and a cognitive or physical talent in diverse domains (Cherry, 2020).

However, personality tests refer to those well-methodical procedures used to diagnose human personality. This technique of testing is designed to evaluate the traits exhibited by individuals across distinct contexts. Usually, personality tests are administered for a number of different intents and purposes, such as clarifying clinical diagnosis, directing therapeutic

interventions, and helping predict how individuals may respond in completely various situations. On the whole, there are two basic types of personality tests, which are self-report inventories and projective tests. The former requires from test-takers to read attentively the question and, then, rate to which extent the question or statement applies to them. Whereas, the latter demands providing the participants with a vague scene, object, or scenario and, finally, asking them to present their interpretations of the tested item (Cherry, 2020).

Another most commonly used data-collection method in different applied linguistic contexts for different purposes is the interview. DeMarrais and Lapan (2004) allege that an interview is "a process in which a researcher and participant engage in a conversation [and] focus on questions related to a research study. These questions usually ask participants for their thoughts, opinions, perspectives, or descriptions for specific experiences" (p. 54). While interviewing, interviewers have the freedom to decide the format, wording, content, as well as the order of the questions in which interviewees are to be asked. As far as the interview types are concerned, researchers conducting studies in the field of Social Sciences may use three different types of interviews, which are structured, unstructured, and semi-structured interviews (Dörnyei, 2007; Dawson, 2007).

Structured interviews are exclusively used in quantitative research in situations where a written questionnaire is unmanageable to a certain category of respondents (e.g., illiterate people). It is useful when the interviewer is aware of what s/he does not know and can construct questions that may yield the needed responses (Dörnyei, 2007). As opposed to structured interviews, unstructured interviews (sometimes also referred to as in-depth interviews, ethnographic interviews, or life-history interviews), are used only in qualitative studies with the goal of understanding the interviewees' points of view vis-à-vis the issue under-study. This category of interviews allows maximum flexibility with only minimal interference from the research agenda for the sake of creating a comfortable atmosphere in which interviewees may reveal more than they would in formal contexts, with the interviewer assuming a listening role (Dawson, 2007).

The last type of interviews which can also be used in qualitative studies is the semi-structured interview. This kind of interviews is used when the interviewer owes adequate information on the phenomenon being discussed and is able to formulate, in advance, broad questions about a certain topic without using ready-made response options in order not to limit the depth and breadth of the interviewees' answers (Dörnyei, 2007). By means of conducting interviews, researchers can investigate phenomena which cannot immediately be observed. Besides, since interviews are interactive, researchers can elicit additional information if answers are vague, inadequate, off-topic, or unspecific.

Apart from interviews, information about participants can be gathered through group discussions, sometimes also referred to as group interviews. In focus group discussions, researchers can ask a number of people, usually from seven to eleven participants, to come together in a group in order to discuss a certain topic (DeMarrais & Lapan, 2004). The moderator or facilitator, who directs the discussion, introduces the issue under-investigation, asks specific questions, controls deviations, and inhibits breakaways and unrelated conversations (Dawson, 2007). Among the pros of the focus group is that during one group discussion, focus group moderators can receive voluminous responses. Additionally,

conducting focus group discussions may succor participants from inhibitions, especially if they happen to know each and one another. Finally, the group effect and interaction may work as helpful resources in the data analysis process (Dawson, 2007).

In addition to tests, questionnaires, interviews, and focus group discussions, researchers may collect data by way of classroom observations. An observation is held to be a purposeful, systematic, and selective data-collection method whereby a researcher observes attentively a given phenomenon that takes place in its real context (Kumar, 2011). As a method of data collection, the classroom observation is more than just observing and listening. Rather, Kabir (2016) pinpoints that an observation is a procedure through which researchers make use of their senses to examine individuals in a natural setting. In doing so, they are expected to make use of methodical improvisations for the sake of developing an adequate understanding of the phenomenon under-scrutiny. As concerns the types of the observation method, researchers may conduct either a participant observation or a non-participant observation. The participant observation is particularly used when the researcher aims to qualitatively get involved in the activities of the group being observed in the same manner as its members do, either with or without their realisation that they are under-observation.

Non-participant observation, on the other hand, is conducted when the researcher does not participate in the activities of the group being observed but remains a passive observer, who watches and listens to the group's activities and, eventually, builds conclusions from them (Kumar, 2011). According to Sapsford and Jupp (2006), observations may put forward a number of advantages over other types of data collection methods. In this connection, information about the physical world and the human behaviour can be obtained and recorded directly by the researcher without having to rely on the retrospective or anticipatory accounts of others. Moreover, many basic features of the physical environment and behaviour are taken for granted by participants and, therefore, it might be daunting for researchers to portray them even more accurately. Usually in such a case, the trained eye of the observer is highly required to see the familiar as strange and provide the necessary description. Thirdly, undertaking the observation method can be quite useful in giving opportunities to those participants who cannot participate in interviews or fill in questionnaires (young children is an obvious example) (Sapsford & Jupp, 2006).

3.2 Data analysis procedures

The procedures used to analyse raw data are highly determined by whether the researcher decides to conduct a qualitative or quantitative research. In this regard, the researcher's choices will be exclusively impacted by personal and methodological preferences and educational backgrounds (Dawson, 2007). According to Denscombe (2007), "the process of analysis involves the search for things that lie behind the surface content of the data –core things that explain what the thing is and how it works" (p. 247). In this regard, the analysis will depend ineluctably on the research topic, the researcher's personal preferences, time, equipment, in addition to the finances available.

For Denscombe (2007), qualitative data analysis is home to a wide range of processes that enable the researcher to move from the information collected into some form of explanation and interpretation of the phenomenon under-scrutiny. Distinguishably, qualitative data analysis is iterative and flexible in that it starts as data are being gathered rather than after data collection has been ceased. According to Macqueen, and Namey (2012), "while analysing qualitative data, not all information can be analysed since qualitative data are so dense and rich and, consequently, researchers need, to some extent, to winnow them" (as cited in Creswell, 2014, n.p.). The most commonly used qualitative data analysis procedures in educational and cultural studies are: Content Analysis, Thematic Analysis, Qualitative Comparative Analysis, Discourse Analysis, Conversational Analysis, and Narrative Analysis. The selection of the most appropriate analytical procedure depends heavily on the research aims, objectives, and questions (Warren, 2020).

Qualitative Content Analysis is the most frequently used analytical procedure in deductive research (Hsieh & Shannon, 2005). More specifically, content analysis is a systematic coding and categorising procedure used to delve into large amounts of textual data in order to determine trends and patterns of words, their frequencies, their interrelationships, along with the structures and discourses of a written text. Prior to apply the qualitative content analysis, the researcher must decide on whether the analysis must be conceptual (i.e., establishing the existence of the frequency of concepts in a text) or rational (i.e., identifying concepts present in a given text or set of texts). In this connection, Busch et al (2012) maintain that the purpose of the content-based analysis is to describe the characteristics of the textual document's content by scrutinising who says what, to whom, and with what effect Applying the content-based analysis, researchers need to carefully observe the following stages:

- Identifying concepts;
- Defining relationships;
- Coding the text on the basis of 1 and 2;
- Coding the statements; and
- Graphically displaying and numerically analysing the resulting maps (Busch et al., 2012, 6§).

Moreover, Thematic Analysis (TA for short) is a poorly-branded, rarely-acknowledged, yet a widely-used qualitative method in the field of Psychology. Braun and Clarke (2006) argue that it is the first qualitative method that should be learnt as "it provides core skills that will be useful for conducting many other kinds of analysis" (p.78). Practically, TA aims at identifying, examining, organising, depicting, and reporting themes embedded in a dataset. In light of this, it can potentially examine participants' perspectives, delineate similarities and discrepancies, and generate unanticipated deductions. As it increasingly forces researchers to adopt well-thought-out approaches, TA is deemed convenient not only in summarising key-features found within a wide range of data, but also, and just as importantly, in producing a clear and well-organised final report (Nowell, Norris, White & Moules, 2017).

Another way to analyse qualitative data is through Qualitative Comparative Analysis (QCA henceforth). The latter, which is closely tied up with TA, holds a central position in Sociology and Political Science. Typically, such kind of analysis is used when the aims

behind undertaking research revolves exceptionally around unfolding general insights by way of captivating analogies in lieu of the obeisance to a purportedly universal set of principles. Applying this procedure, subjects or ideas must continuously be compared and contrasted until the researcher realises that no new issues are continuously springing into action. Also, following the tenets of the QCA method, the researcher is expected to move backwards and forwards between transcripts, notes, memos, and literature (Dawson, 2007).

Furthermore, Discourse analysis (DA) is another qualitative research method used in the field of Social Sciences and Humanities, including linguistics, anthropology, sociology, psychology, and cultural studies. In its essence, DA is an interpretive method of analysing texts and conversations which is used to make interpretations based on the specificities of the material itself and on contextual knowledge. With reference to its applications, DA can be applied to large samples of materials and to smaller volumes, depending on the purpose and the timescale of research. Interestingly, DA looks at patterns of speech, such as how people talk about a given topic, what metaphors they make use of, and how they take turns in conversations. Much of this type of analyses is principally intuitive and reflective; nevertheless, it can possibly encompass some sort of counting instances of turn-taking and their repercussions on conversations (Dawson, 2007; Luo, 2020).

Additionally, Conversational Analysis (CA) is an inductive, micro-analytic, and data-driven method with roots in sociology, linguistics, anthropology, psychology, and, in particular, ethnomethodology. The CA method differs most distinctly from DA in its use, focus, and procedures. following this data analysis procedure, the researcher, at a micro-level, analyses the structures of interaction and focuses mainly on how the participants understand each other through shared interactional norms. Usually, the CA method resonates notably well with those who are fascinated by the specificities of human social conducts and who are, simultaneously, committed to embark on naturalistic observations. More importantly, this method of analysis offers a well-developed descriptive apparatus for studying conversational interactions and rigorous procedures to back up the analysis (Warren, 2020).

Unlike CA which stresses on moment-by-moment interchange, Narrative Analysis (NA) aims at assembling the big picture of events or experiences the way participants comprehend them. As its name suggests, NA focuses attention on the story itself and seeks to intensively safeguard the integrity of a series of events or personal biographies whose discrete elements cannot adequately be understood. Much of this analysis is noticeably used to accentuate the overall goals and intentions of participants. Moreover, NA seeks to make human actors, cultures, societies, and historical epochs comprehensible as a whole (Warren, 2020).

Contrastingly, quantitative data analysis is more accurate and straightforward in that it includes well-defined procedures, which are guided by universally accepted canons, to address certain research intricacies and produce more precise results (Dörnyei, 2007). One way to analyse quantitative data is through Descriptive Statistics in conjunction with Inferential Statistics (Gomez, 2013). Descriptive Statistics are procedures used to describe, summarise, and present a set of data. This can be accomplished by displaying frequency distribution tables and different graphical formats, such as pie-charts, bar-charts, histograms, polygon, etc. More clearly, Descriptive Statistics are counted by means of measures of central

tendency and measures of variability. The selection of the most appropriate measures is subject to the measurement scale of the variables, which can be nominal, ordinal, interval, or ratio (Gomez, 2013).

Fundamentally, measures of central tendency are values that describe a dataset by identifying the central position within that dataset. These measures can provide information on how a group or a collection of data have performed overall. Technically, measures of central tendency can be counted using three different ways, namely the mean, median, and mode. First, the most commonly counted measure of central tendency is the mean. Denscombe (2007) defines the mean (also known as the arithmetic average) as a value that describes "what would result if there was a totally equal distribution of values" (p. 260). The mean can be calculated by dividing the sum of all scores by the total number of scores. It is defined by the formula: $\overline{x} = \frac{\sum X}{N}$. Second, the median is the mid-point of a range or a distribution, with half of the scores lying above and half falling below. Thus, values in the dataset are placed in either ascending or descending rank order and the central score of the range is called "the median". Finally, the mode refers to the value or score that occurs repeatedly in a given dataset. This measure of central tendency has no statistical formula and is more straightforward. It should be made clear that a distribution may have more than one mode if two or more values occur the same number of times. Such distributions are oftentimes called bimodals (two modes), trimodals (three modes), and so on (Denscombe, 2007; Gomez, 2013).

However, measures of variability, also known as dispersion or variation, are quite significant to understand how dispersed or varied the values in a dataset are. The key measures of dispersion are: The range, variance, and standard deviation (Gomez, 2013; Sharma, 2019). Gomez (2013) defines the range as, "the number of points between the highest score and the lowest one plus one to include the scores of both ends" (p. 6). As a measure of variability, the range may give a picture of the data as it just represents the extreme scores of the dispersion and, as a result, it is highly influenced by the behaviour that may not necessarily be representative with respect to the dataset as a whole (Denscombe, 2007; Gomez, 2013).   In the dataset below, the range is: 198 – 72= 126.

72   83   98   99   130   148   198

Addedly, the variance is the arithmetic mean that measures the squared sum differences or squared distance from the mean. The variance is calculated by taking average values of the squared difference of each score and their mean (Gomez, 2013; Sharma, 2019). The formula of the variance is as follows: $S^2 = \frac{\sum(x-\overline{x})^2}{n-1}$. Another measure of variability that deals with the spread of data comes in the form of the standard deviation. For Denscombe (2007), "the standard deviation measures the spread of data relative to the arithmetic mean of the data" (p. 264). More subtly, the standard deviation uses all the scores to calculate how far the values tend to spread out around the mean (Denscombe, 2007). The formula of the standard deviation is as follows: $S = \sqrt{\frac{\sum(x-\overline{x})^2}{N}}$.

When descriptive statistics are accurately measured in quantitative research, a fairly straightforward process of inferential statistics must be thereupon carried out. Largely,

inferential statistics has a critical role in suggesting explanations for a situation or phenomenon by using measurements for the assigned sample in the experiment to compare the treatment groups and make generalisations about the whole population of cases. There are different types of inferential statistics. Each is suitable for a specific research strategy and sample characteristics. On the whole, inferential statistics judges, suggests, and makes inferences based on sound extrapolation. In light of this, it cannot be used to prove an explanation or cause-effect-relationship. Such kind of statistics is used not only to estimate the specificities of a large population relying on a sample, but also, and most importantly, to test the research hypotheses with the goal of finding evidences that either prove or disprove a given theory (Kuhar, 2010).

3.3 Sampling techniques

Researchers cannot contact every member in the population since the latter is infinite. Alternately, they need to single out a number of elements to contact. This is referred to by Dawson (2007) as sampling. A sample, as Sapsford and Jupp (2006) conceptualise it, is "a set of elements selected to some way from a population" (p. 26). The overarching objective behind assigning a sample is to save time, efforts, and attain consistent and bias-free estimates of the whole population in terms of what is being investigated. The process of identifying a sample from a given population is often known as the sample design. The latter necessitates a definite plan which can be adopted in selecting elements for a sample. An effective design of sampling is the one which thoroughly discerns an authentic representation of the selected elements, brings about small sampling errors, and helps in checking research-induced bias in a systematic way (Kothari, 2004). On the whole, there are two basic types of sampling techniques: Probability sampling and non-probability sampling (Kothari, 2004; Sapsford & Jupp, 2006). Prior to choosing any of these two sampling designs, researchers must consider the area of their research study, the respective research methodology along with their research preferences (Dawson, 2007).

On one hand, probability sampling, also labelled as random or chance sampling, is robustly subject to the principle of random assignment. Under this form of sampling, all items within a given population seem to have an equal chance of being picked out. Functionally, probability sampling techniques operate in situations wherein the research aim centers around explaining, predicting, or generalising the findings to the entire population (Kothari, 2004; Dawson, 2007). Archetypically, this sampling technique embodies simple random sampling, stratified sampling, cluster sampling, and systematic sampling (Sapsford & Jupp, 2006). First, cluster sampling builds predominantly on the researcher's ability to split up the sample assigned into different groups, based on easily identifiable traits, called clusters. Throughout cluster sampling, groups can be formulated based on the geographical proximity or based on some ordinary idiosyncrasies which are significantly correlated with the study's main variable (Kumar, 2011).

Second, simple random sampling is one of most frequently used probability sampling techniques in the quantitative research framework. This mode of sampling offers elements in a given population a specifiable possibility of being selected each time in the total population to have the same chance of being embraced in the sample, assuring that the sample will represent population in its entirety (Kothari 2004; Creswell 2014). At this point, it should be

made clear that the term "simple" does not signify that random sampling is easier to implement than other ways of sampling. Instead, it genuinely denotes that several steps are taken into consideration to guarantee that nothing impacts the selection phase since each time a choice is made, other than chance (Sapsford & Jupp, 2006). Third, stratified random sampling combines randomisation and categorisation with some form of a rational grouping. Such a technique of sampling compartementalises elements of the population into distinct categories called "Strata" (Dörnyei, 2007). According to Creswell (2014), the concept of stratification reveals that the specific traits the of individuals are "represented in the sample and the sample reflects the true proportion in the population of individuals with certain characteristics" (n.p.). Therefore, when the study elements are randomly chosen from a population, the aforementioned attributes may or may not be present in the same spectrum as in the population of origin. Often in such a case, stratification ensures their respective representation (Dörnyei, 2007).

Sometimes, it could be daunting to proceed with a random selection mode, especially when researchers cannot identify beforehand a sample to work on. In such a case, the use of systematic sampling would be obviously more suitable (Dörnyei, 2007). In its essence, systematic sampling is also termed as "mixed sampling design" since the benchmarks of both probability and non-probability sampling techniques are deeply entrenched within it. Opting for this technique of sampling, researchers start by grouping the sample frame into a number of segments called "intervals". From the initial interval, the choice of an item is preeminently contingent on a random basis. However, for subsequent intervals, the choice of items will go in tune with the items assigned in the first interval (Kumar, 2011).

Non-probability sampling techniques, on the other hand, are by no means governed by the principle of random assignment in the selection of elements from the entier population. Furthermore, this design of sampling is implemented in situations wherein the number of elements is either anonymous or cannot be individually detected. The most widely opted for non-probability sampling techniques are convenience sampling, quota sampling, purposive sampling, and snowball sampling (Kumar, 2011). Initially, convenience sampling, also known as accidental sampling or haphazard sampling, is another non-random sampling technique used when elements in a certain population appear to have certain characteristics that help in meeting the overall purpose of a given research study. More importantly, convenience sampling techniques are usually considered as accidental samples because "elements […] happen to be situated, spatially or administratively, near to where the researcher is conducting the data collection" (Etikan, Musa & Alkassim, 2016, p. 2). Addedly, quota/ dimensional sampling resembles stratified random sampling but without the axiom of random selection. Applying this technique of selection, researchers shall split up the population of interest into non-overlapping subgroups, called "quotas". In this respect, researchers must begin with a sampling frame and, thereafter, they should identify the main proportions of the subgroups determined by the parameters included in the whole frame. Dörnyei (2007) clarifies that within quota sampling, "the actual sample, then, is selected in such a way that reflects these proportions, but within the weighed subgroups no random sampling is used but rather the researcher meets the quotas by selecting participants s/he can have access to" (p. 98).

Moreover, elements of a given population could be selected using another sampling mode called the purposive sampling technique. More particularly, this type of sampling is useful in qualitative studies with the aim of building a historical reality, portraying a situation, or elucidating something about which only a few is known. The core assumption pertaining to the purposive sampling technique is the researcher's judgement regarding who can supply him/ her with as much information as possible so that s/he can successively meet the objectives that drive his/ her study. In light of this, researchers should approach only that category of people which is believed to have the needed information and which is willing to share it (Kumar, 2011). In addition to quota, purposive, and convenience sampling techniques, snowball sampling is also another frequently used non-probability sampling technique that demands a chain reaction through which an investigator selects only few people who meet the requirements of his/ her investigation (Dörnyei, 2007). It should be noted here that snowball sampling is useful particularly when examining groups whose membership is not readily identifiable or simply when access to the most suitable group is discernibly intricate for some reasons (Dörnyei, 2007).

4. Conclusion

This paper outlined and discussed the critical interrelationship between the components of research methodology in the realm of educational research. At the outset, it demonstrated that knowledge of the various research paradigms can perceivably minimise research-bias, thereby solidify the quality of research. From the discussions presented above and the literature reviewed, proper methodological choices are informed and intrinsically influenced by the underlying characteristics related to ontology, epistemology, methodology, axiology, and methods. In order to achieve methodological breakthroughs, the researcher's choices and dichotomous decisions should be highly structured, rationalilsed, and as standardised as possible. Appropriate choices in the research methods are most certainly to make the research findings both sound and plausible. However, unsystematic methodological decisions are expected to make the research results questionable, unreliable, and mistrustful. Thus, the methodological aspect of any scholarly research ought to be far from skepticism and it should be inclined to the scientific standards governing research (Kothari, 2004).

In less comprehensive terms, research is a principled, controlled, rigorous, valid, empirical, and ethical. A well-executed scientific investigation must notably have an extreme control on the whole research process. Therefore, undertaking either a qualitative, quantitative, or a mixed-methods research necessitates observing attentively the several steps that help point to the right research paradigm, approach, design/ strategy, data-collection methods, data analysis procedures, and even the appropriate sampling techniques. Equally important, to render the research investigation ethical, researchers must adhere to the fundamental ethical considerations/ protocols that enhance research validity, maintain scientific/ academic integrity, and protect dignity rights and welfare of the research participants.

For sound ethical reasoning, researchers must abide by the rights to self-determination, confidentiality, anonymity, legality, integrity, and social responsibility. It should be made clear that no hegemony or superiority is exceptionally granted to multi-method research versus mono-strategy research. Accordingly, the research enterprise may accommodate either

mono-method or multi-method research, as long as the stages of intentional research, which contribute to theory generation and which must, in turn, influence both policy-makers and practice, are prudently observed. In this regard, researchers have to break the wall of polemics and bridge a mutual understanding on the pluralistic nature of the corresponding research methods and strategies in educational research. Educational interventions are way too sophisticated, multifactorial, and socioculturally grounded. Thus, a research methodology which cannot account for this intricacy may not be a wise choice (Mackey & Gass, 2005).

5.   List of References

Abdul Rahman, A., & Alharthi, K. (2016). An introduction to research paradigms. International Journal of Educational Investigations, 3(8), 51-59.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative Research in Psychology, 3, 77–101. doi:10.1191/1478088706qp063oa

Bukhari, S. A. (2011). What is comparative study? Retrieved from https://papers.ssm.com/sol3/papers.cfm?abstract_id=1962328

Busch, C., DeMaret, P.S., Flynn, T., Kellum, R., Le, S., Myers, B., … Palnquisit, M. (2012). Content analysis. Retrieved from https://writing.colostate.edu/guides/citation.cfm

Cherry, K. (2020). The types of aptitude testing. Retrieved from https://www.verywellmind.com/what-is-an-aptitude-test-2794806

Chilisa, B., & Kawulich, B. (2012). Selecting a research approach: Paradigm, methodology and methods. In C. Wagner, B. B. Kawulich & M. Garner (Eds.), Doing social research: A global context (pp. 51-57). London, UK: McGraw Hill.

Cohen, L., & Manion, L. (2000). Research methods in education (5th ed.). New York, USA: Routledge.

Costello, R. J. (2003). Action research. New York, USA: Continuum.

Creswell, J. W. (2014). Research design: Qualitative, quantitative and mixed methods approaches (4th ed.). Los Angeles, California: SAGE.

Dawson, C. (2007). A practical guide to research methods: A user-friendly manual for mastering research techniques and projects (3rd ed.). Oxford, UK: How to Books.

DeMarrais, K. B., & Lapan, S. D. (2004). Foundations for research: Methods of inquiry in education and the social sciences. New Jersey, USA: Lawrence Erlbaum Associates, Publishers.

Denscombe, M. (2007). The good research guide: For small-scale social research projects (3rd ed.). England, UK: Oxford University Press.

Dörnyei, Z. (2003). Questionnaires in second language research: Construction, administration, and processing. New Jersey, USA: Lawrence Erlbaum Associates, Inc.

Dörnyei, Z. (2007). Research methods in applied linguistics: Quantitative, qualitative, and mixed methodologies. Oxford, UK: Oxford University Press.

Etikan, I., & Musa, S. A. (2016). Comparison of convenience sampling and purposive sampling. American Journal of Theoretical and Applied Statistics, 5(1), 1-4. doi: 10.11648/j.ajtas.20160501.11

Gómez, P. C. (2013). Statistical methods in language and linguistic research. Keynes, UK: Equinox Publishing Ltd.

Hesse-Biber, S. (2010). Qualitative approaches to mixed methods practice. Qualitative Inquiry, 16(6), 455-468. doi:10.1177/1077800410364611

Hsieh, H. F, & Shannon, S. E. (2005). Three approaches to qualitative content analysis. Qualitative Health Research, 15(9), 1277-1288. doi:10.1177/1049732305276687

Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. Educational Researcher, 33(7), 14-26. doi:10.3102/0013189x033007014

Jonker, J., & Pennink, B. (2010). The essence of research methodology: A concise guide for master and PhD students in management science. New York, USA: Springer Science & Business Media.

Kabir, S. M. S. (2016). Basic guidelines for research: An introductory approach for all disciplines. Bangladesh, India: Book Zone Publication.

Kivunja, C., & Kuyini, A. B. (2017). Understanding and applying research paradigms in educational contexts. International Journal of Higher Education, 6(5), 26-41. doi:10.5430/ijhe.v6n5p26

Kothari, C. R. (2004). Research methodology: Methods and techniques (2nd ed.). New Delhi, India: New Age International.

Kuhar, C. W. (2010). Inferential statistics. Retrieved from https://www.sciencedirect.com/topics/medicine-and-dentistry/inferential-statistics

Kumar, R. (2011). Research methodology: A step-by-step guide for beginners (3rd ed.). New Delhi, India: SAGE.

Luo, A. (2020). What is discourse analysis? Retrieved from https://www.scribbr.com/methodology/discourse_analysis

Mackey, A., & Gass, S. M. (2005). Second language research: Methodology and design. New Jersey, USA: Lawrence Erlbaum Associates, Inc.

Marczyk, G. R., DeMatteo, D., & Festinger, D. (2005). Essentials of research design and methodology. Canada, USA: John Wiley & Sons.

Naina, A. (2012). Test construction and interpretation. Retrieved from https://www.slideshare.net/mobile/HAMDARDMED2016/test-construction-and-interpretation

Nowell, L.S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. International Journal of Qualitative Methods, 16, 1-13. doi: 10.1177/1609406917733847

Rajasekar, S., Philominathan, P., & Chinnathambi, V. (2006). Research methodology. Retrieved from https://www.researchgate.net/publication/2174858 _Research_Methodology

Salkind, N. J. (2010). Non-experimental designs. Retrieved from https://methods.sagepub..com/reference/encyc-of-research-design/n271.xml

Saou, K., & Hoadjli, A. C. (2022). The effects of L1 interference on the occurrence of code-switching in the Algerian context. International Journal of Arabic-English Studies (IJAES), 22 (1), 221- 240

Sapsford, R., & Jupp, V. (2006). Data collection and analysis. Chennai, India: SAGE.

Sharma, S. (2019). Descriptive statistics and factual designs (Doctoral dissertation). Horizons University, France, EU.

Warren, K. (2020). Qualitative data analysis methods 101: The big 6 methods + Examples. Retrieved from https://gradcoach.com/qualitative-data-analysis-methods/