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Exploration and Mapping of Methods for Researching Second Language Classrooms: Content Analysis based on Rod Ellis' book

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Abstract

Many researchers in the second language field face the challenge of choosing the right method for their research, often relying on one method for their various studies. This study aims to explore various research methods in the context of the second language classroom by conducting a content analysis based on a book by Rod Ellis. This research is qualitative and is conducted through a literature study, the analysis uses Krippendorff's content analysis method, which includes six stages: unitizing, sampling, recording, reducing, inferring, and narrating. The research findings show that Ellis categorizes research methods into two main categories: formal and practical. Formal research includes experimental, descriptive, and hybrid, theory-driven research. While practical research involves action and exploratory, practitioner research does not stem from theory but from teachers' desire to experiment with innovations in their classrooms.

Keywords : second language classrooms, content analysis, mapping, rod ellis

A. Introduction

Research in second language (L2) teaching has become one of the important fields of study in applied linguistics and education.[1] As globalization expands interactions between nations, the need to master a second language becomes more pressing. This has prompted more in-depth and extensive research into how second languages are learned and taught. One of the leading figures in this field is Rod Ellis, whose work has contributed significantly to our understanding of the processes and methods of research in second language teaching.

In Rod Ellis' book "Language Teaching Research and Language Pedagogy," in chapter II, there is an in-depth analysis of the various research methods that can be applied in the context of second language teaching.[2] Ellis distinguishes between formal research, usually conducted by academics, and practitioner research, often conducted by teachers in their classrooms. This approach provides a useful framework for researchers and practitioners to identify and implement research strategies that suit their needs.

Research in second language teaching involves various methods designed to understand the dynamics of learning in the classroom. For example, Koyuncu et al. involved methods such as video recording and observational field notes,[3] Tadic used conversation analysis and membership categorization analysis,[4] Hilda and Pelokazi used content analysis through semi-structured interviews,[5] Mária and Ildikó who used classroom observation and structured interviews,[6] Matiso and Makena who used a qualitative approach with semi-structured interviews and content analysis to categorize data into themes.[7] However, there are still many novice researchers in this field, focusing on one type of method in second language learning, and not daring to explore other types of research.

The many resources in this field still need to contribute more to beginning researchers who are still thinking pragmatically. Resources such as McKay's "Researching second language classrooms"[8] and "Second language classroom research",[9] these works introduce teachers to research methods that can be used

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[1] Diah Aulia Ulfah et al., "The Effect of Muhawarah Method on Speaking Skills of Arabic Language Education Students at UINSI Samarinda," *El-Syaker: Samarinda International Journal of Language Studies* 1, no. 1 (2024): 42–54; Ahmad Fadhel Syakir Hidayat et al., "Exploration of Interaction and Mapping Interaction Research in Second Language Learning Content Analysis Based on Books Rod Ellis," *An Nabighoh* 26, no. 1 (2024): 51–66.

[2] Rod Ellis, *Language Teaching Research and Language Pedagogy* (John Wiley & Sons, 2012).

[3] Selma Koyuncu, Kristiina Kumpulainen, and Arniika Kuusisto, "Scaffolding Children's Participation during Teacher–Child Interaction in Second Language Classrooms," *Scandinavian Journal of Educational Research* 68, no. 4 (2024): 750–64.

[4] Nadja Tadic, "Preference Organization and Possible-Isms in Institutional Interaction: The Case of Adult Second Language Classrooms," *Language in Society* 53, no. 2 (2024): 211–37.

[5] Nomasomi Matiso Hilda and Nqabeni Pelokazi, "Enhancing Communicative Competence in English Second Language Classrooms through Traditional Storytelling," *International Journal of Research in Business and Social Science (2147-4478)* 12, no. 2 (2023): 376–83.

[6] Tódor Erika-Mária and Vančo Ildikó, "Nyelvi Erőforrások Osztálytermi Helyzetekben," 2022.

[7] Nomasomi Hilda Matiso and Bulelwa Makena, "Effective Implementation of the Text-Based Approach in English Second Language Classrooms," 2022.

[8] Sandra Lee McKay, *Researching Second Language Classrooms* (Routledge, 2006).

[9] Sandra L McKay, "Second Language Classroom Research," *The Cambridge Guide to Second Language Teacher Education*, 2009, 281–88.

to research their classrooms to become more effective teachers, emphasizing that the choice of research topic will determine the most effective method, and providing practical guidance in each chapter for applying the methods described through analysis of research data. Schachter and Gass on "Second language classroom research: Issues and opportunities",[10] This book provides an in-depth and unrestricted view of how some academics view their research projects, as well as the various considerations, decisions, and compromises that must be made in designing and carrying out classroom research, emphasizing that the problems or compromises encountered are a natural part of the evolution of the research process. Hyland on "Methods and methodologies in second language writing research",[11] this study aims to understand the complex and multifaceted nature of second language writing and to explore how methodological choices reflect and influence understandings of writing. Harbon and Shen's "Researching language classrooms",[12] this work discusses various forms of research in applied linguistics. Macaro's "Second language teachers as second language classroom researchers",[13] this study is to proposes and defines classroom-based research as an integrated part of the teaching process, as well as provides simple techniques for teachers in carrying out research on language skills, vocabulary learning, and other aspects of language acquisition without increasing their workload.

As mentioned, the works discuss various methods and approaches in second-language classroom research with various perspectives and focus. Meanwhile, Rod Ellis's "Language Teaching Research and Language Pedagogy" was chosen for content analysis because Ellis is known for his in-depth works in language teaching research and language pedagogy. This book may offer a specialized and in-depth view of the relationship between language teaching research and effective teaching practices. Ellis often addresses contemporary issues in language teaching and language teaching research. A content analysis of Ellis' work can help identify his unique contribution to our understanding of how language teaching research can influence better teaching practice. Ellis may espouse certain methodological approaches in her books that are relevant to specific research goals. Conducting a content analysis of Ellis' work can help reveal how these approaches are applied and why they are important in second-language classroom research.

This research aims to explore the research methods described by Rod Ellis and map the types of methods in the context of the second language classroom. By analyzing Ellis' work, this study aims to provide clear guidance on how research in second language teaching can be conducted effectively. This is important for improving the quality of teaching and student learning outcomes.

[10] Jacquelyn Schachter and Susan M Gass, *Second Language Classroom Research: Issues and Opportunities* (Routledge, 2013).

[11] Ken Hyland, "Methods and Methodologies in Second Language Writing Research," *System* 59 (2016): 116–25.

[12] Lesley Harbon and Huizhong Shen, "Researching Language Classrooms," *Research Methods in Applied Linguistics. A Practical Resource. London*, 2015, 457–70.

[13] Ernesto Macaro, "Second Language Teachers as Second Language Classroom Researchers," *Language Learning Journal* 27, no. 1 (2003): 43–51.

B. Method

This literature study discusses methods for second language (L2) classroom research based on Rod Ellis' book. This research is qualitative and is conducted through a literature study. This research includes collecting primary and secondary literature sources, collecting data, evaluating data quality, analyzing data, interpreting data, and concluding research results. This research classifies data based on the research formula used.[14] The author uses data collection techniques, namely documentation and literature study. The author uses content analysis using Krippendorf's review to analyze qualitative data. He divided the content analysis research scheme into six stages: unitizing, sampling, recording, reducing, inferring, and narrating.[15]

C. Findings and Discussion

Part I: Ellis begins with an **Introduction**; Ellis explains that in second-language classroom research, we can distinguish between formal research and practitioner research. External researchers conduct formal research using one or more established research traditions. This research can be driven by theoretical issues (e.g., whether opportunities to negotiate meaning can facilitate second language learning) or pedagogical issues (e.g., how and to what extent teachers apply certain approaches in language teaching). In many cases, the issues under study have theoretical and pedagogical significance. Practitioner research is conducted by teachers in their classrooms using the principles of action research as Wallace[16] and Burns[17] or Allwright's[18] exploratory practice. Pedagogical concerns always drive this research. It is geared towards helping teachers solve problems they experience in teaching or to develop a deeper understanding of a particular aspect of the quality of life in the L2 classroom. Nonetheless, both types of research share common features of research, i.e. there is a problem or question to be answered, data is collected and analyzed, and an interpretation of the findings is given.

Ellis then explains the purpose of this chapter, which is to provide an overview of the methods used to research L2 classrooms rather than to guide how to conduct research. Ellis directs readers interested in the details of the various research methods should refer to relevant research methodology books such as Brown and Rodgers,[19] Dornyei,[20] Mackey and Gass,[21] Nunan and Bailey.[22]

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[14] Wahyudin Darmalaksana, "Metode Penelitian Kualitatif Studi Pustaka Dan Studi Lapangan," *Pre-Print Digital Library UIN Sunan Gunung Djati Bandung* 5 (2020).

[15] Klaus Krippendorff, *Content Analysis: An Introduction to Its Methodology* (Sage publications, 2018).

[16] Michael J Wallace, *Action Research for Language Teachers* (Cambridge university press, 1998).

[17] Anne Burns, *Doing Action Research in English Language Teaching: A Guide for Practitioners* (Routledge, 2009).

[18] Dick Allwright, "Exploratory Practice: Rethinking Practitioner Research in Language Teaching," *Language Teaching Research* 7, no. 2 (2003): 113–41.

[19] James Dean Brown and Theodore S Rodgers, *Doing Second Language Research: An Introduction to the Theory and Practice of Second Language Research for Graduate/Master's Students in TESOL and Applied Linguistics, and Others* (Oxford university press, 2002).

[20] Zoltan Dornyei, *Research Methods in Applied Linguistics* (Oxford university press, 2007).

[21] Alison Mackey and Susan M Gass, *Second Language Research: Methodology and Design* (Routledge, 2015).

This chapter provides a framework for understanding how various research methods can be applied to explore and improve teaching and learning processes in the L2 classroom.

Part II: Ellis on **Formal L2 Classroom Research**, Ellis describes formal research in the second language (L2) classroom. Ellis used a series of classroom-based studies conducted by other researchers and Ellis himself in the 1990s, all guided by Long's Interaction Hypothesis. This hypothesis claims that L2 acquisition is facilitated when communication problems prompt learners to try to resolve them through negotiation of meaning.[23] This negotiation can aid acquisition in several ways: making the input more understandable, encouraging learners to realize the difference between their incorrect output and the correct target form through feedback, and encouraging learners to self-correct.

These studies are experimental, there are one or more experimental groups that receive a treatment (consisting of pre-modified input to facilitate comprehension or student-modified input through interaction or the opportunity to use the target item in production). In all studies, there was a pre-test to determine the target vocabulary that the students already knew, a post-test immediately after the treatment, and a delayed post-test to determine whether the learning that occurred was durable.[24]

Ellis' research is formal in several ways. First, the research was theory-driven, Ellis wanted to test the claims of the Interaction Hypothesis. Although several studies have shown that modified interaction aids comprehension, few studies have examined whether it facilitates acquisition. Therefore, there needs to be more clarity between the claims of the Interaction Hypothesis and the supporting evidence. Ellis tries to fill the gap. Second, Ellis wanted to demonstrate a cause-and-effect relationship (i.e., the relationship between interactively modified input and output and L2 acquisition). For this reason, Ellis chose an experimental design rather than conducting a purely descriptive study. Thirdly, as a university professor, Ellis was interested in conducting studies that could result in publications in academic journals, such as Language Learning, Applied Linguistics, and Studies in Second Language Acquisition.

Ellis goes on to explain that not all formal research is theory-driven. Much L2 classroom research is descriptive, aiming to understand a particular aspect of teaching or learning and providing information that can eventually be used to form theory. An example of this kind of research is Lyster and Ranta's[25] study on how teachers in French immersion classes correct students' linguistic errors when interacting with them. This study was also formal as it was conducted by researchers (Lyster and Ranta are university professors) and aimed to publish an article in an academic journal (Studies in Second Language Acquisition).

Whether experimental or descriptive, formal research in the L2 classroom aims to contribute to research-based language pedagogy, seeking to provide

[22] David Nunan and Kathleen M Bailey, "Exploring Second Language Classroom Research: A Comprehensive Guide," *(No Title)*, 2009.

[23] Michael H Long, "Native Speaker/Non-Native Speaker Conversation and the Negotiation of Comprehensible Input1," *Applied Linguistics* 4, no. 2 (1983): 126–41.

[24] Rod Ellis and Xien He, "The Roles of Modified Input and Output in the Incidental Acquisition of Word Meanings," *Studies in Second Language Acquisition* 21, no. 2 (1999): 285–301.

[25] Roy Lyster and Leila Ranta, "Corrective Feedback and Learner Uptake: Negotiation of Form in Communicative Classrooms," *Studies in Second Language Acquisition* 19, no. 1 (1997): 37–66.

teachers with information they can use to decide what and how to teach. Its characteristics: 1) The researcher determines the phenomenon under study, 2) The researcher borrows a classroom to conduct the research, 3) The researcher may also enlist the help of the classroom teacher to conduct the research, 4) The research is theory-driven (as in experimental research) or conducted to develop theory (as in descriptive research), 5) The results of the research are written according to the requirements of academic articles and to publish them in academic journals, 6) In many cases, the research is aimed at contributing to research-based language pedagogy.

Ellis goes on to describe the limitations that may be experienced, in that formal research may not address issues of concern to teachers and may never reach teachers because they are unlikely to read the journals in which the research is published. If the research does impact teachers, it will happen in a top-down manner - that is, through the mediation of teacher educators who draw implications for teaching from the research and convey them to teachers. Some researchers and teacher educators argue that teachers should be involved in their practitioner research.

Part III: Ellis talks about **Practitioner Research**; Ellis explains that practitioner research is research conducted by practitioners (usually teachers) in their classrooms, either independently or in collaboration. Stewart, citing Thesen and Kuzel[26] notes that this research is reform-oriented rather than simply description or meaning.[27] Therefore, practitioner research aims to enable teachers to become experts who understand their students and classrooms.[28] In this way, it seeks to connect research and practice directly.

Practitioner research topics do not stem from theory but from teachers' desire to experiment with innovations in their classroom, seek solutions to problems they identify in their teaching or with their students, or develop a deeper understanding of some aspect of life in their classroom. Practitioner research, therefore, is inherently local. Its focus is on a particular group of learners in a classroom where the teacher teaches. It should be evaluated not based on its contribution to a general understanding of a particular theoretical issue but on its contribution to the teacher's teaching practice and through the reflection that it can promote teacher development.

The value of practitioner research may lie more in the process than in the research's product. Indeed, it can be questioned whether teachers conducting practitioner research must produce a product - in the form of a report or public presentation of their research. However, Freeman argues that the knowledge that teachers articulate through a disciplined research process should become public.[29] Borg also emphasizes the importance of teachers 'publishing their

[26] J Thesen and A J Kuzel, "Participatory Inquiry," *Doing Qualitative Research*, 1999, 269–90.

[27] Timothy Stewart, "Teacher-Researcher Collaboration or Teachers' Research?," *TESOL Quarterly* 40, no. 2 (2006): 421–29.

[28] Marilyn Cochran-Smith and Susan L Lytle, "Chapter 8: Relationships of Knowledge and Practice: Teacher Learning in Communities," *Review of Research in Education* 24, no. 1 (1999): 249–305.

[29] Donald Freeman, "Redefining the Relationship between Research and What Teachers Know," *Voices from the Language Classroom: Qualitative Research in Second Language Education*, 1996, 88–115.

research' while acknowledging that teachers themselves often doubt the need for this.[30]

There are clear advantages to teachers sharing their research, both for themselves (in terms of the feedback they will receive in a public forum) and for other teachers (who can gain insights from the research). Several outlets are available for the publication of practitioner research, teacher conferences, and several journals (for example, Language Teaching Research has a section called 'Practitioner Research'). However, practitioner research is likely to be published in a different academic journal than formal research, which raises questions about its status in L2 classroom research.

A key point that emerges in discussions about practitioner research conducted by practitioners is the need for a model (in a way, a theory) of how to do it. Such a model comes from teacher educators who promote teacher research to help solve local problems they experience and develop themselves as members of the teaching profession. Ellis considers the two most widely used models: action research and exploratory practice. By analyzing these points, it can be seen how practitioner research differs from formal research and how each type of research has a unique role and contribution to the development of language pedagogy.

Part III Sub I: Ellis discusses **Action Research**; Ellis explains that this research is a form of self-reflective inquiry conducted by participants in social situations to improve the rationality and justice of their practices, as well as the situations in which these practices are carried out.[31] It is applied to a wide range of professional activities. Its origins can be traced to the work of Kurt Lewin, who showed that the highest levels of output by factory apprentices were achieved by those who had the opportunity to formulate their own 'action plans'.[32] Action research is a form of self-reflective inquiry conducted by practitioners in the context of their actions. The aim is to improve the practice of a professional activity - in this case, language teaching. This research can be conducted by individual teachers or collaboratively by teams of teachers.

The action research model for teachers emphasizes several features: (1) context-specific, (2) practical, (3) systematic, (4) reflective, and (5) cyclical. The model proposes several iterative phases: 1) Identifying a problem or issue relevant to a particular teaching context (initial idea), 2) Obtaining information relevant to the problem/issue (fact gathering), 3) Formulating possible solutions to the problem and devising ways to try them out (action plan), 4) Trying out the solution in a specific teaching context (implementation), 5) Collecting data to investigate whether the solution is effective (monitoring), 6) If necessary, revising the action plan and proceeding through steps four and five again or identifying new problems that arise from the initial study.

Penner's small-scale study in her classroom to address the problem of students' use of the first language (L1) - Japanese, is a good example of action research.[33] Penner identified a general problem and then narrowed it down to a

[30] Simon Borg, "Introducing Language Teacher Cognition," 2009.

[31] Wilfred Carr and Stephen Kemmis, *Becoming Critical: Education Knowledge and Action Research* (Routledge, 2003).

[32] Kurt Lewin, "Resolving Social Conflicts; Selected Papers on Group Dynamics.," 1948.

[33] J Penner, "A Balance or a Battle? L1 Use in the Classroom," *Teaching in Action: Case Studies from Second Language Classrooms*, 1998, 199–203.

more specific problem regarding students' use of L1. Penner tried solutions to this problem but needed to investigate their effectiveness systematically. This eventually led her to collect data to help understand the problem better. Penner's questionnaire helped her see why students use Japanese more clearly, mainly because of the social need to establish relationships with classmates.

The first step in action research - determining the problem or issue to be investigated - is critical. Wallace points out that problem areas can include a wide range of possibilities: classroom management problems, teaching materials problems, problems related to specific teaching areas (e.g., reading and oral skills), problems with student behavior, achievement or motivation, and personal management problems (e.g., time management and relationships with colleagues/superiors). Barkhuizen investigated problems identified by a group of English teachers in Chinese universities. The three most frequently identified problems were (1) students' unwillingness to speak in class, (2) students' lack of motivation, and (3) teaching materials.[34]

Whether conducted traditionally or as a micro-evaluation of a task, action research has problems. Some teachers express that the research is time-consuming, they need more expertise, and students may be unwilling to participate. There are doubts about its lack of rigor and its status in academic circles. However, it is important to remember that action research aims to encourage reflection on teaching and does not need to meet academic criteria for research. The main issue is its feasibility. Allwright proposes an alternative form of practitioner research for teachers, believing that teachers can only be expected to engage in action research if they experience burnout.[35] As such, action research provides a powerful framework for teachers wishing to improve their teaching practice through systematic, self-reflective inquiry.

Part III Sub II: Ellis discusses **Exploratory Practice**, where Ellis explains that Allwright strongly supports exploratory research. He explains that it evolved from two ethical concerns - the damaging separation between researchers and teachers and the high risk of burnout associated with proposed teacher-based classroom research.[36] Allwright formulated several general principles to guide the practice of exploratory research. At the center of these principles is the notion of 'classroom life,' which Allwright argues should be considered in terms of 'quality of learning,' 'quality of education,' and ultimately 'quality of life' involving factors beyond the classroom itself.[37]

Ellis then provides the principles of exploratory research: 1) Prioritize the quality of life; practical issues should be considered in context and will involve a holistic understanding of participants' lives, 2) Understand classroom life: Only a serious attempt to understand life in a particular environment makes it possible to decide whether practical change is necessary, desirable, and/or possible. This requires converting the practical problem into a puzzle, 3) Involve everyone; exploratory research is seen as a collaborative endeavor, involving learners as co-researchers, 4) Work to strengthen relationships; exploratory research is geared

[34] Gary Barkhuizen, "Topics, Aims, and Constraints in English Teacher Research: A Chinese Case Study," *TESOL Quarterly* 43, no. 1 (2009): 113–25.

[35] Allwright, "Exploratory Practice: Rethinking Practitioner Research in Language Teaching."

[36] Dick Allwright, "From Teaching Points to Learning Opportunities and Beyond," *Tesol Quarterly* 39, no. 1 (2005): 9–31.

[37] Allwright, "Exploratory Practice: Rethinking Practitioner Research in Language Teaching."

towards achieving social togetherness, 5) Work for mutual development; research participants should work for each other's development, 6) Integrate understanding into classroom practice; practitioner research should refrain from parasitizing the lives it seeks to understand. Whatever investigative tools are used should be part of the instructional activity that is a natural part of the lesson, 7) Make the work an ongoing endeavor; exploratory research should be seen as an ongoing endeavor and can be sustained indefinitely. Avoid time-limited funding, as this will compromise the whole endeavor.

Exploratory research aims to make the time teachers and students spend together enjoyable and productive and create the conditions for pedagogical change. Allwright emphasizes that teacher research must be feasible: if teachers see classroom research as too demanding, they will not engage. Exploratory research, therefore, needs to integrate inquiry into classroom practice. The role of academic researchers is that of 'consultants' rather than 'directors'; they should provide advice on the conduct of the investigation rather than try to control it. Exploratory research should be a collaborative venture involving learners and focus on the 'puzzle' rather than the problem.

Bloom's study of emerging tensions in a Spanish course for university-level health professionals reflects the seven principles of exploratory research.[38] Bloom cared about the quality of life in her class, which became the impetus for understanding why tensions arose and finding ways to resolve them. Bloom treats these tensions as puzzles rather than problems. Bloom engages students and herself in exploring tensions and ways to relieve them. Bloom continues to work for mutual development, both the development of students as effective learners and his development as a teacher. Bloom is very careful to integrate investigative tools into his teaching practice: students are not asked to perform any task for data collection. His work is truly an ongoing venture that spans a one-semester course.

There are several differences between action research and exploratory research. One is the starting point of the problem or task in the case of action research and the puzzle in the case of exploratory research. Another difference lies in the methodology for both approaches. Action research uses data collection methods similar to formal research and involves more than just teaching materials; exploratory research integrates data collection into teaching practice. What the two have in common is an emphasis on the continuous nature of the inquiry. Action research is cyclical; exploratory research is a long-term endeavor and potentially more continuous because it is part of teaching.

Practitioner research is conducted by teachers in their classrooms to improve practice (in the case of action research) or understand classroom life (in the case of exploratory research). Where such research is published, it usually takes the form of a narrative report. Penner's study of action research and Bloom's study of exploratory research are presented as 'stories' about these two teachers' experiences investigating their classrooms and what they discovered through those investigations. This reflects Crookes' call for new discourses and genres that can represent teachers' findings from their research.[39]

[38] Melanie Bloom, "Tensions in a Non-Traditional Spanish Classroom," *Language Teaching Research* 11, no. 1 (2007): 85–102.

[39] Graham Crookes, "Action Research for Second Language Teachers: Going beyond Teacher Research," *Applied Linguistics* 14, no. 2 (1993): 130–44.

The main contribution of such research may not lie in the theoretical understanding of the second language classroom but in its relevance to language pedagogy. As Allwright[40] notes, teachers and learners benefit most from this research, not academic researchers.

Part IV: Ellis discusses the **Main Research Traditions**, Ellis in language teaching research and the social sciences in general, two main research traditions that are often used. The terms used to describe these two traditions vary. They are often called quantitative and qualitative research[41] However, Ellis has his terms, which include confirmatory and descriptive, some use psychometric and naturalistic,[42] normative and interpretive,[43] and analytical-nomological and exploratory-interpretive.[44]

Ellis chose the terms confirmatory and descriptive. Ellis' aim is not to provide practical guidance on these two research traditions but rather to introduce the reader to their theoretical foundations, the types of research designs used, the methods of data collection, and how the data is analyzed. Ellis focuses on research conducted in the second language (L2) classroom. Confirmatory research which aims to confirm an existing hypothesis or theory. This tradition is often associated with quantitative approaches, which involve collecting numerical data and using statistics to analyze that data. Research designs in this tradition are often experimental or quasi-experimental, where independent variables are manipulated to observe their effects on dependent variables. Ellis gives an example of a study that might explore the effects of a particular teaching method on student learning outcomes by using standardized tests to measure improvements in language ability. As for descriptive research, Ellis focuses more on understanding phenomena in their original context. This tradition is often associated with qualitative approaches involving non-numerical data collection, such as interviews, observations, and document analysis. The aim is to develop a deep understanding of a particular process or experience without seeking to confirm a particular hypothesis. Descriptive research might involve an in-depth case study of a teacher's experience of teaching a second language in the classroom, including how she deals with challenges and capitalizes on opportunities in teaching.

Part V: In this section Ellis discusses **Confirmatory Research**; Ellis begins with a theoretical foundation. Confirmatory research is based on several fundamental assumptions: 1) Objective Reality: The phenomenon under study (language classes) is considered an objective reality that can be studied scientifically, excluding the subjective viewpoint of the researcher as much as possible, 2) Theory-driven: The research is guided by an explicit theory that predicts the existence of certain relationships in the phenomena under investigation. The goal is to test these predictions (called hypotheses) by providing evidence that confirms or rejects the hypotheses, 3) Element

[40] Allwright, "Exploratory Practice: Rethinking Practitioner Research in Language Teaching."

[41] Brown and Rodgers, *Doing Second Language Research: An Introduction to the Theory and Practice of Second Language Research for Graduate/Master's Students in TESOL and Applied Linguistics, and Others*; Mackey and Gass, *Second Language Research: Methodology and Design*.

[42] Nunan and Bailey, "Exploring Second Language Classroom Research: A Comprehensive Guide."

[43] Steven H McDonough, "Learner Strategies," *Language Teaching* 32, no. 1 (1999): 1–18.

[44] Rüdiger Grotjahn, "On the Methodological Basis of Introspective Methods.," 1987.

Definition: To form a hypothesis, the phenomenon under investigation must be divided into clearly defined elements or constructs. The validity of the research depends on whether these constructs are theoretically sound, 4) Quantitative Measurement: Once identified, the constructs under study can be measured separately and quantitatively (ethical perspective). Measurement of variables must be reliable, ensuring there is no bias or inconsistency in measurement, 5) Generalization of Findings: By ensuring the validity and reliability of the research, conclusions can be generated that can be applied to the wider population from which the sample was drawn. Confirmatory research findings are not limited to the class/teacher/student under study.

Variables in L2 Research uses language teaching and learning theories to identify variables that can be studied. These variables are general theoretical constructs. Then Ellis explains examples of variables from teaching theory: production-based instruction and comprehension-based instruction. From L2 learning theory, examples are implicit learning and explicit learning. Some variables cover both theories. For example, focus on form is a variable derived from L2 acquisition theory, which claims that attention to form in the context of meaning-focused communication is the ideal condition for learning. However, it is also an instructional variable realized through specific techniques such as corrective feedback.

Variable Operationalization For research purposes, theoretical variables must be made operational. That is, concrete ways of investigating them must be devised. This often means narrowing down the variable to a very specific behavior. For example, comprehension-based instruction can be realized by listening and doing tasks (tasks that require students to listen to instructions or descriptions and then demonstrate their understanding through action). The point is that in confirmatory research, the variables selected for study are predetermined by the general theory.

The relationship between variables can be of two types, resulting in two types of confirmatory research: experimental and correlational.

1. Experimental Research: Assumes a cause-and-effect relationship between variables, where variable A (independent variable) causes a change in variable B (dependent variable). In language teaching research, this usually involves investigating whether a particular aspect of instruction (e.g., corrective feedback) produces changes in students (e.g., improved grammatical accuracy).
2. Correlational Research: Assumes the existence of a relationship between two variables without claiming that the relationship is causal. For example, the relationship between students' participation in class and L2 proficiency is better seen as correlational because students' proficiency may affect their level of participation or vice versa. Correlational relationships should be interpreted with caution as we cannot be sure about the direction of the relationship found.

The relationship between two variables is likely influenced by other variables, known as moderating variables. For example, we must consider individual factors such as language anxiety to investigate the effects of comprehension-based versus production-based instruction on learning. Students who tend to experience anxiety in class may learn better from comprehension-based instruction because production inherently creates anxiety for some

students. In contrast, students more confident and ready to take risks using the L2 may benefit more from production-based instruction.

Part V Sub I: Ellis then focuses on the **design of confirmatory research**, where he explains the fundamental differences in experimental and correlational research designs. Experimental research requires several key elements: 1) Variable Identification and Definition: Independent and dependent variables must be identified and defined, 2) Intervention: The intervention is designed to investigate the effect of the independent variable on the dependent variable. This is referred to as treatment, 3) Group Formation: Several groups are formed, consisting of an experimental group and a control group (the group that does not receive the treatment), 4) Random Assignment: Participants must be assigned to groups randomly. However, most classroom-based studies are not pure experiments. Logistical considerations often require using existing classes, so random assignment is impossible. Experimental research in the classroom is usually referred to as quasi-experimental.

Ellis and He is study is an example of quasi-experimental research. They used existing classes and could not include a control group due to limited access to only three classes. They investigated three experimental treatments (pre-modified input, interactionally modified input, and interactionally modified output) without a control group, which is considered a significant drawback.[45] However, they felt it was reasonable not to include a control group as previous studies have shown that pre-modified and interactionally modified inputs result in greater new vocabulary learning than unmodified inputs.

Some experimental studies investigate a single group using a time series design, where measurements of the dependent variable are taken several times to see a consistent pattern of change resulting from the treatment. More complex experimental designs may involve moderating variables. For example, Y. Sheen's study on corrective feedback examined the effects of language anxiety on students' ability to utilize the feedback provided.[46] Independent and dependent variables can vary in experimental research, leading to design differences. In Ellis and He and Sheen's studies, the independent variable was a specific type of instruction, and the dependent variable was L2 learning. There is often a need for a pre-test to show what students know before instruction, which is then compared to a post-test and delayed post-test to assess learning resilience. Not all classroom-based experimental studies focus entirely on products (outcomes). Research also needs to investigate the process that occurs during the treatment. For example, Ellis and He is study recorded and analyzed interactions during the lesson to understand how the treatment affected the outcomes.[47]

As for correlational research, Ellis explains that it aims to investigate the relationship between two or more variables. There is no treatment and no a priori division of participants into groups. Researchers collect numerical data from the variables under study and then analyze the extent to which the variables are related. Many correlational studies are not classroom-based but examine

[45] Ellis and He, "The Roles of Modified Input and Output in the Incidental Acquisition of Word Meanings."

[46] Younghee Sheen, "Recasts, Language Anxiety, Modified Output, and L2 Learning," *Language Learning* 58, no. 4 (2008): 835–74.

[47] Ellis and He, "The Roles of Modified Input and Output in the Incidental Acquisition of Word Meanings."

student or teacher variables by collecting data outside the classroom. For example, a study on the relationship between student motivation and L2 proficiency. However, there are also classroom-based correlational studies that examine instructional variables. An example of a classroom-based correlational study is Guilloteaux and Dörnyei's study investigating the relationship between teacher-motivational behavior, student-motivational behavior, and student motivation to learn English. Finding a relationship between two variables does not indicate causality. Guilloteaux and Dörnyei acknowledge that alternative explanations, such as 'school effects,' may influence the results.[48] However, in some cases, there are grounds to claim that the relationship is causal, although confirmation requires experimental research.

Experimental and correlational research designs are essential in understanding the relationship between variables in the context of language teaching. Experimental research allows causality testing through controlled interventions, whereas correlational research allows for investigating relationships between variables without intervention. Both have an important role in deepening understanding of the processes and outcomes of language learning in the classroom.

Part V Sub II: Ellis then discusses the **Data Collection of confirmatory research**, which varies depending on the research question. The data collected must be by the purpose of the research, which is to test the hypothesis that has been previously set. Ellis then raised some research examples, such as Ellis and He is study, in which the data collected aimed to show whether students had learned the target vocabulary.[49] The data consisted of measurements that could show changes in students' vocabulary acquisition after treatment. Then Foster and Skehan's study, the data collected in this study consisted of measurements generated from transcripts of students' performance in various tasks.[50] This included measuring aspects such as fluency, complexity, and accuracy of language use. Later, in Guilloteaux and Dörnyei's study, data was collected from within the classroom using observation schemes and self-reported student data.[51] This included observing teachers' and students' motivational behaviors and measuring students' motivation to learn English. In all of these cases, the data collected was numeric, the collection of numerical data is essential in confirmatory research as it allows for the statistical analysis required to test hypotheses.

Ellis describes several types of numerical data that are often collected in confirmatory research: 1) L2 learning: Data relating to second language (L2) learning can be drawn from constructed free responses (such as using communicative oral tasks) to investigate students' interlanguage development. Examples of studies that collect this kind of data are those of VanPatten and

[48] Marie J Guilloteaux and Zoltán Dörnyei, "Motivating Language Learners: A Classroom-oriented Investigation of the Effects of Motivational Strategies on Student Motivation," *TESOL Quarterly* 42, no. 1 (2008): 55–77.

[49] Ellis and He, "The Roles of Modified Input and Output in the Incidental Acquisition of Word Meanings."

[50] Pauline Foster and Peter Skehan, "The Influence of Planning on Performance in Task-Based Learning," *Studies in Second Language Acquisition* 18, no. 3 (1996): 299–324.

[51] Guilloteaux and Dörnyei, "Motivating Language Learners: A Classroom-oriented Investigation of the Effects of Motivational Strategies on Student Motivation."

Sanz[52] and Lyster and Mori,[53] 2) Task Performance: Studies investigating task performance collect samples of students' performance in various tasks, which are then analyzed to provide various measures of L2 use. These include linguistic measures (such as fluency, complexity, and accuracy) and discourse measures (such as negotiation sequences and language-related episodes), 3) Student Factors: Student factors can serve as moderating variables, dependent variables, or in correlational research. Numerical data can be obtained from classroom observation schemes, student questionnaire responses, or tests of specific student factors.

These different types of data are widely recognized in the language research literature and serve to answer various research questions in the language teaching field. Using numerical data allows researchers to test hypotheses validly and reliably, ensuring that findings can be generalized to a wider population.

Part V Sub III: Ellis then focuses on **Data Analysis of confirmatory research**, which is collected numerically and analyzed using statistical methods. Two basic types of statistics are used: descriptive and inferential. Both types are important, as the results obtained from inferential statistics can only be properly understood concerning descriptive statistics. Descriptive statistics provide information about the measures obtained for the whole group. These include 1) The mean, the score obtained by each participant divided by the number of participants, and 2) Measures of dispersion, such as standard deviation and range, which indicate the extent to which individual scores cluster around the mean. Some studies also include participants' scores in addition to group statistics. Inferential statistics are used to make inferences from the data obtained. There are two main types of inferential statistics: 1) Comparing Groups, these statistics are used in experimental studies to measure the extent to which group scores differ; t-tests are used to compare two groups, and Analysis of Variance (ANOVA) is used when the study involves more than two groups. These statistics produce a statistical score (t for t-tests and F for ANOVA) and a p-value, indicating whether the difference is statistically significant. Generally, a p value of <0.05 is required to claim statistical significance, meaning there is only a five in one hundred chance that the difference occurred by chance. 2) Measuring Relatedness: This statistic is used in correlational studies to measure the degree of relatedness between two variables. Pearson correlation (Pearson Product Moment Correlation) gives a score (r). A perfect correlation occurs when $r = 1.0$, which is rare in social research. An r score close to 1.0 indicates a strong relationship, while a low r score indicates a weak relationship. A p value can also be calculated for correlation. A p value <0.05 indicates that the relationship is statistically significant. In correlations, the r measure and p value should be considered together. Sample size (n) also affects significance; with a large sample size, even a weak correlation can become significant. Multiple Regression Analysis: This shows the strength of the relationship between two variables and the extent to which scores on one variable can predict scores on another. This

[52] Bill VanPatten and Cristina Sanz, "From Input to Output: Processing Instruction and Communicative Tasks," in *Second Language Acquisition Theory and Pedagogy* (Routledge, 2013), 169–85.

[53] Roy Lyster and Hirohide Mori, "Interactional Feedback and Instructional Counterbalance," *Studies in Second Language Acquisition* 28, no. 2 (2006): 269–300.

makes it more possible to talk about causation in correlational studies. Thus, data analysis in confirmatory research relies on appropriate statistical methods to answer research questions and test predetermined hypotheses.

Part VI: In this section, Ellis discusses **Descriptive Research**; Ellis explains the theoretical basis of this type, which aims to produce qualitative and quantitative descriptions of classroom processes, the factors that influence them, and the implications for language learning. Although 'naturalistic research' or 'interpretive research' are often used, I prefer 'descriptive research' as it more accurately describes the type of research conducted in the L2 (second language) classroom. Nonetheless, using the term 'descriptive' does not mean that this research fails to explain the phenomenon under investigation. Descriptive research has some common characteristics: 1) Emic perspective, adopting an emic perspective by providing a rich description of a particular teaching context. 2) Limited Context usually involves a few 'cases' (e.g., teachers, learners, or classes) and does not attempt to generalize beyond these cases. 3) Non-intervention, the researcher investigates these cases as they are, without intervening through any particular form of instruction, 4) Cultural and Social Context, emphasizing the need to understand the phenomenon in its cultural and social context, 5) Research-Theory Approach, variables are usually not predetermined based on a particular theory, but rather emerge as the research progresses. Research findings can be used to build theory, 6) Researcher Subjectivity assumes that knowledge and understanding of phenomena are subjective and seeks to offset researcher subjectivity by demonstrating that research findings are consistent with the data and reflect the views of a range of participants.

Part VI Sub I: Ellis then mentions **Types of Descriptive Research**, which rely on observation of the phenomenon being studied and, in some types, self-reports from the participants involved. These approaches can be grouped into two broad categories: interactional and ethnographic research.

1. Interactional Research, documentation of interactional features, i.e., documenting interactional features of classroom discourse. Discourse analysis provides a systematic description of the structure of classroom interactions.[54] Conversation analysis characterizes the organization of interaction by abstracting from instances of interaction to uncover the underlying emic logic.[55] Microgenetic analysis documents change by showing how interactions help participants perform tasks collaboratively.[56]
2. Ethnographic Research, studies behavior in natural settings, focusing on cultural interpretations of behavior.[57] Collects multiple perspectives, gathering various data (e.g., through participant observation, interviews, collection of relevant documents, and member checking) to describe and

[54] Lyster and Ranta, "Corrective Feedback and Learner Uptake: Negotiation of Form in Communicative Classrooms."

[55] Paul Seedhouse, "The Interactional Architecture of the Language Classroom: A Conversation Analysis Perspective.," *Language Learning*, 2004.

[56] Patricia A Duff, "Qualitative Approaches to Classroom Research with English Language Learners," in *International Handbook of English Language Teaching* (Springer, 2007), 973–86.

[57] Karen Ann Watson-Gegeo, "Ethnography in ESL: Defining the Essentials," *TESOL Quarterly* 22, no. 4 (1988): 575–92.

understand common behavior patterns. Communication ethnography examines the 'ways of talking' in a classroom community, focusing on the strategies and conventions that organize larger communication units. Communication ethnography is often used to investigate bilingual and mainstream classrooms containing L2 learners, providing a more holistic and comprehensive view of classroom interactions and behaviors.[58]

Overall, descriptive classroom research provides deep insights into teaching and learning processes and the cultural and social contexts that influence them. This research helps better understand classroom dynamics and their contribution to language learning.

Part VI Sub II: Ellis then discusses the **Design of Descriptive research**; Ellis explains that confirmatory research designs are usually cross-sectional, meaning that data collection is carried out over a short period. This study aims to confirm a predetermined hypothesis through numerical data collection and statistical analysis. Descriptive research can use a cross-sectional or longitudinal design, where data is collected over a longer period to track changes and developments. Most interactional research is cross-sectional. The process includes 1) Identifying the specific phenomenon to be studied (e.g., corrective feedback, teacher questioning, turn-taking), 2) Formulating a research question, 3) Selecting a specific classroom to study, 4) Observing the interactions that occur there, usually by audio or video recording. 5) Extracting relevant episodes from the collected data and describing them according to the procedures of the chosen research tool (discourse analysis, conversation analysis, microgenetic analysis).

Meanwhile, ethnographic research is emergent and usually uses a longitudinal design. According to Watson-Gegeo, this research goes through three stages: 1) Comprehensive Stage, collecting an overview of the situation under investigation, the goal is to learn all theoretically important aspects of a setting, 2) Topic-Oriented Stage, identifying the specific topic to be investigated after the general picture has been obtained, at this stage research questions begin to be formulated, 3) Hypothesis-Oriented Stage, collecting further data to test specific hypotheses.[59]

A good example of an ethnographic study is Harklau's longitudinal study of L2 learners in mainstream classrooms in California. This study reflects all the hallmarks of ethnographic research: 1) General Research Questions, the study is based on general research questions relevant to its field of study, 2) Description of Context, providing a very detailed description of the research context, 3) Data Collection Methods, using a variety of data collection methods including observation and self-reports from participants, 4) Thematic Analysis, distilling the data to extract key themes and discussing them holistically, documenting the findings with quotes from the data.[60] Duff describes Harklau's study as a complete, well-situated, and synthesized account of the students, classrooms, and schools that were the focus of the study.[61]

[58] Muriel Saville-Troike, *The Ethnography of Communication: An Introduction* (John Wiley & Sons, 2008).

[59] Watson-Gegeo, "Ethnography in ESL: Defining the Essentials."

[60] Linda Harklau, "ESL versus Mainstream Classes: Contrasting L2 Learning Environments," *TESOL Quarterly* 28, no. 2 (1994): 241–72.

[61] Duff, "Qualitative Approaches to Classroom Research with English Language Learners."

Part VI Sub III: Ellis then discusses **Data Collection from descriptive research**. Interactional research requires the collection of data related to interactions that occur in the classroom. There are two main ways to collect such data: 1) Interaction Analysis Scheme, recording the various interaction behaviors, and 2) Interaction Recording, recording the interactions that occur, either through audio or video, then preparing transcripts for analysis. Long distinguishes three types of interaction analysis systems: 1) Category System, in each event, is coded every time it occurs; 2) Sign System, in each event is recorded only once within a fixed period; and 3) Rating Scale, providing an estimate of how often certain types of events occur after a period of observation.[62] Communicative Orientation of Language Teaching is one of the most recognized interaction analysis systems. According to Allen, Fröhlich, and Spada, the observational categories in COLT are designed to capture important features of verbal interaction in the L2 classroom and compare them with natural language used outside the classroom.[63]

With the ease of audio and video recording, traditional interaction analysis systems are becoming less popular as recordings offer richer data and allow researchers to consider more carefully when coding categories. Audio and video recordings provide qualitative data through transcribed quotes and quantitative data when the data has been coded according to the coding system. Ethnographic research also uses classroom observations with interaction analysis systems or recordings, but usually supplemented with field notes that provide more detailed contextual information. In addition, ethnographic research collects other types of data, such as participants' self-reports through informal and formal interviews or daily journals and documentary information. An increasingly popular type of self-report is stimulated recall. This method is often used with audio or video recordings, where the researcher plays back excerpts from the recording and asks participants (teachers or students) to recall their thoughts. This method is particularly useful for investigating what participants noticed during the interaction, their affective states, and their perspectives on what was going on.[64]

Part VI Sub IV: Ellis then focuses the discussion on the **analysis of descriptive research**. In descriptive research, quantitative data is analyzed using descriptive and inferential statistics. Chi-square is a very useful statistical tool since the data is usually frequency counts. Chi-square allows the researcher to determine whether the frequency distributions in some categories are statistically significantly different. For example, if the researcher wants to know if learners' difference in error correction after receiving different types of corrective feedback is statistically significant, chi-square will produce a score (x^2) and assess the probability that this score occurred by chance (p-value). Qualitative data can be analyzed using deductive analysis, which uses a predetermined set of themes or categories to code the data. Also inductive analysis, where the data determines the themes/categories through a 'grounded theory' approach. This involves first examining the data to see what kinds of

[62] Michael H Long, "Inside the 'Black Box': Methodological Issues in Classroom Research on Language Learning," *Language Learning* 30, no. 1 (1980): 1–42.

[63] Patrick Allen, "The Communicative Orientation of Language Teaching: An Observation Scheme.," 1983.

[64] Susan M Gass and Alison Mackey, *Stimulated Recall Methodology in Second Language Research* (Routledge, 2013).

chunks naturally form, and then selecting a set of concepts that help explain why the data splits the way it does. Harklau's study used this method. As Ellis and Barkhuizen note, the choice between deductive and inductive analysis is not exclusive, as many analyses involve moving back and forth between the two. The 'grounded theory' approach seeks to develop a theory based on the data collected during the research. Le Compte and Schensul describe this as a process of looking at the data to see what kinds of chunks naturally form and then selecting concepts that help explain the distribution of that data.[65]

Thus, quantitative and qualitative data in descriptive research are analyzed with methods appropriate for the data collection type. Statistical analysis helps determine the significance of quantitative data, while deductive and inductive approaches assist in developing a deeper understanding of qualitative data. The approach used often depends on the specific objectives of the research and the nature of the data collected.

Section VII: In this section, Ellis discusses **Hybrid Research**: process-product studies, where formal research in language teaching is often not pure research (i.e., only confirmatory or descriptive). More often, this research takes a hybrid form. Grotjahn proposes that research paradigms be considered in three dimensions: 1) design, 2) types of data collected, and 3) methods of data analysis.[66] Using these dimensions, he described two pure research paradigms (which correspond to the distinction between confirmatory and descriptive research) and six mixed forms. One very common mixed type in language teaching research is experimental-qualitative-statistical. In this type, the basic design is experimental, but qualitative data is collected and then quantified by counting the frequency of occurrence of specific qualitatively defined categories. These frequencies can then be analyzed using statistical methods. This type of research is often referred to as 'process-product research.'

One of the most famous product-process studies in L2 classroom research is Spada's study of the communicative language classroom. Spada sought to investigate the relationship between instructional differences and learning outcomes. She investigated three classes of intermediate adult learners. To investigate instructional differences, sixty hours of classroom observation data were collected from three classes of intermediate adult learners using an observation scheme. She found differences in the way communicative instruction was applied. Spada also obtained pre-test and post-test scores on seven proficiency measures for learners in these classes, which are product measures.[67] She showed that there was a relationship between classroom process variables and learner improvement on the product measures. Product-process studies are one of the most powerful ways to investigate language teaching. They allow researchers to investigate what happens when a particular experimental treatment is applied. As such, they provide important evidence to explain the results of product-based analysis. It does not necessarily follow that an externally defined treatment will produce actual differences at the process level. This may explain why no differences in learning outcomes occur. Where product

[65] Margaret Diane LeCompte and Jean J Schensul, *Analyzing & Interpreting Ethnographic Data*, vol. 5 (Rowman Altamira, 1999).

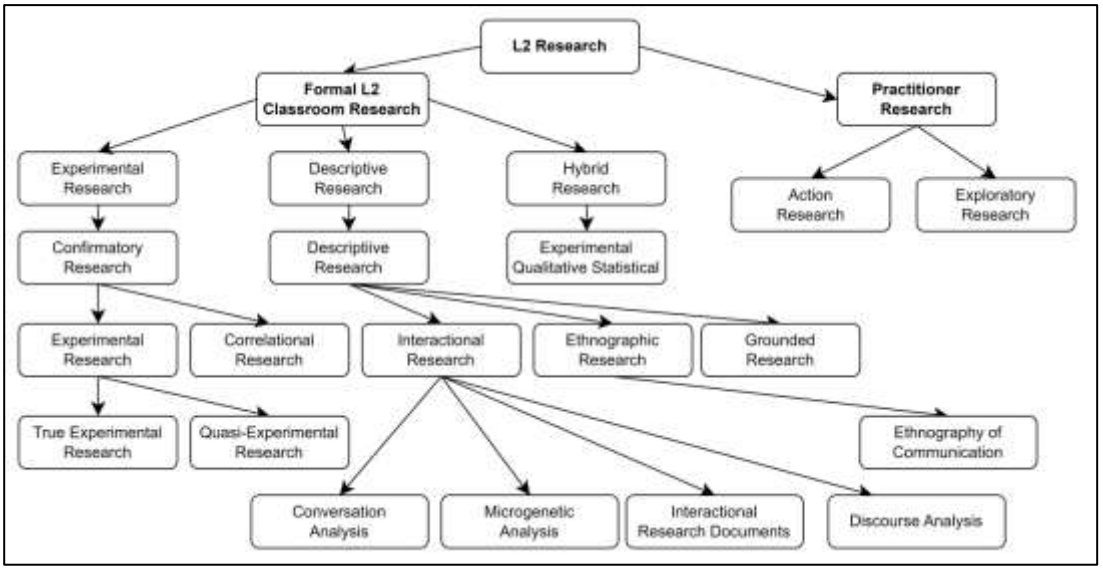
[66] Grotjahn, "On the Methodological Basis of Introspective Methods."

[67] Nina Spada, "Communicative Language Teaching: Current Status and Future Prospects," *International Handbook of English Language Teaching*, 2007, 271–88.

differences are seen, researchers can explore which specific process features explain these differences.

Based on each section discussed by Rod Ellis on this topic, the Mapping on second language (L2) classroom research is found, as shown in the following mapping diagram:

Figure 1. L2 Research Method Mapping Diagram



Based on the mapping picture above, second language classroom research methods can be categorized into two main categories: formal L2 classroom research and practitioner research. Practitioner research is divided into action research and exploratory research. At the same time, formal L2 classroom research, based on the researcher's analysis, can be categorized into three main categories: experimental research, which is then described in the confirmatory research themology, descriptive research; and hybrid research. The research methods in the mapping do not mean that other research methods are ignored, but the mapping focuses on the research raised in Rod Ellis' discussion.

D. Conclusion

Ellis classifies research methods into two main categories: formal research and practitioner research. Formal research is theory-driven and can be experimental or descriptive, whose aim is to contribute to theories of second language learning as well as provide information that teachers can use to develop teaching practices. On the other hand, there is a third type, hybrid research, which uses a mixed form. Practitioner research, on the other hand, is conducted by teachers in their own classrooms and aims to improve teaching practices as well as understanding classroom life, practitioner research does not stem from theory but from teachers' desire to experiment with innovations in their classrooms. Ellis also identifies two main types of practitioner research: action research and exploratory research. Action research is a systematic and reflective approach that focuses on addressing a specific teaching problem through a series of iterative steps. Meanwhile, exploratory practice aims to understand and improve the quality of life in the classroom through collaborative investigations between teachers and students. An important implication for second language classroom researchers is that they can apply the research methods described by

Rod Ellis, such as formal research and practitioner research, to systematically identify and address second language teaching problems in the classroom.

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