Mediating Development in the EFL Classroom: The Case of Saudi Learners' Use of Collaborative Dialogue

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TABLE OF CONTENTS

ABSTRACT *8*

ACKNOWLEDGEMENTS *9*

LIST OF ABBREVIATIONS *11*

LIST OF TABLES *12*

LIST OF FIGURES *14*

LIST OF APPENDICES *15*

1 Chapter 1: Introduction *17*

1.1 Background **17**

1.2 Significance of The Study **22**

1.3 Research Questions **23**

1.4 Personal Motivation **24**

1.5 Organisation of Thesis **26**

2 Chapter 2: Literature Review *29*

2.1 Sociocultural Theory as a Framework for the Study **29**

2.1.1 Understanding the Dynamics of Mediation, Regulation, and Internalisation 29

2.1.2 Zone of Proximal Development 33

2.1.3 Collaborative Dialogue 41

2.1.4 Analysing Collaborative Dialogue Episodes That Arise During Interaction: LREs 44

2.1.5 Unlocking Intersubjectivity: Exploring Mechanisms for Effective Collaborative Dialogue in L2 Learning 46

2.2 Reasoning Skills and Language Development **50**

2.3 Sociocultural SLA: Task Selection and Implementation 59

2.4 Review of Related Studies 60

2.4.1 expert-novice interactions 60

2.4.2 Peer Collaboration: Processes, Patterns, and Conditions for Success 63

2.4.3 Mediational Tools: L1, Digital Environments, and Affect 66

2.4.4 Related studies in the Saudi context 73

2.5 Summary and Research Gap 75

3 Chapter 3: Research Methods 77

3.1 Methodology 77

3.1.1 Researching Within the Pragmatism Paradigm 77

3.1.2 Employing a Mixed Methods Approach 78

3.1.3 Employing Quasi-Experimental Design 79

3.2 Participants 80

3.2.1 Recruitment and Assignment of Participants 80

3.2.2 Participant Demographics and Study Context 82

3.3 Target Forms 86

3.4 Data Collection 88

3.4.1 Tasks 88

3.4.2 Language Development Tests: Pre, Post, and Delayed Test 92

3.4.3 Pilot Study 94

3.4.4 Data Collection Procedures: Tasks and Language Tests 95

3.4.5 Training Sessions: Materials and Procedures 100

3.5 Data Analysis 105

3.5.1 Analysis of Learners' Recorded Interaction 105

3.5.2 (Micro)genetic Analysis Within Socio-Cultural Theory: Investigating Developmental Change in Language Learning 113

3.5.3 Analysis of Language Tests (Pre, Post, and Delayed Tests) 119

3.6 Ethical Consideration 120

4 Chapter 4: Results 122

4.1 To what extent does reasoning skills training impact the quantity, quality, and focus of the learners' produced LREs? 122

4.1.1 Learners' LREs (Frequency of Occurrences, Learners' Level of Engagement, and Focus) 122

4.1.2 LREs Frequency of Occurrences 125

4.1.3 LRE Focus 127

4.2 To what extent does collaborative work supported by reasoning skills training promote second language development? 129

4.3 How does reasoning skills training impact learners' collaborative dialogue and promote second language development? 139

4.3.1 LREs Produced by Learners A20 and A21 While Engaged in Task 1 140

4.3.2 LREs Produced by Learners A13 and A5 While Engaged in Task1 155

4.3.3 LREs Produced by Learners A1 and A9 While Engaged in Task2 167

4.3.4 LREs Produced by Learners A11 and A2 While Engaged in Task2 178

5 Chapter 5: Discussion 193

5.1 Revisiting the Research Questions 193

5.2 The Impact of Reasoning Skills Training on the Quantity, Quality, and Focus of Learners' Produced LREs 194

5.2.1 Frequency of Occurrences 195

5.2.2 Overall Focus of LREs 196

5.2.3 LREs Focus Before and After the Intervention 198

5.3 The Impact of Collaborative Dialogue Supported by Reasoning Skills Training on Second Language Development: Discussion of Language Test Results 199

5.4 The Impact of Reasoning Skills Training on Learners' Collaborative Dialogue and Second Language Development: Discussion of (Micro)genetic Analysis Results 201

5.4.1 Indications of Development in The Learner's Collaborative Dialogue..... 201

5.4.2 Claims of Language Development..... 205

5.4.3 Learner's Use of Psychological Tools for Mediation..... 207

5.4.4 The Use of Playfulness and Laughter to Maintain Intersubjectivity 210

5.5 Reasoning Skills as Mediational Tools in Peer Collaboration 211

5.6 Pedagogical Implications 216

5.6.1 Enhancing Collaborative Dialogue and Reasoning Skills in Adult EFL Classrooms: Recommendations for Curriculum Developers, Educators, and Textbook Authors 217

5.6.2 Enhancing Collaborative Dialogue and Reasoning Skills in Adult EFL Classrooms: A Teacher's Guide to Developing Reasoning Skills 218

6 Chapter 6: Conclusion: Contributions, Limitations, and Recommendations 220

6.1 Research Aims..... 220

6.2 Summary of Key Findings..... 222

6.3 Overview of Key Contributions..... 224

6.4 Limitations and Recommendations for Further Study 226

2 References 228

3 Appendices..... 239

Appendix A: Language Development Pretest..... 239

Appendix B: Task 1A..... 242

Appendix C: Task 1B..... 246

Appendix D: Essex University Ethical Approval..... 251

Appendix E: Majmaah University Ethical Approval..... 252

Appendix F: Participants Information Sheet..... 253

Appendix H: Essex University Consent Sheet to Participate in Research..... 258

Appendix I: Past Simple Review..... 260

Appendix J: Present Perfect Review..... 262

Appendix K: Task 2A..... 264

Appendix L : Task 2B..... 267

Appendix M: Language Development Immediate Post Test..... 271

Appendix N: Language Development Delayed Post Test..... 275

Appendix O: Screenshot of the presentation used in the reasoning skills training..... 278

Appendix P: Reasoning Skills Training Task 1..... 279

Appendix Q: Reasoning Skills Training: Task 2..... 281

Appendix R: Screenshot of The Presentation Skills Training Session Slides..... 282

Appendix S: Presentation Skills (Task 1)..... 283

Appendix T: Presentation Skills (Task 2)..... 284

Appendix U: Analysing an Audio Record on ELAN (Screenshot from This Study)... 285

Appendix V: Transcription Conventions Adapted from Clift (2016: 53–63)..... 286

ABSTRACT

Framed within a sociocultural theory perspective of second language learning, the present study explored the impact of reasoning skills training on learners' collaborative dialogue during EFL tasks, measured through the quantity, quality, and focus of Language-Related Episodes (LREs). A secondary focus was to investigate the effect of collaborative dialogue, supported by reasoning skills, on learners' knowledge of target forms (i.e., past simple, past continuous, present perfect). Forty-five L1 Arabic university students of L2 English participated.

Using a quasi-experimental design and (micro)genetic analysis, results from a mixed-design ANOVA showed that both the reasoning skills group (N=22) and control group (N=23) improved their test scores across three time periods (pre-test, post test, delayed post test).

However, no significant difference was found between the two interventions. A Chi-square test revealed a significant difference in the LREs produced by the reasoning skills group compared to the control group, indicating a positive effect on collaborative dialogue. A qualitative analysis of eight participants from the reasoning skills group revealed how reasoning skills training facilitated development in learners' language knowledge and collaborative dialogue. The study's practical contributions are discussed, highlighting the potential for integrating reasoning skills in second language teaching. Limitations and recommendations for future research, including exploring long-term effects and broader applications, are also addressed.

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LIST OF ABBREVIATIONS

LRE	Language-Related Episode
EFL	English as a Foreign Language
SLA	Second Language Acquisition
ELT	English Language Teaching
L1	First/Native Language
L2	Second Language
SPSS	Statistical Package for the Social Sciences
ZPD	Zone of Proximal Development
OZPD	Objective Zone of Proximal Development
SZPD	Subjective Zone of Proximal Development
ANOVA	Analysis of Variance
SD	Standard Deviation
ID	Identification
CEFR	Common European Framework of Reference for Languages
F-LRE	Form-based Language Related Episode
L-LRE	Lexis-based Language Related Episode
M-LRE	Mechanics-based Language Related Episode
CALL	Computer-Assisted Language Learning
MELL	Mobile-Enhanced Language Learning
CMC	Computer-Mediated Communication

LIST OF TABLES

Table 1. Types of Talk and Their Impact on Collaborative Learning.....54

Table 2. List of Participants' Pseudonym IDs (Reasoning Skills Group).....82

Table 3. List of Participants' Pseudonym IDs (Control Group) 83

Table 4. Study Timeline, Procedures, and Associated Research Questions.....96

Table 5. Interaction Duration in Each Task Before and After Intervention: Reasoning Skills Group 107

T**able 6.** Interaction Duration in Each Task Before and After Intervention: Control Group.....108

Table 7. Language Development Indicators: (Micro)genetic Analysis of the Learners' Interactions.....118

Table 8. Reasoning Skills Group Frequencies of Produced LREs 123

Table 9. Control Group Frequencies of Produced LREs.....124

Table 10. Number of Learners' Produced LREs by Focus Area.....125

Table 11. Frequencies of LREs Before and After Intervention.....126

Table 12. Reasoning Skills Group Test Results 131

Table 13. Control Group Test Results.....132

Table 14. Normality of Distribution (Shapiro-Wilk's Test).....134

Table 15. Homogeneity of Variance (Levene's Test).....134

Table 16. Mauchly's Test of Sphericity 135

Table 17. Descriptive statistics (Control group and Reasoning skills group) 136

Table 18. Overall Analysis Using Mixed Design ANOVA.....137

Table 19. Mixed Design ANOVA (Main Effect Analysis) 138

Table 20. Mixed Design ANOVA Pairwise Comparison with Bonferroni Adjustment (Both Groups Across the Three Time Periods).....139

LIST OF FIGURES

Figure 1. Categorisation of LREs 112

Figure 2. Comparative Analysis of LREs Frequencies Before and After Interventions in Control and Reasoning Skills Groups 126

Figure 3. Distribution of LREs According to Focus. 127

Figure 4. Comparative Analysis LREs Focus Before and After Intervention in the Reasoning Skills Group 128

Figure 5. Comparative Analysis of the Focus of LREs Produced by the Control Group Before and After the Intervention. 129

Figure 6. Language Tests Scores Across the Three Time Point (pertest, post test, and delayed post test) 133

Figure 7. Collaborative Dialogue Supported by Reasoning Skills Training 214

Figure 8. Factors Affecting the Quality of Collaborative Dialogue in the EFL Classroom 216

LIST OF APPENDICES

Appendix A: Language Development Pretest 227

Appendix B: Task 1A 229

Appendix C: Task 1B 234

Appendix D: Essex University Ethical Approval 239

Appendix E: Majmaah University Ethical Approval 240

Appendix F: Participants Information Sheet 241

Appendix G: Mahmaah University Consent Sheet to Participate in Research 244

Appendix H: Essex University Consent Sheet to Participate in Research 246

Appendix I: Past Simple Review 248

Appendix J: Present Perfect Review 250

Appendix K: Task 2A 252

Appendix L: Task 2B 254

Appendix M: Language Development Immediate Post Test 256

Appendix N: Language Development Delayed Post Test 259

Appendix O: Screenshot of the presentation used in the reasoning skills training 262

Appendix P: Reasoning Skills Training Task 1 263

Appendix Q: Reasoning Skills Training: Task 2 265

Appendix R: Screenshot of The Presentation Skills Training Session Slides.....266

Appendix S: Presentation Skills (Task 1) 267

Appendix T: Presentation Skills (Task 2) 268

Appendix U: Analysing an Audio Record on ELAN (Screenshot from This Study) 269

Appendix V: Transcription Conventions Adapted from Clift (2016: 53–63) 270

1 Chapter 1: Introduction

1.1 Background

An enduring goal for Second Language Acquisition (SLA) professionals and researchers is to deepen the understanding of how learners acquire language and how this learning process can be enhanced. SLA researchers have explored the impacts of various learning and development theories proposed by prominent theorists from the 19th and 20th centuries on learners in diverse contexts. It is undeniable that these theories have largely revolutionised the educational landscape, and their influence is clear in second language (L2) classrooms. In recent years, the concepts of collaborative learning and the mediation process that occurs during learner interactions have attracted the attention of sociocultural theory researchers (e.g., Lantolf and Thorne, 2006; Gánem-Gutiérrez, 2006; Swain & Lapkin, 1998).

A core concept in sociocultural theory is 'mediation', which refers to the process by which humans use culturally constructed artefacts, concepts, and activities to regulate their material world and their social and mental activities (Lantolf & Thorne, 2006, p. 79). According to Lantolf and Thorne (2006), mediation provides the tools and context for learning, while regulation, another important Vygotskian concept, describes how learners develop from relying on these external supports to being able to manage their learning processes independently (Vygotsky, 1978). Regulation is broadly defined as the learner's ability to manage and control cognitive, emotional, and behavioural processes in the service of achieving academic goals (Zimmerman, 2002). Within the sociocultural theory framework, regulation develops through a progression from external guidance to internal control, encompassing stages of object-regulation, other-regulation, and self-regulation (Lantolf & Thorne, 2006).

In sociocultural theory, there are three main stages of regulation. The first is object regulation, where human activity is controlled by tools external to themselves, such as dictionaries and grammar checkers in second language acquisition. Other-regulation refers to development scaffolded by interactions with other people, teachers or peers who provide support. Finally, self-regulation refers to a situation whereby the learner can execute the novel skill autonomously, with limited support. Mediation (focuses on the process of learning through cultural and psychological tools and the social context that influences learning) is connected to regulation (focuses on the learner's ability to control and manage their cognitive and emotional processes during learning) through internalisation.

In sociocultural theory, Internalisation is the process by which externally mediated actions are transformed into internal mental functions. Learners who engage in mediated activities gradually internalise the cognitive tools and strategies they use. Another important concept that is key in understanding the connection between mediation and regulation is the Zone of Proximal Development (ZPD). The ZPD is the difference between the learner's actual abilities and potential development. Effective mediation requires graduated assistance from a teacher or peer, from the most subtle hints and gestures to the most explicit instructions. All these critical learning mechanisms, such as mediation, regulation, internalisation, and the ZPD, require an encouraging environment to grow. To Vygotsky, learning is a social process greatly dependent upon interaction. Interaction may be between a parent and child, teacher and student, or among peers. In a Vygotskian framework, the quality and nature of interaction determine the course of cognitive development. For example, the parent's interaction with the child and the teacher's explanation to a student mediates understanding; the required mediation causes

learning. Through guided interaction, the child or the student internalises new knowledge through self-regulation skills.

The present study is situated within the field of second language acquisition, with a specific focus on how learners develop grammatical accuracy through oral peer interaction. The linguistic focus of this study is on English verb tenses, specifically the past simple, past continuous, and present perfect, as these forms are often problematic for learners and frequently appear in communicative tasks (Bardovi-Harlig, 2000; Collins, 2002; Salaberry & Shirai, 2002). These tenses were chosen based on their pedagogical relevance and the common difficulties learners face in mastering their use in context. A more detailed justification for selecting these particular tenses, along with relevant literature and prior research findings, is provided in Section 3.3).

A central construct in this study is the concept of Language-Related Episodes (LREs), which are moments during learner interaction where attention is directed to language use. LREs typically occur when learners question, discuss, or correct aspects of language form or meaning (Swain & Lapkin, 1998). These episodes are crucial to second language learning, as they reveal how learners negotiate and co-construct linguistic knowledge.

LREs are closely tied to collaborative dialogue, as they often emerge from peer interactions during meaning-focused tasks. In these moments, learners engage in problem-solving related to grammar, vocabulary, or pronunciation, and they collaboratively seek solutions. Analysing the frequency and type of LREs provides insights into how learners notice and process language. In this study, collaborative dialogue is examined through the lens of LREs to better understand the role of reasoning skills training in facilitating language development.

The present study focused on peer interaction as a vital form of collaborative learning. Peer interactions offer unique opportunities for learning because they involve negotiation, shared problem-solving, and mutual regulation (Swain, 2000). These dialogues among peers enable participants to co-construct knowledge and support each other's cognitive development, embodying Vygotsky's emphasis on social interaction as a cornerstone of learning. This type of interaction is referred to in the literature as collaborative dialogue. This type of interaction is referred to in the literature as collaborative dialogue. Collaborative dialogue is defined by Swain (2000, p. 102) as "dialogue in which speakers are engaged in problem-solving and knowledge building." It is characterised by joint attention to linguistic form and meaning and plays a central role in the co-construction of knowledge, language development, and scaffolding in peer interaction (Swain, 2000; Donato, 1994). In this context, reasoning skills refer to learners' ability to use logical thinking to analyse, justify, explain, and evaluate ideas during interaction. According to Mercer (2000), reasoning is developed through structured dialogue in which participants build knowledge together by offering explanations, challenging ideas, and providing justifications. These skills are especially important in collaborative dialogue, where learners must articulate their thinking, respond to peers' contributions, and co-construct meaning through discussion. In second language learning, reasoning enables learners to engage more deeply with linguistic forms and meaning, fostering metalinguistic awareness and promoting language development. Thus, reasoning skills are a key component of effective collaborative dialogue, as they encourage higher-order thinking and enhance opportunities for learning.

Swain (2000) defines collaborative dialogue as an interaction where participants engage in joint problem-solving and knowledge-building activities. This type of dialogue fosters essential mechanisms of sociocultural theory, including mediation, regulation, internalisation,

and the ZPD. In the context of a sociocultural approach, knowledge creation emerges from social interaction. Consequently, one's language can be developed through a dynamic and transformational process, which may be called (micro)genesis. It is suggested that microgenesis refers to 'the rapid, moment-to-moment changes occurring as a learner engages in a task, interacts with others, or even encounters new information (Wertsch 1985, as cited in Gánem-Gutiérrez 2006). Unlike long-term developmental changes that occur over months or years (such as those studied in developmental psychology), (micro)genesis looks at how understanding and cognitive skills emerge and transform over very short timescales (Gánem-Gutiérrez, 2006). (Micro)genesis can be observed during dialogic communication and studied within the context of the situated activities in which it occurs' (Gánem-Gutiérrez, 2006, p. 40). Given the importance of capturing moment-to-moment developments during interactions, the current study aims to investigate collaborative learning in the English as a foreign language (EFL) classroom through the lens of sociocultural theory. This investigation is particularly timely in the context of Saudi Arabia, a rapidly developing country undergoing substantial educational reform. According to Bloomberg UK (2021), Saudi Arabia currently has the fastest-growing economy in the world, and this momentum is mirrored in its education sector. The government has invested significantly in modernising teaching approaches, moving away from traditional, teacher-centred models toward more interactive, learner-centred methodologies. In the past, lecturing dominated classroom instruction, limiting learners' opportunities for participation and dialogue. As a result, many adult college learners have underdeveloped communication and reasoning skills that are central to collaborative learning and second language development. This study aims to address this gap by exploring how targeted reasoning training within peer interaction can foster both linguistic and cognitive growth.

1.2 Significance of The Study

As discussed in the literature review (see Chapter 2), sociocultural theory provides a robust theoretical and methodological foundation for understanding second language (L2) development as a fundamentally social process. Within this framework, collaborative dialogue has emerged as a powerful mechanism through which learners co-construct knowledge and advance their language skills (Swain & Lapkin, 1998; Gánem-Gutiérrez, 2006; Hovardas et al., 2014; Van de Pol et al., 2010). Collaborative learning has been widely recognised and applied across various educational settings globally, from primary classrooms in Europe to university-level language programs in Asia (Swain & Lapkin, 2001; Storch, 2002). Despite its widespread application, however, there remains limited research on how collaborative dialogue itself can be systematically improved through targeted interventions, particularly in terms of enhancing learners' reasoning skills, which are essential for effective collaboration.

While previous studies have investigated factors influencing collaborative dialogue, such as task modality (Swain & Lapkin, 2001), learners' proficiency levels (Watanabe & Swain, 1997; 2007), and group dynamics (Storch, 2002), few have examined whether reasoning skills can be explicitly taught to improve dialogue quality. Reasoning skills, which help learners articulate ideas, justify perspectives, and engage in deeper-level negotiation of meaning, have been found to significantly impact the quality of peer interactions in L2 learning (Watanabe & Swain, 2007; Alkhalaf, 2020). Despite the importance of these skills, no prior research has systematically explored the effect of reasoning skill training on both collaborative dialogue and L2 development in adult learners.

Most research in this field has relied on qualitative designs, such as (micro)genetic or case study approaches, which provide in-depth insights but offer limited generalisability across

broader learner populations (Donato, 1994; Ohta, 2001; Swain & Lapkin, 1998). The present study aims to address this gap by employing a mixed-methods design, combining both qualitative and quantitative approaches. The quantitative component allows for the measurement of learning gains and changes in interaction patterns, while the qualitative component examines the nature and quality of peer interactions. By integrating these methods, the study provides a more holistic understanding of how reasoning skill training impacts collaborative dialogue and L2 development, offering valuable insights that extend beyond immediate learning gains. Additionally, the study investigates the long-term effects of collaborative dialogue, a dimension that is often overlooked in existing research, which primarily focuses on short-term outcomes.

This present study makes several significant contributions to the existing body of knowledge. It investigates a novel instructional intervention, reasoning skill training, within the context of collaborative dialogue, addressing a gap in prior research. Furthermore, it provides insights into both the processes and outcomes of second language learning through the lens of sociocultural theory, offering a more comprehensive and generalisable understanding of how learners co-construct knowledge through interaction. By examining the long-term impact of collaborative dialogue, the study also enriches our understanding of how sustained language development occurs beyond the immediate effects of interaction.

1.3 Research Questions

To effectively achieve the objectives of the current study, a set of specific research questions was developed. These questions provided structured guidance for investigating the impact of reasoning skills training on adult EFL learners' collaborative dialogue and language development. Each question was designed to explore a distinct dimension of the research focus, ensuring a comprehensive examination of the central problem. Grounded in the theoretical

framework, the questions aimed to contribute new insights to the field of second language acquisition. Through rigorous analysis guided by these inquiries, the study sought to advance understanding of collaborative dialogue in the EFL classroom and inform both pedagogical practice and policy.

The research questions are as follows:

RQ1: *To what extent does reasoning skills training impact the quantity, quality, and focus of the learners' produced LREs?*

RQ2: *To what extent does collaborative work, supported by reasoning skills training, promote second language development?*

RQ3: *How does reasoning skills training impact learners' collaborative dialogue?*

RQ4: *How does collaborative dialogue, supported by reasoning skills training, promote second language development?*

1.4 Personal Motivation

My teaching experiences in Saudi Arabia, teaching English to young learners and college students, significantly influenced my motivation for this PhD thesis. During my teaching practice, I noticed a sharp contrast between approaches adopted at elementary and higher education levels in implementing collaborative learning into the EFL classroom. In elementary schools, learning is highly collaborative, achieved through practical collaborative task sessions, discussion groups, and role-playing. The system, curriculum, school administration, and coworkers actively apply and encourage the application of collaborative learning in the classroom. While focusing on this collaboration, young learners become deeply involved in the subject and others around them, making learning more interactive. Collaborative materials included in these classes are well-structured and guided by the teachers to ensure students

acquire the necessary teamwork and good communication skills early. However, I soon found a contrast when I started teaching English to college students. Despite the documented advantages of collaborative learning, higher education did not duly emphasise this approach. Most collaborative assignments assigned to college students were to be finished outside of class. For example, group projects will be presented in the classroom, and collaborative writing will be submitted later. When learners work on these tasks outside of the learning institution, they cannot benefit from the teacher's direct guidance and support, which is an essential factor in effective collaboration. The lack of in-class collaborative activities also means that students often miss the opportunity to develop their collaborative skills within a controlled and supportive environment. When I tried to bring collaborative activities into the college classroom, students were eager to participate in group discussions and other collaborative activities. Still, they quickly proved that most of them needed to develop the skills for collaborating in high-quality and productive ways. This disconnect called for explicit instruction and practice in collaboration skills within the classroom setting. Without these skills, students would often experience struggles with effective group work, organisation, putting their ideas across, and resolving the usually arising conflicts during collaboration.

As I prepared to apply for a PhD program, I delved into the sociocultural theory of language learning. The point of view that SCT generally puts on language learning as a co-construction of knowledge within social interaction corresponded to my observations and experience. The theory highlights explicitly the importance of collaborative engagement and the social context in which this occurs. From the perspective of SCT, effective learning can best be achieved when learners are involved in social interaction that challenges them to construct new understandings collaboratively. My study aims to explore the impact of enhancing reasoning

skills on second language acquisition. By focusing on developing these skills within the EFL classroom, I hope to contribute to a more effective and engaging language learning experience for college students.

My purpose was to demonstrate that with adequate guidance and training in collaboration skills, students could attain higher levels of language proficiency and a more rewarding educational experience. Specifically, enhancing reasoning skills in collaborative tasks involving helping students evaluate their peers' ideas critically, contribute to one another's ideas, and develop a deeper understanding of the language and content they are learning.

My motivation to pursue a PhD is driven by a desire to bridge the gap between theory and practice in collaborative learning for adult L2 learners. Specifically, I aimed to explore how the principles of sociocultural theory can be effectively applied to enhance collaborative learning experiences in higher education. In this regard, the current research seeks to develop practical strategies and pedagogies that are implementable to provide meaningful and guided collaborative learning to improve language gain and enhance general student outcomes. Therefore, my interest in developing better quality language education using efficient collaborative learning practices has formed the background and motivation towards this PhD thesis.

1.5 Organisation of Thesis

This thesis is organised into six chapters. The first chapter introduces the background of the study, the significance of the study, and the research question, as well as describes the personal motives behind the research. The last part of this chapter gives an overview of the thesis structure. The literature reviewed in Chapter Two pertains to the theoretical and empirical aspects of the sociocultural theory. It discusses mediation, regulation, the zone of proximal development, scaffolding, collaborative dialogue, and the role of verbalisation and semiotic tools in second

language learning. The literature review also covers an overview of past related studies, research using (micro)genetic analyses, and research within the Saudi context.

Chapter Three outlines the research methodology. First, the pragmatism paradigm, the use of a mixed-methods approach, and the quasi-experimental design are discussed. Then, participants, context, course, target language forms, data collection instruments, and procedures are discussed. This chapter also outlines treatments or training sessions, materials, and procedures. The last part of this chapter presents data analysis methods, including quantitative and qualitative methods, to analyse learners' recorded interactions and outcomes of the language development tests.

Broadly, Chapter Four falls into two divisions: One presents the quantitative results addressing the first and second research questions, which details the findings from the analysis of learners' LREs. It looks at the number of occurrences of the LREs, the level of engagement by learners during these episodes, and the focus of LREs, hence giving the quantitative effect of the intervention on collaborative dialogue. It also discusses the result of the language development tests (pre-test, post test, and delayed post test) to explore the effect of the training in reasoning skills on learners' proficiency in the target language forms. The following section covers the qualitative results addressing the third and fourth research questions through a (micro)genetic analysis of interactions among four pairs of learners from the group receiving training in reasoning skills. The finer details of their collaborative dialogues and their language development are discussed.

In Chapter Five, interpretations of the research findings in light of the research questions of the present study are discussed. The chapter falls into two parts: the first interprets quantitative data regarding LREs and language development tests outcomes to examine the effectiveness of

the intervention; the second examines the growth in learners' language knowledge and collaborative dialogue skills as a result of reasoning skills training from a qualitative aspect. The findings contribute to the sociocultural theory and offer practical recommendations for educators and curriculum developers on integrating reasoning skills training into language programs to enhance learning outcomes.

The sixth chapter summarises the research aims, key findings, and contributions. Research questions are restated, and a review is carried out of how they have been answered in this study by a mixed-methods approach. This chapter synthesises the main findings, focusing on how reasoning skills training influenced learners' language development and collaborative dialogue. It accounts for the study's limitations and provides recommendations for future research regarding new questions or methodologies that could further the findings of this study. This chapter places the study in the larger context of knowledge concerning SLA and points out future directions for further studies.

2 Chapter 2: Literature Review

2.1 Sociocultural Theory as a Framework for the Study

Sociocultural theory grew from the work of Russian psychologist Lev Vygotsky, who specialised in child development in the late 1910s. In the mid-1980s, Lantolf and Frawley introduced Vygotsky's theory of language and thinking to the SLA community in the U.S. (Burns & Richards, 2012). Vygotsky 'believed that thought has a social, external origin and that language functions as a tool in the development of individual cognition from this external origin' (Frawley & Lantolf, 1985, p. 19) and since the 80s, this concept has been developed, elaborated and widely studied in SLA field. Vygotsky (1978, 1986, 1987, 2012) posits that human cognitive abilities develop due to internalising socially based learning through culturally constructed artefacts. In other words, thoughts and higher forms of consciousness do not exist in isolation but are driven by the dialectical interaction between physical abilities and culturally shaped ways of life. This notion inspired researchers to explore the possible implications of sociocultural theory to L2 learning and instruction, as seen in the work of Lantolf (2007), Lantolf and Thorne (2006), and Negueruela (2003, 2008a, 2008b), among others. Vygotsky's SCT of the mind (1978, 1986, 1987, 2012) is shaped by the concepts of mediation, regulation, internalisation, and the zone of proximal development, which will be discussed below.

2.1.1 Understanding the Dynamics of Mediation, Regulation, and Internalisation

Mediation is the backbone of the SCT because every other concept founded in the sociocultural theory (e.g., regulation, internalisation or ZPD) is centred around the notion of mediation Vygotsky (1978) defined mediation as a process in which dialogic (i.e., speech) and symbolic resources (e.g., language and gesture) are employed in collaborative activity, which could qualitatively transform psychological processes, enabling individuals to gain control and

regulate their thoughts and actions. From the previous definition of mediation, we can conclude that mediation as a process can only occur during an interaction. During that interaction, cognition can be transmitted through a process called mediation.

The sociocultural theory acknowledges that the human mind constitutes two main dimensions of human consciousness: a higher and a lower level of consciousness. The lower level is based on neurobiological mechanisms (i.e., automatic processes that include involuntary memory, attention and performance in the form of reflexes to external stimuli). However, what Vygotsky highlighted as a critical mechanism for development is the higher form of human cognition that is culturally mediated, represented in the mental capacity for voluntary control over biology using higher-level cultural artefacts (i.e., language, literacy, numeracy, categorisation, rationality, and logic.)

Regarding the study of knowledge development, the sociocultural approach has shifted the focus to these higher-level cultural tools that connect humans to their environments by mediating between the person and the social and cultural material world. In this act of mediation, 'humans use culturally constructed artefacts, concepts, and activities to regulate (i.e., gain voluntary control over and transform) the material world or their own and each other's social and mental activity' (Lantolf &Thorne, 2006, p. 79). This concept of mediation (i.e., higher levels of human consciousness are mediated by cultural artefacts) is one of the core concepts of sociocultural theory. When children interact with their parents or teachers (i.e., expert members of their environment), they use cultural tools. In return, parents or teachers direct and regulate their performance. Mediation is not limited to children. Adult learners in educational settings also benefit from using cultural tools and expert guidance. For instance, in professional training or tertiary education, instructors use specialised knowledge, strategies, and resources to guide

adult learners, helping them navigate concepts and skills. In the L2 learning classroom, teachers and possibly peers mediate their students' appropriation of L2 meanings, forms, and functions.

Mediation offers the necessary tools and environment for learning. At the same time, regulation, a key concept in Vygotsky's theory, outlines the transition from dependence on external aids to independent management of one's learning. Regulation involves overseeing and controlling cognitive functions, emotions, and behaviours throughout learning. It encompasses how learners oversee and modify their strategies, motivation, and involvement to reach their educational objectives (Zimmerman, 2000).

According to Lantolf and Thorne (2007), there are three nonlinear and recurring regulation phases. The first is object-regulation, which occurs when humans use objects in their environment to regulate their learning. For example, when a child in a mathematics class uses objects (e.g., blocks) to do a mathematical activity. Adults also use objects in their environment to regulate their learning. For instance, adults may use grammar and spelling checkers. Secondly, Other-regulation refers to when humans use the assistance of other humans, whether experts or novices (e.g., teachers, parent, siblings, or peers), to support their development (in the discussion about the ZPD below); how other-regulation functions in the case of second language learning will be discussed). Second, self-regulation is the capacity to independently perform a newly acquired skill (e.g., second language) with little or no assistance. The process that transforms what was once other-regulation into self-regulation is called internalisation. Internalisation processes that lead to self-regulation can be explained by Vygotsky's concept of the 'two planes' (Vygotsky, 1981, p. 163). The first process is the social or inter-mental plane in which humans familiarise themselves with a particular skill, concept, or language form with the help of objects,

symbols, other experts, or all these tools, in the second process, referred to as the

personal, psychological, or intra-mental plane. When adequately mediated, new forms of knowledge (i.e., skills, concepts, language forms) transform into internalisation. Internalisation is described by the capacity to perform newly acquired skills independently and, most notably, by generalising internalised psychological tools (e.g., language form). The transition from other-regulation activity/inter-mental to the self-regulation activity/ intra-mental planes is represented in the learners' gradual increase in control over learning behaviours and the environment (see Lantolf & Appel, 1994).

The process through which cultural artefacts, such as language, take on a psychological function is representative of internalisation. This process, along with mediation, is one of the core concepts of sociocultural theory. As Kozulin (1990) puts it, 'the essential element in the formation of higher mental functions is the process of internalisation' (p. 116). Internalisation is further described by Winegar (1997), who notes that it 'is a negotiated process that reorganises the relationship of the individual to her or his social environment and generally carries it into future performance' (p. 31). Yaroshevsky (1989) explains that internalisation 'accounts for the organic connection between social communication and mental activity and is the mechanism through which we gain control over our brains, the biological organ of thinking' (p. 230).

Vygotsky captured the interconnection established by internalisation in his general law of genetic development, stating that every psychological function appears twice: first between people on the interpsychological plane and then within the individual on the intrapsychological plane (Vygotsky, 1987). the concepts of mediation, regulation, and internalisation are deeply interconnected. In Vygotsky's sociocultural theory, mediation provides the tools and context necessary for learning, regulation describes the shift from external support to independent

management of learning processes, and internalisation is the process through which

external tools become internalised cognitive strategies. In other words, mediation facilitates regulation, which leads to internalisation and the development of self-regulation.

Studies on collaborative dialogue (a detailed discussion of this concept is provided in Section 2.2) have initially been focused on the interaction between the learner and a more knowledgeable other, such as the teacher (Wood et al., 1976). However, when learners are engaged in a collaborative activity in educational settings, they receive assistance from resources other than the teacher, such as peers and educational aids. Vygotsky (1978) argued that meditating in the ZPD (a detailed discussion of this concept is provided in the next section) is not limited to expert-novice interaction; peer mediation is also critical for internalisation and progress. Research on peer mediation has established that when learners are involved in situations that promote peer mediation behaviours (e.g., asking for clarification or providing an explanation), they recognise a gap between their knowledge and the knowledge of their peers. As a result, they seek to learn a new skill to fill this gap (Choi et al., 2005). Indeed, in a classroom setting, learners have different levels of competence. While working in collaboration, learners' expertise is dynamic and fluid, in which learners can act both as experts and novices. Learners can positively influence each other's growth (e.g., Ohta, 2000; Storch, 2002; Swain & Lapkin, 1998). During an interaction, a learner can simultaneously be an expert and a novice. In other words, both learners can provide something that can mediate the other's knowledge by working jointly. When learners draw from each other's different resources, they can reach a level of performance beyond their current level (Dobao, 2012).

2.1.2 Zone of Proximal Development

The zone of proximal development (ZPD) is the most realised concept of Vygotsky's sociocultural approach. It has significantly impacted various research areas, such as

developmental psychology, education, and applied linguistics (Lantolf & Poehner, 2011).

Vygotsky (1978) defined ZPD as 'the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem-solving under adult guidance or in collaboration with more capable peers' (p. 86).

In this sense, Vygotsky distinguishes between two developmental levels: the actual developmental level and the level of potential development. The former refers to the person's ability to perform a task without assistance; at this stage, one's particular abilities have developed. The latter describes functions that have not developed yet but are in the process of maturing, for instance, a person's ability to solve problems with assistance. Vygotsky emphasises that this development is driven by interaction with a teacher, parent, or a more capable peer, highlighting the collaborative nature of learning. Therefore, the fundamental role of education throughout the transition from different levels of development (i.e., The actual to the potential level) is vital (Lantolf & Poehner, 2011).

Vygotsky (1978) argues that the process of development is nonlinear. The ZPD is represented by the individual's different levels, ranging between the intermental and intramental focuses. An individual can reach his/her intra-mental level by having his/her performance assisted by more capable others within their surrounding social structure where social interaction can occur. Lantolf (2000b) states that 'the ZPD is not a place situated in time and space; rather, it is a metaphor for observing and understanding how mediational means are appropriated and

internalised' (p. 16). In other words, we can describe ZPD as a comprehensive concept that helps us to understand the different developmental stages a person can go through before accomplishing atomisation and self-regulation rather than restricting the concept of ZPD to be

used as an instrumental tool applicable only to educational settings for the promotion of knowledge and skills.

Even when ZPD is used in educational settings, it cannot be restricted to being used as a model of the developmental process. According to Lantolf and Thorne (2007), the ZPD can be considered a conceptual tool that educators use to understand aspects of students' emerging capacities in their early stages of maturation. In a recent article, Xi & Lantolf (2020) describe ZPD as a process that takes into account the mutual and unique relationship between person and context, which Vygotsky referred to as the social situation of development (SSD). In other words, a situation may influence an individual, while the individual shapes the nature of the influence. Two people could experience the same situation; however, they would respond to the same situation differently according to their position in society, their past experiences, and their level of development.

According to Chaiklin's (2003) interpretation of Vygotsky's (1998) discussion of the development of children from birth to school age, there are two types of ZPDs: an objective ZPD (OZPD) and a subjective ZPD (SZPD). He describes OZPD as the structural relations 'historically constructed and objectively constituted' by the particular culture in which children live (Chaiklin, 2003, p. 49). Vygotsky (1998) proposes that each age period, starting from infancy and extending into adolescence, includes a specific type of structural relationships that are not universal but are instead historically constructed and objectively constituted. For example, activities such as play, free time activities, and work in adulthood are all included in the OZPD (Vygotsky, 1978). However, each activity's description, amount, and type constantly change according to the community and history they are situated in. Xi and Lantolf (2020) give an example of how the types of play that have been valued and promoted before the digital

revolution of the late twentieth century are different from the types of play that are being valued and promoted nowadays.

As children grow and encounter a new OZPD that corresponds to their evolving age group, it is expected that the structural relationships among their psychological functions will start to mature. This maturation process can be described as the Subjective Zone of Proximal Development (SZPD) 'As children interact with others in their SSD (the dialectic between OZPD and SZPD) qualitatively new structural relationships among the psychological functions that form consciousness emerge' (Chaiklin, 2003, p. 50). Therefore**,** Vygotsky (2011) claimed that the size of SZPD is a better predictor of school success than IQ. Children with a large SZPD (with many maturing functions) tended to achieve tremendous success in school regardless of IQ level, and children with small SZPD (with few maturing functions) tended to be less successful, irrespective of their IQ level. This highlights Vygotsky's belief that cognitive development and learning are not solely determined by inherent intelligence but are also influenced by the extent of the ongoing developmental processes within a child.

In the SLA field, the ZPD provides a valuable framework for understanding second language (L2) development. It emphasises that language acquisition is not a simple, linear process. Instead, it is dynamic and evolves nonlinearly, influenced by numerous interacting factors such as exposure, interaction, and scaffolding from more knowledgeable others (e.g., teachers or peers). The concept of ZPD in SLA also underscores the notion that learners' potential language development does not always result in immediate or automatic progress simply from exposure to language input. Instead, learners may require guidance, support, and interaction to actualise their potential, demonstrating that acquiring a second language is much more complex than merely absorbing linguistic input.

Although Vygotsky's studies have been focused on the utilisation of the ZPD mainly with children and adolescents, ZPD also has been used by many researchers to investigate its relationship with and impact on adult EFL and ESL learners (Alavi &Taghizadeh, 2014; Aljaafreh &Lantolf, 1994; Nassaji & Swain, 2000). Aljaafreh and Lantolf (1994), one of the earliest studies that explored the use of ZPD in adult learners, have identified three principles for providing assistance and feedback within the learner's ZPD: graduated, contingent, and dialogic.

Graduated assistance refers to adjusting the level of help based on the learner's capabilities and decreasing support as the learner becomes more competent. Initially, learners may need explicit correction and direct instruction to understand a concept or complete a task. As they begin to grasp the concept or develop the skill, the assistance becomes less explicit, shifting towards more subtle hints or prompts. Eventually, the support is withdrawn altogether as the learner can perform independently. For example, a tutor might first directly correct a grammatical error by providing the correct form. As the learner becomes more familiar with the rule, the tutor might instead ask guiding questions that prompt the learner to self-correct.

Contingent assistance means that the help provided should directly respond to the learner's immediate needs and performance. The feedback or support is given in direct reaction to what the learner is currently doing or saying, ensuring it is relevant and valuable at that specific moment. The assistance adapts dynamically based on the learner's actions. If a learner shows they understand a concept, the tutor reduces the level of support. Conversely, if a learner is struggling, the tutor may increase the level of assistance to help them succeed. For instance, if a learner makes a mistake, the tutor might provide a hint directly addressing the error. If the learners correct themselves or show progress, the tutor might encourage them to continue without additional help.

Dialogic interaction involves engaging the learner in a two-way, interactive dialogue where the learner actively participates in the learning process. This principle emphasises the importance of communication and collaboration between the learner and the tutor, where the feedback is co-constructed through dialogue. Instead of simply providing feedback, the tutor and learner engage in a conversation that explores the learner's thought processes, clarifies misunderstandings, and jointly constructs knowledge. This collaborative dialogue helps the learner internalise the learning process and develop self-regulatory skills. For example, during a writing task, the tutor might ask the learner to explain their reasoning for using a particular grammatical structure. The learner's response provides insight into their understanding, and the tutor can then guide the learner through questions or prompts that help them think more deeply about their choices. Lantolf and Thorne (2007) pointed out a common misconception about the ZPD: it is often seen as the same as scaffolding or assisted performance, but this is not the case.

In many studies, the terms scaffolding and zone of proximal development (ZPD) have been used synonymously. However, Vygotsky never used the term scaffolding in his works. The term was coined by Jerome Bruner and his colleagues nearly three decades later (see Wood et al., 1976), referring to adult-child (or expert-novice) assisted performance. Bruner (1983) defined scaffolding as 'a process of setting up the situation to make the child's entry easy and successful and then gradually pulling back and handing the role to the child as he becomes skilled enough to manage it' (p. 60).

It can be inferred from Bruner's (1983) definition that there are three fundamental elements in any scaffolding (e.g., Parent-child interaction, teacher-learner, or peer-peer); they are contingent, collaborative, and interactive. However, scaffolding can be further refined in educational settings by adding features specific to schooling. According to van Lier (2004),

pedagogical scaffolding has three central features: first, scaffolding must occur in social interaction settings for development to be mediated. Second, according to Donato (1994), scaffolding refers to a 'situation where a knowledgeable participant can create supportive conditions in which the novice can participate and extend his or her current skills and knowledge to higher levels of competence' (p 40), which means that the amount of scaffolding and the type of scaffolding (i.e., explicit or implicit) is provided according to the learners needs. Scaffolding then withdraws gradually according to the learner's need for assistance until scaffolded assistance fades away when the learner achieves self-regulation. Thirdly, scaffolding occurs between a novice and an expert, and that expert can be a teacher, parent, or peer scaffolded assistance appears to play an important role in the EFL classroom and can support the learning process, whether planned or spontaneous. However, Xi and Lantolf (2020) pointed to the problematic relationship that ZPD has had with the term scaffolding over the past two decades in applied linguistics. They assert that ZPD and scaffolding are two concepts that refer to two processes. When ZPD is compared with scaffolding, several differences are recognised.

First, ZPD is more of a comprehensive concept than scaffolding. Scaffolding is a process that can only occur during a face-to-face interaction between two people; however, ZPD is a process that is extended to occur in more types of settings. For example, ZPD can take place during play (especially with young learners), or it can take place during the interaction between the learner and a text (i.e., object regulation). Second, scaffolding is limited to expert-novice interactions, whether that expert is a teacher, parent, or peer. Therefore, the idea of expertise being fluid between learners and how learners can be experts and novices at the same time cannot be described by the scaffolding terminology. Third, ZPD is a process that considers the mutual and unique relationship between person and context, a crucial factor that can describe and

explain how individuals and communities develop. Scaffolding fails to include context as part of its operation. It does not position individuals within the social relationships established by institutions (e.g., family, school, play settings, work, etc.).

Furthermore, according to Bozhovich, 2009, scaffolding fails to consider what individuals bring to the scene regarding past experiences, level of development and needs. In other words, Scaffolding does not make the crucial distinction between OZPD and SZPD (Xi & Lantolf, 2020). One of the limitations of scaffolding, and a critical point that suggests its misalignment with Vygotsky's theory of development, is the vague understanding of its intended

outcome. Is the goal task fluency, mastery, learning, or development? Some researchers, such as Bruner (1966) see a developmental potential in scaffolded interaction. However, Valsiner and van der Veer (1993) pointed out that scaffolding does not adequately address the relationship between learning and development, distinguishing Vygotsky's approach to development from other models.

Another final point of comparison that Xi and Lantolf (2020) point out is the different meanings entailed by the two metaphors (i.e., Scaffolding and the Zone of Proximal Development). Scaffolding is a term borrowed from architectural language and used to describe how builders use scaffolds to build a building from down and move up gradually. In that sense, scaffolding is more 'mechanical' (Veresov, 2017, p. 27), and architects use specific, detailed plans to execute their work, making sure to use appropriate tools and materials. In addition, the outcome of their work is predetermined, and there is minimum variation in the quality of the outcome when the same materials and tools are used. On the other hand, Vygotsky's Zone of Proximal Development is quite different. Xi and Lantolf (2020) argue that ZPD can be described as an agricultural process in which the farmer plants the seed and provides all the required care

to grow. Although the outcome of the growing process is predicted (e.g., if you plant an apple seed, you will grow apples and not oranges), the quality of the fruit can vary, depending on the care provided to the plant in each stage of the growing process (e.g., buds, flowers, then fruits) and lack of proper care may not enable the plant to get to the next stage of growing (e.g., the lack of proper fertilisation prevents buds from growing into flowers). In that sense, we can claim that ZPD is a more fitting concept for describing human psychological development. Human embryos grow into humans and not into other species; however, their sociological development can vary depending on the amount of care/development that they receive throughout their lives.

Furthermore, Swain (2000) used the term *collaborative dialogue* rather than *scaffolding* to describe assistance provided by learners to their partners while engaged in a collaborative activity. According to Swain (2000), collaborative dialogue captures how social interaction mediates development more accurately. The scaffolding metaphor implies a pre-planned architecture (e.g., what teachers sometimes do when they provide scaffolded feedback to their students). However, according to SCT, mediation is a jointly constructed activity and is thus flexible and collaborative. In the present study, in keeping with the Vygotskian approach to knowledge development, the assistance provided by learners to their partners will be referred to as *collaborative dialogue*, and the process governing that assistance will be referred to as *mediation*.

2.1.3 Collaborative Dialogue

Collaborative dialogue represents a manifestation of (ZPD)-oriented intersubjective space. Swain (2000) defined collaborative dialogue as an interaction where participants engage in joint problem-solving and knowledge-building activities. Although collaborative dialogue can theoretically address any subject, this study refers explicitly to discussions about linguistic

constructions. Through such dialogue, participants either regulate themselves (self-regulation) or are regulated by others (others-regulation), and most of the time, it is a combination of both.

Historically, collaborative dialogue has often been operationalised through Language-Related Episodes (LREs). Swain and Lapkin (1998) describe LREs as 'any part of a dialogue where students talk about the language they are producing, question their language use, or correct themselves or others' (p. 326). Numerous studies have employed LREs to investigate collaborative dialogue (e.g., Alegría de la Colina & García Mayo, 2007; Bao, 2020; Leeser, 2004). Regardless of proficiency, all learners can benefit from participating in collaborative dialogue. Leeser (2004) analysed the frequency, type, and outcomes of different proficiency pairings, finding that as learner proficiency increases, so does the number, variety, and successful resolution of LREs. Other studies corroborate that higher proficiency learners benefit from collaborative efforts (e.g., Swain, 1998; Williams, 2001).

There is also evidence that lower proficiency learners can gain from collaborative dialogue (see Alegría et al., 2007). Thus, all learners, irrespective of proficiency, can benefit from engaging in collaborative dialogue. However, learners benefit most from collaborative and expert/novice interaction patterns (Storch, 2003), and proficiency levels may influence these interaction patterns.

There is also evidence of the role of task modality in improving collaborative dialogue. According to Swain and Lapkin (2001), problem-solving tasks generate more LREs than other tasks used in their study. Similarly, Alshuraidah and Storch (2022) found that collaborative writing tasks generate more LREs compared to tasks when learners are required to provide written feedback on a text written by another group or when learners are asked to revise their text

in response to peer feedback (refer to Section 2.5 for more details about previous studies exploring collaborative dialogue).

Another contributing factor is the use of L1. Researchers have found that L2 learners use their L1 to understand a text, solve language-related problems, generate ideas, gain control of the task, and maintain dialogue (Villamil & de Guerrero, 1996). The present study posits that improved reasoning skills among learners would enhance collaborative dialogue, creating more language development opportunities.

As mentioned earlier, for learners to have a successful collaborative dialogue, they need to have the ability to reason together (see section2.1.1) Learners who ask questions, give reasons for their opinions, listen to each other, and try to reach common grounds tend to have more and better opportunities for the co-construction of knowledge that most probably will lead to language development (Mercer, 2000; Wegerif & Dawes, 2004; Mercer & Littleton, 2007).

Alkhalaf (2020) explored the attitudes of 50 Saudi EFL female learners toward collaborative writing and the challenges they encountered during the collaborative task. Most of the participants had positive attitudes toward collaborative learning. However, the learners reported several challenges that hindered their collaborative work: (1) while engaged in an EFL writing task, some of the learners were unwilling to listen or consider opposing opinions, which caused many disagreements among the groups in which Mercer (2003) refers to as disputation talk. (2) Learners also reported their struggle with unproductive members in the group in which these learners would passively agree on anything to avoid participating, which Mercer (2003) refers to as cumulative talk. (3) Learners also expressed that their lower level of proficiency makes them hesitant to participate in the group. All the above collaborative work obstacles can be seen as a result of learners' lack of reasoning skills.

In another study conducted in the Saudi context, Aldossary (2021) explored how collaborative writing affected the development of university students learning English as a foreign language in Saudi Arabia. However, Aldossary provided the learners with a 60-minute training session to acquaint them with collaborative writing. The training session also included a pre-task that helped the learners to practice and model collaboration. The study highlighted the importance of training students before implementing collaborative writing in the classroom, in which introducing collaborative work beforehand could make collaborative writing more effective, particularly in EFL contexts. In light of all the above, Saudi college EFL learners can be described as learners with positive attitudes toward collaborative dialogue; however, their lack of reasoning skills and experience with collaborative tasks hinder them from achieving successful collaboration and reasoning. One of the main goals of the current study is to explore the impacts of reasoning skills training on adult learners' collaborative dialogue and language development. The impact of this training on adults may lead to positive developments in their collaborative skills and language knowledge.

2.1.4 Analysing Collaborative Dialogue Episodes That Arise During Interaction: LREs

In the early 1990s, LREs were initially used as units of analysis to examine the goal-appropriateness of discourse used in completing classroom tasks. This descriptive construct is based on instances of language use termed *critical episodes* (Samuda & Rounds, 1993).

In 1998, Swain and Lapkin expanded the use of LREs into SLA research. They defined them as 'any part of the dialogue where the students talk about the language they are producing, question their language use, or correct themselves or others' (p. 326). In other words, LREs occur when language is used to mediate cognitive activity that may lead to development in language knowledge (e.g., language form, spelling, or grammaticality). Moreover, these learning episodes

begin when learners start talking about a particular topic (e.g., the correct form of a tense, the meaning of a word, and the correct spelling). It ends when the learner stops talking about that topic and moves on to a different one, whether they finish their discussion about that topic resolved or not. From that point on, LREs have been used by many in classroom research to identify the degree to which language learners address recently learnt or problematic features of the target language, allowing for the systematic categorisation of these episodes by researchers.

Research into L2 learners LREs, over the past years, has provided us with a close look into the learner's production while engaging with their teachers (e.g., Gánem-Gutiérrez, 2018) or peers (e.g., Swain and Lapkin, 1995; 1998) in the EFL classrooms. In an attempt to provide fine-grained analyses of learners' interactions and the learning processes that take place during these interactions, several LRE studies have provided subcategorisation to the LRE (e.g., meaning-based, grammatical, orthographic, or according to varying degrees of negotiation for meaning).

The following episode, taken from one of the early studies that employed LREs in their methodology of analysis, a study by Storch (1998, pp. 294–295) demonstrates how classroom-based research can have descriptive accounts of learners who, during interaction, have their attention drawn toward grammatical features of their target language. Here, the students are working on a collaborative text reconstruction task. This episode relates to the choice of preposition:

Excerpt 1. Learners' interaction during collaborative text reconstruction task

Storch (1998, pp. 294–295)

Iris: Were moored on

Kim: Sorry, I reckon in River Thames

Iris: Why in?

An: On ... yes on ... on the River Thames on the Yarra not in the Yarra Kim: Oh, sorry

Furthermore, research on LREs has gone beyond just group discussions; it has also explored LREs in think-aloud protocols. The following example, taken from a think-aloud protocol study, shows how producing language can help learners notice grammatical features:

S8: 'I was gonna write *le sdroits uhm d'animaux,* but it doesn't sound right so I said *les droits des animaux* (animal rights)' (Swain & Lapkin, 1995, p. 381).

LRE research has many implications for ELT professionals. For example, it has provided evidence of how collaborative learning and task-based instruction can enhance language learning, where interaction may help create the conditions for language development. Swain and Lapkin (1998) show that LREs analysed during learners' interactions can be used to develop materials for further instruction or testing. As a research tool, LRE has helped uncover how others' input can contribute to the learners' second language development.

From the former discussion, we can conclude that over the past decade, using LREs as a research tool has proven its efficiency and functionality. LRE analysis has helped us understand how and to what extent collaborative dialogue can contribute to learners' language development.

2.1.5 Unlocking Intersubjectivity: Exploring Mechanisms for Effective Collaborative Dialogue in L2 Learning

Intersubjectivity is the shared understanding between individuals during communication, where participants align their perspectives, intentions, and interpretations to achieve mutual comprehension (Rommetveit, 1974; Wertsch, 1991; Tomasello, 1999). In the context of collaborative dialogue, it represents a dynamic and ongoing process through which individuals negotiate meaning and co-construct knowledge. Intersubjectivity, an integral part of collaborative dialogue, requires that the perspectives of the individuals be integrated into one

shared understanding of the activity being worked on. This shared understanding forms an intersubjective space where such interaction can occur. Indeed, many studies have examined how learners establish and maintain intersubjectivity. One such mechanism is the utilisation of playfulness and laughter, which have been extensively studied in general social interactions (e.g., Glenn & Holt, 2013), albeit less so in the context of L2 learning. Gánem-Gutiérrez and Gilmore (2018) observed laughter as a critical mechanism for maintaining intersubjectivity in a study involving an adult EFL university student and her tutor/researcher during an L2 writing event. They found that giggling facilitated the learner's explanation of cognitive decisions, highlighting the intertwining nature of emotion and cognition (Streeck et al., 2011), a concept echoed in current research on Mediated Development in L2 learning (Swain, 2013; Poehner & Swain, 2016). While studies of playfulness rooted in sociocultural theory have traditionally focused on play and private speech, such as L2 learners playing with language, experimenting with sound, and/or rehearsing through self-directed speech (Lantolf and Thorne, 2006: 190; McCafferty, 2002; Ohta, 2001), Gánem-Gutiérrez and Gilmore (2018) advocate for a broader examination of this crucial mechanism.

In a related study, Scotland (2022) examined the interaction of a Qatari undergraduate EFL learner with three different partners across various form-focused tasks. The study highlighted the learner's use of semiotic tools to achieve intersubjectivity. The more proficient peer facilitated intersubjectivity through techniques such as (a) using repetition with adjusted intonation, (b) not overtly stating that any of his partner's answers were incorrect, (c) not being dismissive of his partner's answers, (d) patiently explaining features of the target language, and (e) waiting an appropriate time for his partner to process and respond. Conversely, the less proficient peer demonstrated receptivity to guidance and support. These findings underscore the

significance of intersubjectivity in collaborative dialogue and elucidate strategies for its cultivation (Donato, 1994; Guerrero & Villamil, 2000; Lidz, 1991; Villamil & Guerrero, 2006).

Intersubjectivity has a critical role in facilitating effective interaction during collaborative dialogue. Mechanisms such as playfulness and laughter, alongside semiotic tools, contribute to creating and maintaining shared understanding among learners. These findings underscore the importance of considering socio-emotive and cognitive dimensions in L2 development. Further research into these mechanisms promises to enrich our understanding of how collaborative dialogue fosters language learning and intercultural communication.

A key concept in studying semiotic tools as mediational mechanisms for L2 learning is Verbalisation, or Languaging, which involves producing language to mediate cognitive activity (Swain, 2010, p. 115). The idea is that using language as a mediational tool aids in internalising language and language concepts (Swain, 2010). Verbalisation can occur individually, through self-explanation, or collaboratively, such as in pair work. During the collaborative activity, other psychological tools for mediation, like using L1, repetition, and reading aloud, are often employed and have been reported by several studies (e.g., Gánem-Gutiérrez & Gilmore, 2018 and Scotland, 2022).

Building on earlier research on concept-based-instruction (CBI) (Knouzi et al., 2010; Lapkin et al., 2008; Swain et al., 2009), Gánem-Gutiérrez and Harun (2011) conducted a study to investigate the potential of CBI as a pedagogical framework for language learning. Their focus was on individual and dyadic verbalisation as a mediational tool to support learners in developing a deeper understanding of tense-aspect marking. Six advanced L2 English postgraduate volunteers at a British university participated (five L1 Arabic and one L1 Thai).

Using a pre/post test design, the study assessed improvements in understanding tense-aspect marking after a CBI treatment involving slides with diagrams and animation based on Radden and Dirven's (2007) cognitive linguistics model. Participants either self-explained or discussed the content in pairs, with all verbalisations recorded and transcribed for analysis. The post test, conducted the following day, showed that five out of six participants improved. The study also used (micro)genetic analysis to examine verbalisation's role during CBI. In particular, semiotic tools like reading aloud, repetition, and discourse markers were crucial in supporting individual and collaborative reasoning, aiding functions such as focusing, questioning, explaining, and inferencing.

The use of socially rooted semiotic tools as reasoning aids has also been documented in other studies. For instance, repetition, whether as verbatim replication of others' words or self-repetition, is a problem-solving tool and helps sustain interaction (McCafferty, 1994; Roebuck & Wagner, 2004). Repetition aids reasoning (Buckwalter, 2001) and functions as a regulatory tool for language appropriation and achieving intersubjectivity, which is essential for successful collaboration and scaffolding (DiCamilla & Antón, 1997). Similarly, the use of the L1 has garnered increasing attention in studies of interaction, where it is also recognised as a socially rooted semiotic tool that supports reasoning (Alegría et al., 2009; Brooks & Donato, 1994; Buckwalter, 2001; De Guerrero & Villamil, 2000; Lee, 2008). L1 has been examined both as part of interactive processes and as a distinct focus of its own (Antón & DiCamilla, 1998; Ohta, 2001; Swain & Lapkin, 2000) (also see section2.4.3).

In addition, Gánem-Gutiérrez (2009) and Gánem-Gutiérrez and Roehr (2011) demonstrated how discourse markers such as and, but, or, oh, now, then, y'know, and I mean act as verbal aids that support task handling and reasoning. Interjections and other such particles are

transitional devices that advance the jobs, while markers of cause-and-effect relationships, such as so and because, and coordinating conjunctions do so. Semiotic tools and verbalisation (or languaging) play a crucial role In L2 learning. These tools, including L1, repetition, and reading aloud, help internalise the language through individual and collaborative activities. Research by Gánem-Gutiérrez and Harun (2011) suggests that these tools aid reasoning and understanding. Specifically, repetition and discourse markers facilitate interaction, problem-solving, and collaboration, making them essential components of the language learning process.

2.2 Reasoning Skills and Language Development

In sociocultural theory, language learning is seen as a socially mediated process in which interaction with others is crucial to cognitive development. From this perspective, collaborative skills enable learners to engage in meaningful social interactions, such as dialogue and problem-solving, which promote language development (Vygotsky, 1978).

Effective verbal and non-verbal communication is a crucial skill in collaboration, as Gánem-Gutiérrez (2009) highlights. This involves expressing ideas, asking questions, and understanding body language and tone. Active listening also plays a vital role, allowing learners to gain new perspectives and support their learning through interaction. Peer scaffolding, as noted by Ohta (2001), is another critical collaborative skill where learners support each other by offering explanations and strategies. This process aligns with the concept of the ZPD, where learners improve through guidance from peers or teachers. Mutual responsibility is also emphasised, with learners taking ownership of their collective learning outcomes. In addition, social mediation, where language is used as a tool for thought and understanding, is critical to effective collaboration. Language helps learners regulate their learning processes and engage in

more complex thinking. Cultural awareness is also necessary, as learning is embedded in social and cultural contexts, making it essential to respect diverse perspectives (Swain, 2000).

Mercer et al.'s (1999) definition of reasoning skills covers many of these collaborative abilities, as it underscores the role of dialogue in developing both communicative and cognitive skills. In their work, Mercer et al. (1999) conceptualise reasoning skills as the ability to use talk effectively for problem-solving and knowledge construction. These skills are operationalised through structured group activities that require learners to explain, justify, and critically evaluate ideas in dialogue. For example, Mercer et al. (1999) describe a science-based group activity in which pupils work together to determine why a metal spoon gets hot when placed in a cup of hot water. During the task, students are encouraged to share hypotheses, ask for clarification, and challenge each other's reasoning, thus engaging in exploratory talk. To measure the effectiveness of reasoning skills, Mercer and colleagues (1999) analysed transcriptions of learners' talk using discourse analysis to identify patterns aligned with reasoning-based dialogue, especially exploratory talk. They also conducted pre- and post-tests (e.g., Raven's Progressive Matrices and curriculum-based assessments) to measure gains in cognitive performance and subject understanding.

Their theoretical framework draws on sociocultural theory and emphasises the role of language as a cultural tool for thinking. One of their key contributions is the typology of classroom talk: cumulative, disputational, and exploratory talk. These types are grounded in sociocultural theory and were developed based on classroom observations, audio-recorded group discussions, and iterative analysis of children's speech in collaborative tasks. The purpose of this typology is to understand how different styles of group talk affect the quality of learners' reasoning and learning outcomes. Mercer et al. (1999) operationalised reasoning skills primarily

through the concept and practice of exploratory talk which served both as the means and the observable outcome of effective reasoning.

To measure the development of reasoning skills, they conducted classroom-based interventions using the Thinking Together approach. This involved structured lesson sequences, talk-based activities, and collaborative tasks designed to foster the use of exploratory talk. Their methodology included audio-recording students' group discussions before and after the intervention, coding them based on the type of talk used, cumulative, disputational, or exploratory, and analysing the dialogue for reasoning indicators, such as justification, clarification, and evaluation of ideas. In addition to qualitative analysis of talk, they employed standardised assessments like Raven's Progressive Matrices to quantify improvements in non-verbal reasoning skills. These mixed methods approach allowed them to assess both the social (dialogic) and cognitive (reasoning) dimensions of learners' development.

Through exploratory talk, learners can co-construct knowledge, develop reasoning abilities, and engage in critical thinking, all essential for successful collaboration in EFL contexts. This approach creates a dynamic and supportive environment where learners can develop their language skills, deepen their reasoning, and enhance their cognitive growth through interaction. Several studies have reported the positive effects of learners' high reasoning skills on the quality of the learners' collaborative dialogue and knowledge development. (Mercer, 2000; Wegerif & Dawes, 2004; Mercer & Littleton, 2007) focused on developing children's reasoning skills with the assumption that developing these skills will lead to high-quality collaboration, creating more learning opportunities. Dawes, Mercer, and Wegerif (2000) carried out an experimental teaching program, namely the thinking together approach, designed to enable children in British primary schools to talk and reason**,** applying these skills in their science study.

The Thinking Together approach encourages the use of exploratory talk as a medium of teaching and learning. Exploratory talk is not a new concept in the UK educational system. It was first advocated by Douglas Barnes in the 1970s (see, for example, Barnes, 1976), then it was taken up and developed by Neil Mercer, who defined Exploratory Talk as follows:

Exploratory talk foregrounds reasoning. 'Its ground rules require that the views of all participants are sought and considered, that proposals are explicitly stated and evaluated, and that explicit agreement precedes decisions and actions. It is aimed at the achievement of consensus. Exploratory talk, by incorporating conflict and the open sharing of ideas, represents the more visible pursuit of rational consensus through conversations. It is a speech situation in which everyone is free to express their views and in which the most reasonable views gain acceptance' (Mercer, 1995, p. 107). Mercer & Littleton's (2007) work was widely successful in different contexts (i.e., the United Kingdom and Mexico) in improving the quality of interaction during collaborative tasks in EFL classes and other subject areas (e.g., math and science).

They identified three distinct types of talk that learners may use when working collaboratively:

- Cumulative Talk: Talk is supportive and affirming, but reasoning is underdeveloped as learners uncritically accept each other's ideas.
- Disputational Talk: Learners disagree, often without explanation or justification, leading to competitive, unproductive discussions.
- Exploratory Talk: Learners engage critically and constructively with each other's ideas, offering reasons, asking questions, and seeking consensus.

These are summarised in Table 1 below.

Table 1.

Types of Talk and Their Impact on Collaborative Learning

Talk Type	Participation Style	Use of Reasoning	Interaction Tone	Learning Potential
Cumulative Talk	Passive agreement and repetition	Low – ideas accepted uncritically	Harmonious, but uncritical	Limited knowledge construction
Disputational Talk	Competitive, individualistic dialogue	Low – disagreements without justification	Confrontational	Minimal collaborative learning
Exploratory Talk	Collaborative, inclusive contributions	High – explanations and justifications	Respectful, open-minded	Deep understanding and knowledge co-construction

They found that a high level of reasoning skills enables the learners to co-construct their knowledge in a collaborative learning situation. According to Mercer and Littleton (2007), learners working collaboratively to solve an activity might engage in one of the following types of talk: cumulative, disputational, or exploratory.

In cumulative talk, in which almost all learners in the group accept and agree with what other learners say, learners use their talk to share knowledge. However, they do so in an uncritical way, and finally, learners repeat and elaborate on each other's ideas, but they do not evaluate them carefully. The following excerpt from Mercer (2008, p. 2) exemplifies cumulative talk. Hannah, Deborah, and Darryl, three Year 5/6 children, were working at the computer using a Science Explorer simulation to test different materials for sound insulation.

Excerpt 2. learners' interaction in a task session described as cumulative talk (Mercer, 2008, p. 2)

Hannah: (reads instructions) 'Keep it Quiet. Which material is the best insulation? Click 'measure' to take a sound reading. Does the pitch make a difference?' No we don't want clothes. See what one it is then. (Points to screen) No it's cloth

Darryl: Oh it's cloth.

Hannah: Go down. This is better when Stephanie's in our group. Metal? Darryl: Right try it.

Deborah: Try what? That? Hannah: Try 'glass'

Darryl: Yeah Deborah: No one. Hannah: Now!

Darryl: Measure!

Hannah: Now measure. Hold. (Turns volume control dial below screen) Darryl: Results, notes!

Hannah: Results. We need to go on a different one now. Results! Darryl: Yeah, you need to go there so you can write everything down

Hannah: I'm not writing.

In the previous example, Hanna is trying to lead the group in a controlling manner, and the other members agree with her passively without questioning or contributing, which has led to an interaction with very few learning opportunities.

The Second type of talk that Mercer and Littleton (2007) discuss is disputation talk, which, as the name suggests, refers to the type of dialogue in which learners have many disagreements. There are few attempts to pool resources or to offer constructive criticism. Finally, the conversation's atmosphere can be described as competitive rather than cooperative. Excerpt 3 is an example of a disputational talk from Mercer et al. (2003, p.175). Two learners were solving a puzzle in a session before the implementation of the thinking together approach

(i.e., reasoning skills training).

Excerpt 3. learners' interaction in a task session described as disputational talk (Mercer et al., 2003, p.175)

Kyle: It's four not five (referring to the number of the puzzle).

Vijay: We're on number five now, bogey. Look, we done number four, dumb brain. It's this one, isn't it?

Kyle: No.

Vijay: It's this one isn't it? Kyle: No.

Vijay: Yes. Kyle: No.

Vijay: It's number 1.

Kyle: No, It's my turn to cross it off (Attempts to take the pencil from Vijay who keeps it and marks number 1 on the answer sheet).

In the previous example, the interaction between the two learners was not productive from a pedagogical point of view. The learners disagreed without attempting to explain, provide reasons for their opinions, or seek each other's views; in other words, they lacked reasoning skills.

As mentioned previously, the third type of talk is exploratory talk, which is the core of this approach. Dawes, Mercer, and Wegerif (1999) proposed a set of social ground rules for developing a framework for effective collaborative learning. These rules were influenced by a review of literature on effective collaboration (Mercer, 1995, pp. 90–95), the philosophy of rationality (Wegerif, 1999), and the author's classroom experiences. From these sources, they identified seven critical ground rules for productive group work (Mercer et al., 1999, pp. 98–99):

1. All relevant information is shared.

2. The group seeks to reach an agreement.

3. The group takes responsibility for decisions.
4. Reasons are expected.
5. Challenges are acceptable.
6. Alternatives are discussed before a decision is taken.
7. All group members are encouraged to speak with their peers.

The following interaction is an example of exploratory talk taken from the same study (i.e., Mercer et al., 2003) and the same learners (i.e., Vijay and Kyle) as the previous example of disputation talk. However, this interaction occurred after implementing the thinking together approach (i.e., the reasoning skills training program), in which learners use reasoning skills in their collaborative work. This led to more constructive and cooperative conversations described by Mercer as expletory talk.

Excerpt 4. Learners' interaction in a post-intervention collaborative learning session, described as exploratory talk (Mercer et al., 2003, pp. 175–176)

Kyle: Which one ... (to Nuresha) You have to ask us which one we think. O.K. You have to say 'Kyle and Vijay, whose name, which one?'

Vijay: You have to say 'I don't want to do this' or 'Kyle, what do you think?'... say ... (And a little later)

Vijay: Next. Nuresha's getting the best ones, isn't she? You have to say 'what do you think, Vijay or Kyle?

Nuresha: I think that (number 2) Kyle: I think that (number 4)

Vijay: Nuresha, look.

Nuresha: I think, that, that, that.

Kyle : No, because, look, because that goes round. It goes out. It goes out. Vijay: Or that one.

Kyle : No, because it hasn't got squiggly lines. Vijay: It has to be that.

Vijay: OK num' 4. Nuresha: Num' 4.

In the previous interaction, the learners encouraged each other to participate in the conversation, listen to each other, and accept alternative viewpoints.

Mercer reported on many benefits obtained from the thinking together approach, indicating that children can use talk more effectively as a tool for reasoning. Furthermore, they pointed out that talk-based activities can help develop reasoning and scientific understanding. Following the thinking together experiment, several studies were conducted to evaluate the thinking together approach designed by Mercer and Littleton (2007). Some were in UK primary schools, and one in Mexico (Rojas-Drummond & Mercer, 2003)).

These study's findings were consistent with the findings of the first thinking-together experiment (Dawes et al., 2000), in which learners in the experimental groups used more exploratory talk than learners in the control groups. In addition, these studies found that children who were in the experimental groups (i.e., the thinking together program) achieved better results on the tests of non-verbal reasoning (Raven's Progressive Matrices) and in their understanding of curriculum subjects than those in the control classes, even when working alone. These findings suggest that children who had the thinking to gather lessons have developed personal ways of thinking (Wegerif et al., 1999; Mercer et al., 2003).

From a sociocultural perspective, the findings of (Mercer, 2000; Wegerif & Dawes, 2004; Mercer & Littleton, 2007) support Vygotsky's claim that intermental or social activity can promote intramental or individual psychological development (Vygotsky, 1978). There is no

doubt about the immediate and long-term benefits of reasoning skill training in children's knowledge and language development, but what about adult learners? According to Hester et al. (2014), adult learners with limited reasoning skills struggle to integrate information into a learning context. They can also not elaborate on their ideas and connect the different information.

2.3 Sociocultural SLA: Task Selection and Implementation

Sociocultural scholars (e.g., Coughlan & Duff, 1994; Donato, 2000; Storch, 2017) have often pointed out that the design of a task does not necessarily predict how different learners will perform it. Several studies have found that the same task can yield different performances. For example, Coughlan and Duff (1994) found that the same task can be performed differently by different learners (Hungarian school students and an adult ESL learner) and by the same learner (the adult ESL learner) at different times.

Coughlan and Duff (1994) argue that a distinction between tasks and activities should be drawn. Tasks are more formal and goal-oriented; they include exercises that involve specific cognitive processes, whereas activities are often more flexible and informal and may not require learners to perform in the same way. Learners bring into the task their own unique goals, language learning past experiences, and, importantly, their perception of the task at hand. For example, in Coughlan and Duff's study, the learners' perception of the contrived nature of the experimental task explained differences in task behaviour on different occasions.

Donato (2000) also provided evidence to show that 'tasks do not manipulate learners to act in certain ways because participants invest their own goals, actions, cultural background, and beliefs (i.e., their agency) into tasks, and thus transform them' (p. 44). De Bot and Larsen-Freeman (2011) presented a similar point of view. From their perspective, the way learners

perform in a particular task cannot be predicted because the performance of a task is connected to several factors, such as the task itself, the educational context, and the learner's background.

After presenting the former point of view, we can conclude that from a sociocultural point of view, task design cannot control the learner's performance and reaction to that task. However, from the existing body of knowledge, we can determine some task types that are most likely to generate interaction that involves high levels of thinking and provide opportunities for co-construction of knowledge. Some SCT researchers have suggested the best types of tasks that align with the SCT approach of SLA. Storch (2017), for example, pointed out that for successful L2 learning, educators must include two key elements in their instruction: 'challenge and effective support' (p. 77). In other words, when learners are required to perform tasks that are below their level of linguistic abilities, they will draw on everyday concepts that they have already internalised. Thus, the need for mediation and, consequently, development opportunities almost do not exist. Second, the co-construction of ZPDs requires challenging tasks, but at the same time, these tasks need to be not too far beyond the learners' level, which cannot be successfully performed through mediation. To achieve the study goals, participants should be engaged in tasks that can promote the generation of LREs. Thus, using tasks can challenge the learners' linguistic abilities while providing space for the co-construction of knowledge and development.

2.4 Review of Related Studies

2.4.1 expert-novice interactions

Almost thirty years ago, sociocultural researchers started exploring the learners' development within Vygotsky's concept of ZPD in the EFL classroom. The first studies that have focused on mediation emerging from expert-novice interactions in the ZPD (e.g., Aljaafreh and

Lantolf, 1994; Nassaji & Swain, 2000; Gánem- Gutiérrez and Gilmore, 2018). One of the first studies that investigated learners' development within Vygotsky's concept of ZPD and later inspired many other researchers is Aljaafreh and Lantolf (1994). They collaborated with three ESL learners with grammatical difficulties during a writing class. A tutor met individually with each student and targeted their use of tense, modal verbs, prepositions, and articles. The mediator in this study aimed to co-construct a ZPD with the participants, interacting with them to diagnose areas of difficulty and help them gain control over the relevant structures. The most critical element in this study is that the expert-novice interactions were in the form of a constant cycle of mediating moves on the part of the tutor, learner responses, and then appropriate adjustments to mediation (becoming either more or less explicit). In this way, they fulfil the need for mediated development to be dynamic and achieve its goals.

While methodologically insightful, the study's reliance on one-on-one tutoring in a controlled environment raises concerns about ecological validity. It does not reflect the realities of most classroom settings, where teachers manage multiple learners simultaneously. Furthermore, the small sample size limits the generalisability of the findings, although the detailed, (micro)genetic analysis offers rich insights into how mediation operates moment-by-moment.

Another vital contribution of Aljaafreh and Lantolf (1994) is that they have shown how working in the ZPD reveals aspects of development that remain hidden if educators consider only correct or incorrect responses as indicators of development. They stated that a change in the type of mediation a learner requires (e.g., learners' need for assistance changes from explicit to implicit mediation) most likely indicates development. However, the study could have been

strengthened by incorporating learner perspectives to better understand how the participants perceived the mediation process and whether it aligned with their self-reported progress.

Nassaji and Swain (2000) did a follow-up study to Aljaafreh and Lantolf's (1994) study. They investigated whether negotiated help provided within the learner's zone of proximal development ZPD is more effective than help provided randomly and irrespective of the learner's ZPD. The study included two learners as participants and one tutor as in the Aljaafreh and Lantolf (1994) approach. The tutor gradually provided help to the learner, starting from the most implicit mediation to the most explicit, according to the learner's particular needs. However, the other learner was given help in a random matter without following a scale of hints or clues from the most implicit to the most explicit. The study showed that the ZPD learner outperformed the non-ZPD learner in the final composition task. In addition, the authors note that the ZPD learner 'exhibited consistent growth over time, a pattern not observed in the non-ZPD student's performance' (Nassaji & Swain, 2000, p. 48).

This study makes an important empirical contribution by contrasting systematic and random mediation. However, it shares similar methodological constraints with its predecessor, namely, the extremely limited sample size and lack of triangulation with other data sources such as learner interviews or classroom observations. Moreover, the binary contrast between 'ZPD' and 'non-ZPD' assistance risks oversimplifying the nuanced continuum of learner needs in real pedagogical settings. Nevertheless, the study effectively reinforces the value of tailoring mediation to the learner's developmental level**.**

Recently, in the same line of expert-novice mediation analysis, Ganem Gutierrez and Gilmore (2018) conducted a study investigating the interaction between an adult EFL university student in Japan and her EFL tutor/researcher while they observed the student's L2 writing event

during a stimulated retrospective recall session. They used (micro)genetic multimodal interaction analysis to analyse data collected from eye-tracking and real-time screen capture of the writing event. This study has showcased how developmental opportunities emerge during stimulated retrospective recall, indicating that a tool for research (i.e., Stimulated retrospective recall) is simultaneously a tool to promote the learner's potential development. Furthermore, this study has a crucial pedagogical implication in which the data and the study's findings can be used to raise L2 educators' awareness about different dialectic mechanisms that can be used to promote learner development.

This study introduces a novel methodological approach by integrating multimodal data, such as eye movements and screen activity, which enriches our understanding of cognitive and attentional processes during ZPD interactions. However, its use of complex and resource-intensive technology may pose practical challenges for replication or adoption in everyday classroom contexts. Additionally, while the analysis is (micro)genetic, the study is still based on a single learner, which raises questions about broader applicability. Despite these constraints, the study expands the conceptual scope of mediation by demonstrating how research methods themselves can become sites of pedagogical intervention.

2.4.2 Peer Collaboration: Processes, Patterns, and Conditions for Success

Research on peer-to-peer interaction from a sociocultural point of view started emerging in the late 1990s. Studies over the past years have investigated peer-to-peer interaction from various perspectives. A line of studies has focused on comparing the effect of expert vs. peer scaffolding on L2 development (e.g., Shin et al., 2020; Jamali Kivi et al., 2022; Taheri & Nazmi, 2021). For Example, Jamali Kivi et al. (2021) investigated the impact of teacher versus peer scaffolding on EFL learners' incidental vocabulary learning and reading comprehension

through a sociocultural viewpoint. To measure students' vocabulary knowledge development, the authors used a teacher-made English vocabulary test as the study's pre-test and post test. They contained questions based on the learners' textbook. The most significant finding of this study is that learners can scaffold one another in the same way teachers help learners. Moreover, Jamali Kivi et al. (2021) asserted that learners' interaction in the sociocultural context leads to many other positive effects. It allows learners to play other roles in the learning environment (e.g., the facilitator). It benefits them by enabling them to give and receive other-regulation and later move from other-regulation to self-regulation.

While this study offers encouraging evidence for the role of peer scaffolding, its use of a teacher-made vocabulary test, although practical, may benefit from further validation to strengthen the reliability of the findings. A clearer description of the test development process would have enhanced the transparency of the methodology. The conclusion that peer scaffolding can be as effective as teacher scaffolding is promising, yet it may be more accurate to view the two forms of mediation as complementary rather than equivalent. Teachers often bring a depth of linguistic and pedagogical knowledge that peers may not yet possess, though peers can offer unique support that fosters collaboration and learner autonomy.

In addition, while the study highlights the broader benefits of peer interaction, such as role shifting and movement toward self-regulation, it would be useful for future research to further explore the specific scaffolding strategies learners use and how these evolve over time. Nevertheless, this study contributes valuably to sociocultural understandings of peer learning, emphasising the active role learners can play in each other's development.

Another line of studies shifted their focus from the output to the process that governs peer-to-peer interaction. This shift of focus represents a critical element of Vygotsky's theory: the

importance of looking at the process rather than the output if we want to learn about development. Focusing on the process rather than the output allows us to understand how knowledge is co-constructed and how developmental opportunities emerge in such peer-to-peer interactions.

Swain and Lapkin (1998) investigated peer interactions during a collaborative writing task. They found that learners produced collaborative dialogue through language-related episodes (LREs), in which they talk about the language they produce, analyse it, and correct it. In such dialogue, learners assist each other by exchanging knowledge, co-constructing their language knowledge, and reaching shared conclusions. Their qualitative approach offers valuable insights into how learners negotiate meaning and support each other's development. While the study focuses on a small number of learners in a specific context, it nevertheless provides a strong foundation for understanding the nature of peer scaffolding.

These findings parallel Storch's (2005) findings. Storch pointed out that the most important aspect of collaboration between learners is the opportunity to generate ideas collaboratively and be exposed to different views when engaged in a language task. Storch's categorization of interaction patterns enriches our understanding of peer collaboration by highlighting how different dynamics can shape learning opportunities. Although her work is context-specific, it offers useful frameworks that can be applied in similar educational settings, especially when exploring how learners share control and contribute to each other's language development. Together, these studies underscore the importance of focusing on the interactional process in peer learning. While further research across diverse contexts would strengthen the evidence base, the existing findings already contribute meaningfully to our understanding of co-constructed learning in L2 classrooms.

2.4.3 Mediational Tools: L1, Digital Environments, and Affect

Learners' collaboration in the EFL classroom can be affected by different factors that can promote or hinder their collaborative work and the quality of the collaborative dialogue**.** While engaged in an EFL task in which all the learners share the same L1 (e.g., most Saudi EFL classes), sometimes learners would express themselves in their L1 when they lack the proficiency to express themself in the target language. The Use of L1 in L2 classrooms is a controversial issue. The use of L1 has received increasing attention in studies investigating interaction more broadly (Alegría et al., 2009; Brooks & Donato, 1994; Buckwalter, 2001; De Guerrero & Villamil, 2000; Lee, 2008) as well as in studies focusing specifically on L1 itself (Antón & DiCamilla, 1998; Ohta, 2001; Swain & Lapkin, 2000).

Sociocultural theorists argue that the presence of L1 can be positive because they consider L1 a cognitive tool essential to making sense of the L2 learning process. Antón and DiCamilla (1998) explored the use of L1 as a psychological tool that mediates human mental activity on both the external (interpsychological) and internal (intrapsychological) planes during the collaborative interactions of adult EFL learners studying Spanish as an L2. Qualitative analysis of five learners working collaboratively on writing tasks showcased how the L1 mediated intersubjectivity and externalisation of inner speech (i.e., private speech) during cognitively complex activities to regulate one's mental activity. While the sample size was relatively small, the depth of analysis offers valuable insight into how L1 functions as a mediational tool. However, further large-scale studies would be beneficial to understand how generalisable these findings are across contexts and proficiency levels.

Villamil and de Guerrero (1996) also found that L2 learners use their L1 to make meaning of a text, solve language-related problems, generate ideas, gain control of the task, and maintain

dialogue. Their study offers important pedagogical insights, though it should be noted that it focused primarily on Spanish learners in a specific educational context, which might influence how broadly the results can be applied.

Centeno-Cortés and Jiménez (2004) conducted a study investigating the role of L1 in cognitive regulation. They compared private speech use between native Spanish speakers and L1 English speakers of L2 Spanish at intermediate and advanced proficiency levels. Advanced L2 speakers initially used a mix of Spanish and English private speech during individual cognitive problem-solving activities, but most reverted to their L1 as the reasoning process intensified. When advanced speakers continued reasoning in the L2, they often responded incorrectly or abandoned the task. Conversely, intermediate L2 speakers consistently relied on their L1 private speech to address the problem. This study provides a compelling argument for the use of L1 as a regulatory tool. Still, the task-based nature of the study and individual variation in cognitive strategies suggest a need for additional investigation into learner preferences and task demands.

Another factor affecting learners' collaborative dialogue is the difference in their proficiency levels. Kowal and Swain (1997) pointed out that a significant variation in the learners' proficiency levels (e.g., low, middle and high) may result in different interaction scenarios during the collaborative task. For example, the more competent students would lead the group and learners with lower proficiency levels would be too hesitant to participate. In this interaction pattern, the weaker learners' opinions would be overlooked, whether they were valid or not. Therefore, Kowal and Swain (1997) claimed that in such a heterogeneous grouping, achieving a successful collaborative dialogue in which learners respect and consider each other's opinions would be difficult. This finding highlights important considerations for group formation in pedagogical practice. However, the conclusions might be influenced by classroom dynamics

or learner attitudes that were not fully accounted for in the study.

Nearly ten years later, Watanabe and Swain (2007) conducted another study that found that proficiency differences were not the decisive factor in the nature of the collaborative dialogue. Watanabe and Swain (2007) investigated how four adult ESL learners each interacted with more and less proficient peers and how their interaction affected the nature of collaborative dialogue and L2 learning. Using a mixed methods approach, they engaged the participants in a three-stage task involving pair writing, pair comparison (between their original text and a reformulated version) and individual writing. Participants also engaged in a stimulated recall after the task. The pair's collaborative dialogue was analysed regarding LREs, pair interaction patterns (Storch, 2002a), and each learner's post test score. They found that when the learners engaged in collaborative patterns of interaction, they were more likely to achieve higher post test scores regardless of their partner's proficiency level. The strength of this study lies in its methodological triangulation and its nuanced approach to analysing interactional patterns. However, its limited number of participants may restrict generalisability, suggesting a need for further replication with larger samples.

The researchers thus claimed that proficiency differences did not seem to be the decisive factor in affecting the nature of collaborative dialogue. Instead, the pattern of interaction co-constructed by both learners had a more significant impact (see also Kim & McDonough, 2008). Bao (2020) explored the nature of collaborative dialogue among complete beginners learning Chinese as a foreign language. Despite discovering that pairs with weaker linguistic abilities failed to resolve over half of the LREs correctly, Bao's research indicates that most low-proficiency pairs still gained benefits from engaging in collaborative dialogue. These findings suggest that engaging in collaboration can be productive even without immediate success in LRE

resolution. However, the study could further benefit from a longitudinal perspective to assess longer-term development.

This last point leads us to discuss another factor that plays a vital role in the learners' collaborative dialogue in the EFL class: learners' interaction patterns. Storch (2002), in her study of collaborative tasks in an adult ESL classroom, found four different patterns of pair interaction that influenced the degree of collaboration and opportunities for learning. First is the collaborative pattern, in which both learners worked together and shared ideas throughout the completion of the task. Second is the dominant/ dominant pattern, in which learners were unwilling to share ideas, and if they shared their ideas, they were unwilling to accept each other's ideas. Third is the Dominant/passive pattern, which contains a dominant participant with an authoritarian stance who takes control of the task and a passive partner who maintains a subservient role. Lastly, there is the expert/novice pattern, in which the more knowledgeable learner (expert) actively encourages the less knowledgeable learner (novice) to engage in the task. Storch (2002) found that the pairs with a collaborative orientation (collaborative and expert/novice) afforded more opportunities for learning than the pairs with a non-collaborative orientation (dominant/dominant and dominant/passive). This framework is highly valuable in analysing learner interactions, though one must consider cultural and institutional contexts that may affect the emergence of these patterns.

Watanabe and Swain (2007) proposed an additional interaction pattern (expert/passive). In the expert/ passive pair, despite the ongoing encouragement of the more proficient expert participant, the less proficient passive participant's involvement in the task decreased over time as he became intimidated and reluctant to say anything in front of his expert partner, in which they consider this pattern of interaction a non-collaborative. This extension of Storch's

framework adds depth to our understanding of collaboration and highlights the importance of emotional and affective factors in learner participation.

Storch and Aldosari (2013) investigated the nature of pair work in a Saudi context. They found that dyadic relationships (e.g., collaborative, expert-novice, dominant– dominant, and dominant–passive) may be of greater significance than proficiency pairing. However, they comment that 'similar proficiency learners seem more likely to form collaborative relationships than pairs where the proficiency gap is large' (pp. 46–7). This study usefully contextualises earlier findings within a specific EFL setting, reinforcing the importance of sociocultural and contextual sensitivity when interpreting peer interaction data.

Efforts have also been made to understand the impact of different task types on the quality and quantity of collaborative dialogue (e.g., Swain & Lapkin, 2001; de la Colina & García Mayo, 2007). Swain and Lapkin (2001) investigated the effect of different task types (jigsaw and dictogloss) on form-focused language learning episodes. The participants spoke English as their first language and learned French as their second language. The students were divided into two groups: the first group engaged in a jigsaw task while the other group completed a dictogloss task. They analysed the data in terms of the time taken to do the task, the quality of the written narratives (i.e., content, organisation, vocabulary, syntax, and number of idea units), and the test outcomes in which direct comparisons between the two groups post test scores. Comparisons between the two groups' test outcomes included only core pre- and post test items. No significant differences were found between form-focused LREs generated by the two tasks. However, the dictogloss imposed a smaller range in the total number of LREs produced by the students relative to the jigsaw task. While the comparative approach was effective in assessing the influence of task type, the relatively narrow participant base may limit broader implications.

Further research is needed to determine whether task type consistently influences LRE production across various L2 contexts.

In another study, Alshuraidah & Storch (2021) found that collaborative writing tasks generate more LREs compared to tasks when learners are required to provide written feedback on a text written by another group or when learners are asked to revise their text in response to peer feedback. Their findings further support the role of collaboration in promoting language-related discussions. Yet, future studies could explore how different feedback modalities influence learner autonomy and task engagement.

With the advancement of technology and the use of devices (e.g., computers, mobiles, and tablets) as a tool for learning, sociocultural theory scholars were interested in exploring learners' interaction in computer-assisted language learning settings. For example, Gánem-Gutiérrez (2006) compared Spanish learners' progress through collaborative activity with computer software built-in aids such as clues and hints and paper-based tasks. She pointed out that there are different levels of collaboration during a collaborative learning event. She identified a more significant number of high-quality collaboration (HQC) instances, defined as the 'collaboration where learners, working within a ZPD, can co-construct language-related knowledge' (p. 238). The study highlights how digital tools can scaffold language learning, although the software's design and learners' digital literacy could also influence outcomes, factors that merit further inquiry.

Following this interest in uncovering peer-mediated developmental processes, several studies have explored scaffolding patterns learners use when collaborating in EFL activities. Fung (2010) used conversation analysis to investigate the defining and facilitating features of collaborative face-to-face learning. He pointed out that the common defining features of

collaborative learning during writing are mutual interaction, negotiations, conflict, and shared expertise. Through mutual interaction, learners jointly plan and generate ideas; what is more important is listening to others to broaden their thinking. Negotiation, as the second defining feature, refers to the modification and restructuring of interaction when there is a comprehension problem during the interaction. The problem may be indicated through clarification requests, confirmation, and comprehension checks. The third defining feature is cognitive conflict, which refers to the dichotomy of opinions of learners interacting, which is essential in problem-solving and thinking processes. Finally, shared expertise points to learners benefiting from their partners' expertise and producing higher-quality writing. He also identified several interaction features that facilitate learning: affective factors, use of L1, backtracking, and humour. This study is one of few studies (e.g., Ohta, 1995 and Daiute and Dalton's 1993) that noted the element of humour during collaborative L2 learning. His rich qualitative data bring attention to often-overlooked social dynamics like humour, though replication across diverse learner populations would strengthen claims about generalisability.

More recently, Shin et al. (2020) employed verbal analysis, content analysis, and social network analysis (SNA) to investigate patterns of peer scaffolding that occur during inquiry-based learning (IBL) group activities. Nine types of peer scaffolding were identified: hinting, demonstrating, explaining, confirming, procedural assistance, providing feedback, Posing, clarifying, and elaborating. The other part of the study investigated the relationship between the level of individual student's prior knowledge and their choice of peer scaffolds used during the activity. They found that the high prior knowledge group provided peer scaffolding that focused attention on considerations key to developing their arguments, and this scaffolding may have improved the group's work. In the mixed prior knowledge group, the students with greater prior

knowledge were likely to support those with less prior knowledge. These findings indicate that how students are grouped may impact observable patterns in peer scaffolding. The methodological triangulation here is a notable strength, offering multidimensional insight into peer interaction. However, the influence of task design and classroom culture on scaffold use remains a question for future research.

2.4.4 Related studies in the Saudi context

In the Saudi EFL context, peer interaction has been the subject of a growing body of research. However, most existing studies have primarily focused on learners' attitudes and beliefs about collaborative learning (e.g., Al-Furaydi, 2013; Alkhalaf, 2020), rather than providing fine-grained analyses of the interactional dynamics that occur during collaboration. While attitudinal studies offer insight into learner perceptions and general preferences, they fall short of elucidating how learning actually unfolds in interaction. These studies often rely on self-report instruments such as questionnaires and interviews, which, although useful, are susceptible to social desirability bias and do not capture the real-time cognitive and linguistic processes involved in collaboration.

Another stream of research has investigated the impact of various technological tools, such as Computer-Assisted Language Learning (CALL) and Mobile-Enhanced Language Learning (MELL), on facilitating collaborative learning (e.g., Fardoun, Zafar, & Ciprés, 2013). Although these studies demonstrate a growing interest in integrating digital tools into language learning, many of them lack detailed interactional or discourse analysis, which limits our understanding of how technology mediates language development at the micro-level**.** For example, Alahmadi (2007) investigated interaction patterns in computer-mediated communication and identified clarification requests and feedback as dominant moves. While this

provides a useful taxonomy of interaction types, the study did not investigate the extent to which these moves contributed to language development or co-construction of knowledge, thus limiting its explanatory power in relation to sociocultural learning mechanisms.

A more methodologically rigorous study was conducted by Al-Mutairy and Shukri (2017), who used conversation analysis to explore interactional patterns in synchronous CMC settings. Their longitudinal design, tracking learners over multiple sessions, allowed for the observation of developmental trends, such as increased willingness to interact over time. Importantly, their analysis highlighted the role of affective factors (e.g., nervousness, comfort) in shaping peer interaction, suggesting that sociocultural variables beyond linguistic competence significantly influence collaborative dialogue. However, the study focused primarily on surface-level patterns (e.g., turn-taking and repairs) and could have been strengthened by linking these patterns to specific learning outcomes or language gains.

The most relevant study to the present one is by Alshuraidah and Storch (2020), which compared the quantity and quality of LREs generated by two types of L2 writing activities. Thirty-four Saudi college English language learners worked in self-selected small groups (predominantly pairs) on three successive activities. First, they completed a collaborative writing task. Next, they provided written feedback on a text written by another group. Finally, they revised their text in response to the peer feedback received. Analysis of the recorded talk during these three activities showed that the collaborative writing task generated more languaging episodes than the other activities. This finding is valuable in demonstrating that task design can directly affect opportunities for language-related talk. However, the study could benefit from a deeper analysis of how these LREs contribute to long-term language development, particularly through a (micro)genetic lens.

In a similar study, Aldossary (2021) explored the effect of collaborative writing tasks on the learners' language development. He conducted a classroom-based study that investigated the effects of collaborative writing on EFL college students' language development. The 46 participants were evenly divided into a control group, which wrote essays individually, and an experimental group, which completed the task in small groups. Both groups completed a pre-test before the eight-week intervention and an immediate post-test. The experimental group also completed an end-of-study questionnaire that elicited participants' perceptions of collaborative writing's effect on their writing skills. Although both groups showed improvement, the experimental group improved significantly more on the post-test than the control group and expressed positive attitudes toward collaborative writing on the questionnaire. While these findings are promising, the study relies heavily on quantitative pre- and post-test comparisons and self-reported perceptions. It would have been strengthened by including interactional data or learner dialogue to show how collaborative engagement led to observed improvements. Despite the progress made, the Saudi context still lacks research that applies sociocultural theory in depth, particularly studies that utilise (micro)genetic analysis to capture moment-to-moment learning developments. Such analyses would offer a more nuanced understanding of how knowledge is co-constructed and regulated within peer interactions.

2.5 Summary and Research Gap

The theoretical framework guiding this study, Sociocultural Theory (SCT), positions language learning as a socially mediated process in which development occurs through interaction within the Zone of Proximal Development (ZPD). Central concepts such as mediation, internalisation, and regulation frame peer collaboration as a dynamic space where learners can scaffold one another's thinking and construct knowledge through dialogue.

Empirical studies reviewed in this chapter support the notion that peer interaction plays a vital role in second language development, particularly when learners engage in language-related episodes (LREs) and collaborative dialogue. These interactions have been shown to foster opportunities for negotiation of meaning, co-construction of knowledge, and cognitive regulation. The reviewed literature also highlights the importance of interaction patterns, such as collaborative, expert/novice, and dominant/passive configurations, in shaping the quality of peer engagement and the developmental potential of language tasks. Additionally, studies emphasise the strategic use of learners' L1 as a mediational tool, particularly in moments of linguistic difficulty or conceptual challenge.

Nevertheless, several gaps are evident in the literature. Much of the previous research focuses on the outcomes of collaboration, often overlooking the micro-level processes through which learning occurs during peer interaction. Additionally, Saudi EFL contexts remain underrepresented in studies grounded in sociocultural theory. Existing research in this context has tended to prioritise learner attitudes, technological tools, or task-based comparisons, with limited attention to the fine-grained interactional dynamics that underpin language learning as a social and developmental process.

The present study addresses these gaps by adopting a sociocultural lens and a (micro)genetic approach to analyse the moment-to-moment co-construction of language knowledge among Saudi EFL learners. By focusing on the processes of mediation and regulation within peer dialogue, this research contributes to a more nuanced understanding of how learning emerges through interaction. Furthermore, it offers context-specific insights into the nature of collaborative engagement in Saudi classrooms, thereby extending the application of SCT to new educational and cultural settings.

3 Chapter 3: Research Methods

3.1 Methodology

3.1.1 Researching Within the Pragmatism Paradigm

The present study is grounded in a pragmatist research paradigm, chosen for its compatibility with the study's research aims and the nature of the questions being investigated. Pragmatism, initially introduced by Peirce (1905) and further developed by James (1907), Dewey (1938), and Mead (1934), is based on the principle that the value of ideas and methods lies in their practical consequences. Rather than being confined to a single epistemological or ontological stance, pragmatism supports methodological flexibility, prioritising the use of whatever approaches are most effective for addressing the research problem.

This paradigm is particularly appropriate for applied linguistics research, which often deals with complex, socially situated phenomena such as interaction, collaboration, and language development. In the context of this study, focusing on peer interaction, scaffolding, and collaborative learning through the lens of sociocultural theory, a purely quantitative or qualitative approach would have been insufficient. Pragmatism enables a more nuanced understanding by allowing multiple ways of knowing, recognising that both objective measurements and subjective experiences contribute valuable insights.

Importantly, the research questions in this study encompass both explanatory and exploratory dimensions. For instance, questions such as *"To what extent does reasoning skills training impact the quantity, quality, and focus of the learners' produced LREs?"* and *"To what extent does enhanced collaborative dialogue, fostered through reasoning skills training, contribute to second language development?"* reflect an explanatory aim, seeking to measure and evaluate the effects of a specific intervention. On the other hand, questions like *"To what*

extent does collaborative work supported by reasoning skills training promote second language development?" and *"How does reasoning skills training impact learners' collaborative dialogue?"* are exploratory in nature, focusing on understanding the processes and interactions underlying peer collaboration. A pragmatic paradigm supports this dual focus by accommodating diverse types of data and analytic strategies suited to addressing both types of inquiry. Given this orientation, the study employs a mixed methods design, which is discussed in detail in the following section.

3.1.2 Employing a Mixed Methods Approach

To address the multifaceted nature of the research questions and the theoretical underpinnings of the study, I adopted a mixed methods approach that integrates both quantitative and qualitative data collection and analysis. This design was driven by the dual focus of my research questions, which required examining not only the measurable outcomes of reasoning skills training (e.g., the quantity and types of LREs and changes in collaborative dialogue) but also the underlying interactional processes through which learners reason together and construct knowledge.

Specifically, research questions 1 and 4, focusing on the extent to which reasoning skills training impacts LRE production and contributes to L2 development, necessitated quantitative analysis to identify patterns, frequencies, and measurable changes across pre- and post-intervention data. Meanwhile, research questions 2 and 3, exploring the influence of reasoning skills training on the nature and quality of collaborative dialogue, required qualitative methods to capture the nuanced, moment-to-moment dynamics of peer interaction.

Following Tashakkori and Creswell (2007), mixed methods research involves collecting, analysing, and integrating both types of data within a single study to offer a fuller understanding

of complex phenomena. In this study, quantitative analyses (e.g., frequency counts and statistical comparisons of LREs and interactional features) allowed for the identification of trends and measurable effects of the intervention. Qualitative analyses, including (micro)genetic analysis of peer interaction transcripts, provided insight into the developmental processes underpinning collaborative dialogue and scaffolding.

The rationale for this design aligns with broader methodological shifts in applied linguistics, where combining methods is increasingly seen as essential for capturing the dynamic and layered nature of language learning. Drawing on Mackey and Gass (2015), this approach leverages the strengths of both paradigms, replicability and generalisability from quantitative methods, and depth and contextual sensitivity from qualitative methods, offering a more rigorous and comprehensive response to the study's aims.

3.1.3 Employing Quasi-Experimental Design

Applied linguists often use experimental methods to explore causality in second language acquisition by manipulating certain variables (treatments) to assess their impact. In doing so, they utilise experimental or quasi-experimental designs to determine whether such treatments produce specific outcomes. In line with the previous section, this study's main objective is to explore the impact of reasoning skills training on learners' collaborative dialogue and their language development.

To address RQ1: *To what extent does reasoning skills training impact the quantity, quality, and focus of learners' produced LREs?* and RQ4: *How does collaborative dialogue, supported by reasoning skills training, promote second language development?* a pre-test, post-test, and delayed post-test design was used. This design allowed for the quantitative

measurement of changes in learners' performance over time, capturing the effects of the intervention on both the production of LREs and broader language gains.

To answer RQ2: *To what extent does collaborative work supported by reasoning skills training promote second language development?* and RQ3: *How does reasoning skills training impact learners' collaborative dialogue?* learners' interactions were recorded during task sessions conducted before and after the training. These interactions were then analysed using qualitative (micro)genetic analysis to provide in-depth insights into how learners co-constructed meaning, mediated each other's understanding, and developed reasoning in real-time. A more detailed explanation of the data analysis procedures used to address RQ2 and RQ3 is provided in (section 3.5).

This quasi-experimental design involved two learner groups: an experimental group that received reasoning skills training and a control group that received presentation skills training. The intervention spanned eight sessions and included language testing, collaborative task work, and training components. This design enabled the study to triangulate data from multiple sources and answer all four RQs from both quantitative and qualitative perspectives.

3.2 Participants

3.2.1 Recruitment and Assignment of Participants

The participants were recruited using convenience sampling (Dörnyei, 2007), as they were students at the researcher's institution. According to Dörnyei (2007), convenience sampling, also known as haphazard or accidental sampling, is a type of nonprobability sampling where members of the target population meet specific practical criteria, such as being more accessible, living nearby, being available at a particular time, or even just being willing to participate in the study. Given (2008) also describes it as selecting subjects from the population

that are easily accessible to the researcher. The primary assumption of convenience sampling is that the target population members are relatively homogeneous. This means that the research outcomes would not differ significantly whether the sample is random or selected from a conveniently accessible portion of the population. This assumption applies to the present study, as the inclusion of adult L2 learners from Majmah University or any other university in Saudi Arabia is unlikely to affect the results significantly.

Given the constraints of the educational setting, an intact group assignment was used (Creswell & Creswell, 2018). This involved randomly assigning intact classes of second-year English language students into the conditions rather than the individual students. This approach encouraged the delivery of the intervention in the natural classroom environment. I used a coin toss to determine which of the two intact classes should be assigned to the experimental or the control group. The classes are labelled head and tail before a balanced coin is flipped to ensure a fair assignment. The experimental group, i.e., the reasoning skills group, consisted of the class corresponding to the flip of the coin, while the other class was assigned to the control group.

Class A, randomly selected to be the reasoning skills group (N=22), received the training in reasoning skills, while Class B, the control group (N=23), received presentation skills training. Participants in both conditions attended eight sessions, each lasting 30 to 45 minutes. Having the two groups on separate campuses (more details about the participants' study context are discussed in Section 3.2.2) proved beneficial in eliminating interference between the two groups, it made it easier to control the conditions. The intact group assignment strategy ensured that the education setting remained manageable and controllable while maintaining the original classroom structures.

3.2.2 Participant Demographics and Study Context

This study involved 45 Saudi EFL learners in the undergraduate English program at Majmah University in Majmah, Saudi Arabia. Their ages ranged from 19 to 27, with a mean age of 22 and a standard deviation of (SD = 1.53). (See Tables 2 and 3 for detailed age distribution.) The study was conducted at a women's university; therefore, all participants were female.

Table 2.

List of Participants' Pseudonym IDs (Reasoning Skills Group)

pseudonym ID	Age group
A1	20
A2	20
A3	21
A4	19
A5	19
A6	20
A7	19
A8	20
A9	22
A10	21
A11	21
A12	21
A13	20
A14	21

A15	20
A16	19
A17	23
A18	22
A19	20
A20	20
A21	21
A22	19

Table 3.

List of Participants' Pseudonym IDs (Control Group)

pseudonym ID	Age group
B1	20
B2	20
B3	20
B4	23
B5	20
B6	20
B7	21
B8	22
B9	20
B10	19

B11	20
A12	19
B13	21
B14	23
B15	19
B16	20
B17	22
B18	22
B19	23
B20	21
B21	20
B22	20
B23	27

All participants were native Arabic speakers who had been learning English as part of their educational curriculum for six years, from middle school through high school and into their university studies, resulting in an estimate of intermediate to upper-intermediate proficiency levels corresponding to the B1 to B2 levels on the Common European Framework of Reference for Languages (CEFR). All 45 participants are female second-year students. This uniformity ensures that the participants have relevant characteristics, thus controlling variability and allowing a more precise assessment of the effects of the treatment. The participants for this research were second-year students studying in the English language department. The study was carried out across two campuses of Majmaah University. While these campuses are located geographically apart, their course curricula have the same content and structure for equality in

learning and quality. Majmaah University is in Majmaah, Saudi Arabia, characterised by excellence in higher learning and commitment to research. The university's English language department is dedicated to producing graduates proficient in English and capable of contributing effectively to various professional fields. The university's infrastructure supports a variety of academic and extracurricular activities.

The rationale for selecting second-year students was based on several factors. First, they had relatively similar exposure to English language instruction. Additionally, from my experience teaching college students in the English language department, many first-year students have motivational problems. These students often lack the motivation to learn English because some of them have enrolled in the English language department primarily to change their major after the first year. Furthermore, there is a significant variation in proficiency levels among first- year students; those who achieve the required proficiency level move to the second year, increasing the probability of homogeneity in proficiency among second-year students. On the other hand, third-year and fourth-year students could be more proficient for the purposes of the current study.

Moreover, recruiting intact classes from two different campuses allowed for the practical implementation of the treatment while controlling the experimental environment. Since all participants had the same educational background and were exposed to English language teaching for the same length of time, the sample used in this study can be described as homogeneous. Homogeneity reduces the differential effects produced by disparate backgrounds or levels of proficiency and focuses research on specific aspects of the treatment under measurement.

The English Language course at Majmaah University is a comprehensive four-year

program designed to equip students with a robust foundation in the English language, ultimately culminating in a bachelor's degree in English. It is a structured curriculum designed to progressively advance students' capacity and proficiency in various aspects of the language through a succession of more complex courses. In the first two years of the course, the students focus on core subjects that are important in developing essential language abilities. The core units involve reading, writing, grammar, listening, and phonetics. In these classes, learners build reading skills, writing, listening, and pronunciation. The foundational work laid out in the initial stages is further developed into more advanced topics for students who progress to the third and fourth years of study. The refined subjects involved in this course include advanced writing, extensive reading, an introduction to literature, and an introduction to translation. The program structures are designed to increase students' understanding and appreciation of English literature, develop high-order language skills, and provide basic translation skills. In this program, English is used as the medium of instruction; hence, students are assured of being exposed to the language in all situations. Typically, students engage in English language classes, attending classes for an average of six hours weekly, giving a reasonable leeway for immersion in the language and practice. Such orderly involvement is necessary to acquire the high competence levels expected of program graduates.

3.3 Target Forms

The present study aimed to explore the impact of learners' collaborative dialogue, supported by reasoning skills training, on their language development in specific target forms: past simple, past continuous, and present perfect. These forms were chosen for several reasons; each grounded in pedagogical relevance and theoretical alignment with the study's objectives.

First, these grammatical structures are commonly recognised as challenging for English language learners due to their semantic and functional overlap (Bardovi-Harlig, 2000; Salaberry & Shirai, 2002; Collins, 2002; DeKeyser, 2005). Learners often struggle to distinguish between them, particularly in terms of temporal reference, aspect, and contextual usage. Their accurate use requires not only grammatical knowledge but also higher-order thinking and reasoning, making them ideal for examining the effects of reasoning skills training on language acquisition (Swain, 2006; Nassaji & Swain, 2000).

Second, the selected forms were part of the learners' syllabus. Learners had been introduced to them in the term preceding the study, ensuring a baseline familiarity. Since the study did not involve direct instruction of these forms, this prior exposure was essential for exploring how collaborative reasoning could deepen and refine their understanding. Focusing on familiar forms allowed the study to isolate the effect of the intervention on further development, rather than the initial acquisition of new structures.

Third, findings from the pilot study (see section3.4.3) showed that these forms frequently appeared in language-related episodes (LREs) during the tasks. Their recurrence in learners' dialogue suggested they naturally provoked negotiation of meaning, explanation, and scaffolding, key features of collaborative interaction. This reinforced their suitability for investigating how peer dialogue and reasoning support grammatical development.

Additionally, grammar was selected as the focus of this study, rather than broader language skills like speaking, writing, or vocabulary, due to its central role in L2 development and its suitability for precise, systematic analysis (Larsen-Freeman, 2001; Ellis, 2006). The use of tense and aspect reflects learners' ability to apply grammatical knowledge accurately and contextually, which requires cognitive engagement and peer-mediated reasoning. Unlike broader

skills, grammatical development is more readily measurable, allowing clearer identification of the intervention's impact (Mackey & Gass, 2015). This made grammar an appropriate lens for exploring how reasoning skills and collaborative dialogue contribute to L2 learning outcomes.

3.4 Data Collection

The data collection instruments were a combination of tasks and language tests. Below, I will briefly review each instrument and describe its procedures.

3.4.1 Tasks

The study included two EFL task types for the task completion sessions. Audio recordings of the learners' interactions during these sessions were analysed to answer RQ1: *To what extent does reasoning skills training impact the quantity, quality, and focus of the learners' produced LREs?*, RQ3: *How does reasoning skills training impact learners' collaborative dialogue?*, and RQ4: *How does collaborative dialogue supported by reasoning skills training promote second language development?*

Each task had two comparable versions. The first version of each task type was used before the intervention, and the second version was used after the intervention. During task-completion sessions, learners were randomly divided into pairs and asked to work collaboratively on the tasks. Each task had a time limit of 30 minutes, and learners' interactions during these tasks were audio-recorded.

The first task used in the study was a jigsaw storytelling task adapted from Swain and Lapkin (2011) (see Appendix B and Appendix C). In this task, learners were given a set of pictures and asked to collaboratively arrange them in chronological order and compose a story describing what was happening in the pictures. They were prompted to attend to both language meaning and form while writing the story. This task was designed to encourage *languaging*, the

process of using language to mediate cognitive activity, reflect on language use, and construct knowledge collaboratively (Swain, 2006). The rationale for choosing this type of task lies in its ability to facilitate such dialogic thinking and meaning-making through language use.

This helps learners make their implicit knowledge explicit, thereby promoting deeper cognitive processing (Swain, 1985). Storytelling tasks, in particular, have been shown to generate a high number of language-related episodes (LREs), where learners notice gaps in their language knowledge, experiment with new forms, and refine their linguistic competence through meaningful interaction. Such tasks encourage learners to engage in metalinguistic reflection and co-construct knowledge, often leading to measurable language development (Swain & Lapkin, 1998).

The second task combined cloze (fill-in-the-gaps) and sentence completion items aimed at testing learners' knowledge of the present perfect tense. According to Storch (2005), collaborative cloze tasks encourage learners to reflect metalinguistically and negotiate language choices together, which supports the development of grammatical awareness. While storytelling tasks are widely acknowledged to be particularly suitable for collaborative learning due to their open-ended and co-constructive nature, using only this type would have limited the study's scope.

The decision to include two different types of tasks was deliberate. It allowed the research to explore how reasoning skills training supports collaborative dialogue and grammatical development across varied task formats. This choice also aligned with the distinct conceptual demands of the grammatical structures under investigation. Past simple and past continuous tenses are naturally suited to narrative storytelling, where events unfold in a temporal sequence. In contrast, the present perfect often appears in contexts where learners reflect on

experiences, which lends itself more effectively to structured sentence completion and cloze-type activities. By using two task formats, the study aimed to avoid the risk of task-type bias and ensured that any observed effects could be attributed more confidently to the intervention rather than the specific affordances of one particular task design.

Furthermore, both task types are supported in the literature as effective for eliciting LREs and fostering collaborative dialogue. Swain and Lapkin (2011) highlight how storytelling tasks promote interaction, co-construction, and language awareness, while Storch (2005) illustrates the metalinguistic benefits of collaborative cloze tasks. Including both also added variety and cognitive challenge to the learning experience, sustaining learner engagement and encouraging different types of reasoning and problem-solving.

During the sessions, learners received a brief review of the past tense before working on Task 1 and a brief review of the present perfect tense before beginning Task 2. Analysis of learners' interactions during the pilot study provided key insights. For Task 1, which required learners to compose a story using past simple and continuous forms, learners engaged in meaningful LREs related to tense use, as illustrated in the following excerpt:

Excerpt 5. LRE focused on the past tense. (from the pilot study)

S1: Then he makes his bed.

S2: ما تجي makes.

(is not appropriate)

S1: اجل ايش ؟

(What then?)

S2: we are talking about the past (0.3) maybe we should say made.

S1:ايه صح صح

(yah right right)

For Task 2, which focused on the present perfect, learners similarly demonstrated engagement with form through peer dialogue and correction. This is reflected in the following example from the pilot study:

Excerpt 6. LRE focused on the present perfect. (from the pilot study)

S4: Ok next one

S5: What city you haven't visited yet that you would like to visit.

S5: ° ° Hummm ° °(.) ° ° Hummm ° °

S4: Ok, what city you haven't visited yet that you would like to visit.

S5: Dubai?

S4: don't you have a country?

S5: No, but here city ((pointing to the question))

S4: خلاص Dubai, I like Dubai. (ok)

S5: I haven't visit Du:bai (0.7) Yet (1.5) right?

S4: Aha.

S5: I haven't visit Dubai yet but I [

S4:]I haven't visited.

S5: Ok, I haven't visited Dubai yet, but (.) I would like :to visit (.) or visited?

S4: To visit.

S5: Ok to visit it.

Together, these two tasks allowed the study to examine how reasoning skills training influenced collaborative dialogue and grammatical development in different yet complementary ways.

3.4.2 Language Development Tests: Pre, Post, and Delayed Test

The present study used pre-, post, and delayed language tests to evaluate the learners' linguistics development in the target forms (past simple, past continuous, and present perfect) throughout the study to address RQ2: *To what extent does collaborative work supported by reasoning skills training promote second language development?* The language tests were, therefore, carefully developed to serve the purposes of the investigation that targeted the impact of collaborative dialogue supported by reasoning skills on learners' language development in the target forms.

A couple of factors guided the development of the language tests used in the present study. First, the language tests were adapted from the tasks used in the current study. Ensuring consistency between the testing and learning environment. This helps to reduce external variables that might impact performance, thus allowing the tests to measure what it is intended to measure: the learners' application of skills developed during the study. This will increase the ecological validity of the research, as it mirrors the context in which the target forms were practised. Hence, the results will be more reliable and relevant to the learners' actual experiences.

Second, analysis of the learners' interactions during the task completion sessions in the pilot study provided important insights regarding the language tests. Initially, items requiring learners to convert times into written format were included in the language tests to align with Task 1, where learners read times from story pictures and used them to describe events in the correct order. Aiming to ensure consistency between the tasks and tests. However, these items proved to confuse participants and were below their proficiency level, so they were eventually removed from the final version of the test.

The language tests' aim is to assess the learners' development in language forms they were likely to discuss during the tasks (past simple, past continuous, and present perfect), hence evaluating the impact of collaborative learning supported by reasoning skills training on their language development. This evaluation was achieved by comparing test results between the experimental and control groups at different points in time (pre-test, post test, and delayed post test) following the intervention. In constructing the language tests, the following sources were drawn upon: Gánem Gutiérrez 2006; Swain and Lapkin 2011; Benhamlaoui & Ganem Gutierrez 2022). The three tests - pre-, post-, and delayed - were constructed to be comparable and used a cloze format, with gaps in a reading passage providing context for the test items. Each test had 25 items, of which 18 targeted grammatical structures, 6 were distractors, and one was a sample for the test candidates. The dichotomously valued tests were scored according to the already prepared answer key, allowing one mark for every correct answer, with a total score of 24 being the full score for each test (see Appendices F, K, and L).

To establish the internal consistency of the tests, reliability coefficients were calculated using the KR-20 formula (Brown, 2005). The results showed acceptable reliability across all three test administrations: 0.81 for the pre-test, 0.84 for the post-test, and 0.79 for the delayed post-test. These coefficients indicate that the tests were sufficiently reliable for measuring learners' grammatical development in the targeted forms.

The following specific steps were taken to make sure that the language tests in the present study were valid and reliable. First, the language tests were reviewed by a native speaker of English experienced in TEFL to ensure the authenticity of the language and that each item test was understandable and unambiguous. The tests were revised based on the recommendations made by this expert.

Then, three English teachers from Majmah University also examined these tests for their appropriateness in terms of content. The reviewer's comments also indicated that the tests represented the domain to be tested and were appropriate for testing the targeted linguistic skills. Incorporating feedback from both the TEFL expert and the university instructors, the tests were refined for reliability and validity. That exhaustive validation process ensured that the measurements would obtain the required language competencies and that the research results would be valid.

3.4.3 Pilot Study

A pilot study was conducted prior to the main data collection to enhance the validity and reliability of the research instruments and procedures. Ten second-year English major students participated in this phase, ten completed the language test, and six took part in the collaborative task session. These participants were excluded from the main study to avoid any learning effects or bias.

In the first session, learners completed the pre-test (see Appendix A), which was designed to assess their proficiency in the target forms (see section 3.3). The pilot supported content validity by helping identify issues related to the relevance and clarity of test items. For instance, items requiring learners to convert time into written format caused confusion and were considered below the participants' level; these items were subsequently removed. Participants also confirmed that the 30-minute time allocation was appropriate, which contributed to ensuring consistency in test conditions and thus supported reliability.

In the second session, learners were randomly paired to complete collaborative Tasks 1A and 1B (see Appendices B and C), and their interactions were recorded. This session aimed to evaluate whether the task instructions were clear, the timing appropriate, and the tasks capable of

eliciting language-related episodes (LREs), especially those tied to the target forms. The ability of the tasks to elicit the intended interactional features contributed to construct validity, while clear patterns in learners' engagement supported the dependability of the data collection approach. Adjustments were made based on pilot observations. The positioning of audio recording devices was refined to improve sound quality, thus enhancing data reliability. Furthermore, the task instructions were revised. Initially, learners were told they could speak Arabic if needed, but this resulted in excessive use. The revised instructions emphasised the importance of using English as much as possible, with gentle prompts to return to English when overuse of Arabic occurred. Overall, the pilot study provided critical insights that strengthened the validity and reliability of the research instruments and procedures, ensuring a smooth and effective implementation of the main study.

3.4.4 Data Collection Procedures: Tasks and Language Tests

The present study examines the impact of reasoning skills training on the learners' collaborative dialogue and language development in the target forms (i.e. past simple, past continuous, and present perfect). The procedures for collecting the data needed for analysis were as follows.

The study was conducted over six weeks and was integrated into the learners' course schedule. The pretest was administered in the first session during the initial week of the study. Pre-intervention task completion sessions (sessions 2 and 3) took place over two consecutive days in the first week, utilising tasks 1A and 2A. The training session (session 4) occurred in the second week. Post-intervention collaborative task sessions involving tasks 1B and 2B were conducted during the third week on two consecutive days. This was followed by session 7, in which the immediate post test was administered. Three weeks later, during the sixth week, the

delayed post test was administered in session 8. Table 4 outlines all the sessions included in this study and the data collection instruments used in each session.

Table 4.

Study Timeline, Procedures, and Associated Research Questions

Week	Session	Description	Data Collection Instruments	Research Questions Addressed
1	1	Pretest administration	Pretest	RQ2: *To what extent does collaborative work supported by reasoning skills training promote second language development?*
1	2	First task completion session	Task 1A	RQ1: *To what extent does collaborative work supported by reasoning skills training impacts learners' LREs quantity, quality, and focus?* RQ3: *How does reasoning skills training impact learners' collaborative dialogue?* RQ4: *How does collaborative dialogue supported by reasoning skills training promote second language development?*
1	3	Second task completion session	Task 2A	RQ1: *To what extent does collaborative work supported by reasoning skills training impact learners' LREs quantity, quality, and focus?*

				RQ3: *How does reasoning skills training impact learners' collaborative dialogue?* RQ4: *How does collaborative dialogue supported by reasoning skills training promote second language development?*
2	4	Training session	Training activities	RQ1: *To what extent does collaborative work supported by reasoning skills training impact learners' LREs quantity, quality, and focus?* RQ3: *How does reasoning skills training impact learners' collaborative dialogue?* RQ4: *How does collaborative dialogue supported by reasoning skills training promote second language development?*
3	5	First post-intervention task session	Task 1B	RQ1: *To what extent does collaborative work supported by reasoning skills training impact learners' LREs quantity, quality, and focus?* RQ3: *How does reasoning skills training impact learners' collaborative dialogue?* RQ4: *How does collaborative dialogue supported by reasoning skills training promote second language development?*

3	6	Second post-intervention task session	Task 2B	RQ1: *To what extent does collaborative work supported by reasoning skills training impact learners' LREs quantity, quality, and focus?* RQ3: *How does reasoning skills training impact learners' collaborative dialogue?* RQ4: *How does collaborative dialogue supported by reasoning skills training promote second language development?*
3	7	Immediate post test session	Immediate post test	RQ2: *To what extent does collaborative work supported by reasoning skills training promote second language development?*
6	8	Delayed post test session	Delayed post test	RQ2: *To what extent does collaborative work supported by reasoning skills training promote second language development?*

Note: This table outlines the sessions, their descriptions, data collection instruments, and the specific research questions each session aims to address throughout the six-week study period.

In Session One, the pretest was administered (see Appendix A) with a 30-minute time limit. In Session Two, learners were asked to engage with Task 1A (see Appendix B). I began the session by briefly reviewing the past tense and past continuous (i.e., target forms in Task 1) by distributing a worksheet that includes a brief review (see Appendix I). I allocated 10 minutes for participants to read the worksheet collectively, refreshing their understanding of its usage. After that, we moved to the main part of the session, the collaborative EFL task. I divided the

learners randomly into pairs and handed out the task worksheets to each pair. I explained the task's requirements and informed the learners that they had 30 minutes to complete it. I also told them that if they needed help during task completion, they could ask me for help by raising their hands. However, I emphasised the importance of seeking help from their partners before seeking help from me (teacher/researcher). During the task, each pair's interaction was audio-recorded using separate digital voice recorders placed discreetly at each table. The classroom was relatively large, which allowed for adequate spacing between pairs. I arranged the learners' chairs in a way that ensured each pair had some distance from others, minimising background noise and allowing for clearer recordings. After completing the task, each group was asked to share the story they had composed.

Session Three began a day after Session Two with a brief review of the perfect tense (see Appendix J), a topic the learners had previously covered in their curriculum. The same procedures used in Session 2 with Task 1A were repeated in Session 3 with Task 2A. The perfect tense review took about 10 minutes, after which we moved to the main part of the session, the collaborative EFL task. Learners were divided into the same groups they had in Session One, working with the same partner throughout the study allowed the researcher to detect any changes in the learners' interactions and patterns of mediation. After finishing the task, I elicited answers from all groups. When learners provided an incorrect answer, I informed them of the error and gave them a second chance to discuss and provide the correct answer. If they could not give the proper form, I would allow another pair to provide the correct answer and explain their reasoning.

The training session, Session Four, took place in the second week of the study. Learners in the control group received training in presentation skills, and learners in the reasoning skills

group received training in reasoning skills (for more information, see section 3.4.5). Session Five occurred in the third week of the study. In this session, learners were asked to work collaboratively on Task 1B (see Appendix C) with the same partners they had in the previous collaborative task sessions. The same procedures used in Task 1A (Session 2) were repeated. Session Six, which took place a day after Session Five, took place during the third week of the study. Learners were asked to work collaboratively on Task 2 B (see Appendix L). This session repeated the procedures used in Task 2A (Session 3). Session Seven occurred during the third week of the study, a day after Session Six. The immediate post test was administered with a time limit of 30 minutes (see Appendix M) (see section 3.4.2) for more information on the language tests used in the current study). In Session Eight, the delayed post test was administered (see Appendix N). The learners were given 30 minutes to complete the test.

3.4.5 Training Sessions: Materials and Procedures

The present study explores the impact of reasoning skill training on EFL college students' collaborative dialogue while engaged in different EFL tasks and their language development in target forms that have been the focus of their interactions. To achieve that goal, the first group of learners (i.e., the reasoning skills group) received training in reasoning skills, while the second group (i.e., the control group) received training in presentation skills. Since the current study aims to explore the impact of reasoning skill training on the learners' interactions during collaborative work and what could result in language development, reasoning skill training will be the focus of the present study. The purpose of the presentation skills training (received by the control group) is to ensure that both groups receive an equal amount of instructional time and exposure to L2. This design choice helps control for differences in language input and interaction time, making the groups more comparable by isolating the effect

of the training content. By the end of the study, the content of the two training sessions (i.e., reasoning skill training and presentation skill training) was made available to both groups for ethical purposes (see section 3.6).

The training sessions (session 4) were conducted by the researcher and took place in week 2 after the pre-intervention task-solving sessions: session 2 (Task 1A) and session 3 (Task 2 A). The reasoning skills group received reasoning skills training designed to improve their logical thinking and problem-solving abilities and enhance their collaboration skills in general. The training sessions were conducted over one session lasting 2 hours. Slides were used as visual aids during the sessions to engage the learners and enhance the effectiveness of the training (see Appendix O). Slides allowed for a structured and visually appealing presentation of the material, supporting the learners' engagement and comprehension. Additionally, the slides helped maintain a consistent flow of information and provided a reference point for discussions and interactive activities.

I started the session by discussing with the learners what they like and dislike about collaborative learning and what obstacles they have faced during a collaborative activity. After eliciting answers from the learners, I introduced the different advantages of collaborative learning in the EFL classroom, which were adopted from Ellis (2005). Afterwards, I presented training materials adopted from Mercer and Littleton’s (2007) work (see section 2.2) for more theoretical information about reasoning skills).

According to Mercer & Littleton (2007), learners working collaboratively to solve an activity might engage in one of the following talk types: (1) disputational talk, which, as the name suggests, refers to the type of dialogue when learners have many disagreements, there are few attempts to pool resources or to offer constructive criticism. That conversation's atmosphere

can be described as competitive rather than cooperative. (2) cumulative talk, in which almost all learners in the group simply accept and agree with what other learners say; learners use talk to share knowledge. Still, they do so in an uncritical way, and learners repeat and elaborate on each other's ideas, but they do not evaluate them carefully. (3) Exploratory talk, which can be described in the following:

- All learners in the group listen actively.
- Learners ask questions and share relevant information.
- Ideas may be challenged, and reasons are given for challenges.
- Contributions build on what has gone before.
- Everyone is encouraged to contribute, and ideas and opinions are treated with respect.
- There is an atmosphere of trust and a sense of shared purpose.
- The group seeks agreement for joint decisions.

I discussed these three types of talk with the learners, and together, we concluded that Exploratory talk is our goal in any classroom discussion. Afterwards, I discussed with the learners different expressions in English that could help students have a successful exploratory talk (e.g., in my opinion, I think, I would like to add something). Another critical point highlighted during the training session is the importance of learners supporting their views, comments, or answers with reasons, allowing others to understand their viewpoints. Moreover, we discussed the importance of questioning others' opinions and answers and asking for reasons and justification with constructive intentions.

In the second part of the training session, the learners had two activities (see Appendix P and Appendix Q) adopted from Lyn Dawes (2008). They were randomly divided into groups.

The first activity (see Appendix P) was a list of statements. The learners were required to decide which statement could be described as a principle for a successful exploratory talk by ticking yes or no for each statement.

Then, the learners were asked to list the principles they chose from the most important to the least important. Before engaging in the activity, the researcher reminded the learners to listen actively to others and give reasons for their answers. When the learners finished working on the activity, they were asked to present their answers to the whole class. In the second activity, namely Money (see Appendix Q), the goal was to allow the learners to practice their reasoning skills considering what had been discussed in the first part of the training session. task 2 contained ten talking points about Money. The learners were asked to decide whether these statements were true or false or if their group was unsure. They were also asked to prepare their group response with reasons. Although the reasoning skills training tasks were not explicitly grammar-focused, this was an intentional design choice to maximise learners' cognitive engagement with reasoning strategies. The training sessions used topics such as money and exploratory talk to create a context where learners could practise reasoning, argumentation, and collaborative problem-solving without the added pressure of grammatical accuracy. This separation allowed learners to develop their reasoning abilities in a low-stakes environment fully. Once these skills were established, learners were then expected to transfer and apply them during the grammar-focused treatment tasks, which required both linguistic accuracy and cognitive engagement. In this way, the reasoning training served as a foundational scaffold that supported learners' ability to engage meaningfully with grammatical forms during collaborative dialogue.

As mentioned in the literature review, Mercer & Littleton's (2007) work was focused on developing reasoning skills in young learners; in the current study, the language of the adopted

training materials was modified to suit adult learners. The adopted training materials were also modified to address the present study's participants' particular needs and interests; for example, in the training session, I mentioned references with a brief introduction about the linguist or scholar with whom discussing their ideas. Furthermore, to ensure that the training materials are of the learners' interest, some of the discussion topics in the reasoning skills training, task 2 (see Appendix Q) were altered to more relatable and interesting topics.

In the subsequent collaborative work sessions with the reasoning skills group, I reviewed the principles of exploratory talk with the learners before starting the collaborative task. These principles included that all learners in the group listen actively, learners ask questions and share relevant information, ideas may be challenged, reasons are given for challenges, contributions build on what has gone before, everyone is encouraged to contribute, and ideas and opinions are treated with respect. There is an atmosphere of trust and a sense of shared purpose.

This review encouraged them to engage in meaningful dialogue by frequently prompting them to ask for reasons, justify their answers, and contribute thoughtfully to the discussion. They were explicitly guided to use phrases such as 'why,' 'what do you think,' 'I agree,' and 'I don't agree because.' These reminders were reinforced multiple times during the sessions to ensure that learners actively participated in and adhered to the principles of exploratory talk.

The control group received training in presentation skills, which was also conducted over one session lasting for 2 hours. Similar to the reasoning skills group, slides were used to engage learners and present the material effectively (see Appendix R). Materials were adapted from Bradbury (2006). As noted earlier, this training session aimed to ensure that both the control and reasoning skills groups had comparable exposure to L2 throughout the study. The procedures for the presentation skill training were as follows: I began the session by asking the learners about

their experience with presentations. Specifically, I asked if they had ever been required to work on a project and present it in front of their classmates and professors. Then, I inquired about any obstacles they might have encountered while preparing and delivering their presentations. After gathering their responses, I delivered the first part of the training session, focusing on the preparation phase of a presentation. Following this, we discussed their experiences and challenges during the actual delivery of a presentation. Based on their feedback, I proceeded to the second part of the training, which covered the presentation process. This included posture, body language, speaking techniques, pauses, and other relevant skills. After the training, I divided the learners randomly into groups of three and assigned them presentation skills task 1 (see Appendix S). The aim of Task 1 was to test their knowledge of presentation skills. Following this, we moved on to presentation skills task 2 (see Appendix T), which allowed the learners to practice their presentation skills collaboratively.

3.5 Data Analysis

3.5.1 Analysis of Learners' Recorded Interaction

The complex nature of L2 development requires a comprehensive tool for data analysis that allows us to observe changes related to development directly as they occur. Macro-developmental approaches may not provide a sufficient tool to analyse this complex development process with traditional designs, such as cross-sectional and longitudinal methods (Lee & Karmiloff-Smith, 2002; Siegler & Crowley, 1991). On the other hand, the (micro)genetic method can follow moment-to-moment changes in abilities and knowledge during short time spans through intensive observations (Garnett & Parziale, 2002; Pang, 2021; Üstün & Aksu Ataç, 2022). Heinz Werner first introduced (Micro)genetic analysis in the mid-1920s. Then, Vygotsky (1978) adapted the method to developmental psychology.

After the expansion of the sociocultural theory into language development, some potential advantages of (micro)genetic analysis have been recognised in the domain of L2 development studies. According to Parziale (2002) (micro)genetic analysis provides rich data that help us understand the psycholinguistic, dynamic, and construction processes of change. (Micro)genetic analysis includes observations extending from the beginning of a change process to achieving a relatively stable state (Siegler, 2006). So, through this method, 'researchers can identify when interventions may work and when teaching may become beneficial; thus, they can provide more accurate predictions and contribute to improving teaching' (Granott & Parziale, 2002, p. 14).

According to Lavelli and Pantoja (2005), (micro)genetic analysis has two advantages. First, in some contexts (e.g., having limited access to learners) (micro)genetic analysis is the only approach to gaining rich data essential for understanding process change. Second, the observation and understanding of micro-level changes in real-time are necessary for researchers to notice macro-level changes in developmental periods. In dialogic interactions research, (micro)genetic analysis was used successfully to analyse instances of (micro)genesis (i.e., overt signs of language development) (see Gánem Gutiérrez, 2008) which allowed us to have insight into learning processes as they occur directly (e.g., Miri et al., 2017; Moradian et al., 2021; Storch, 2007; Swain & Lapkin, 1998, 2002; Gánem Gutiérrez, 2008).

To address the first research question: *To what extent does collaborative work supported by reasoning skills training impact learners' LREs quantity, quality, and focus?* RQ3: *How does reasoning skills training impact learners' collaborative dialogue?* and RQ4: *How does collaborative dialogue support reasoning skills training promote second language development?*

(Micro)genetic analyses were employed to examine learners' interactions during collaborative tasks.

Consistent with Gánem-Gutiérrez & Gilmore's study (2018), all data were analysed using Elan2 v.6.8 (Lausberg & Sloetjes, 2009). The interactions of 8 pairs from the reasoning skills group and six pairs from the control group while engaged in task 1 and task 2 before and after the intervention were included in the analysis. The interactions of 3 pairs from the reasoning skills group and five pairs from the control group were not included in the study because of problems with the clarity of the audio records. The total interaction duration produced by the reasoning skills group was 14 hours and 16 minutes, respectively, and the total interaction duration produced by the control group was 8 hours and 23 minutes, respectively. The total duration of the analysed interactions was 22 hours and 55 minutes, respectively. Tables 5 and 6 show the durations each group spent on each task.

Table 5.

Interaction Duration in Each Task Before and After Intervention: Reasoning Skills Group

Reasoning skills group		Duration of the interaction			
Student pseudonym ID		Pre intervention Task 1	Pre intervention Task2	Post intervention Task1	Post intervention Task 2
1.	A3 and A7	22:37	30:22	27:31	25:33
2.	A12 and A15	12:49	31:12	30:12	30:02
3.	A4 and A17	21:27	28:30	30:01	29:46
4.	A20 and A21	21:8	25:04	29:21	24:00
5.	A1 and A9	31:12	31:21	31:03	30:05
6.	A5 A13	18:22	27:42	24:47	22:09

7.	A2 and A11	21:50	31:02	27:30	26:34
8.	A8 and A6	24:40	29:16	31:08	28:11

Note. Time is presented in minutes and seconds.

Table 6.

Interaction Duration in Each Task Before and After Intervention: Control Group

Student pseudonym ID		Pre intervention Task 1	Pre intervention Task2	Post intervention Task1	Post intervention Task 2
1.	B17 And B20	22:13	25:56	28:02	30:01
2.	B2 and B19	17:03	31:12	15:57	26:33
3.	B11 and B5	15:33	24:09	18:33	22:49
4.	B10 and B13	20:22	22:48	20:04	24:01

Note. Time is presented in minutes and seconds.

Initial descriptive statistical analysis of the audio recordings, including the frequency of LREs, was conducted using Elan v.6.8. (Lausberg & Sloetjes, 2009). Different LREs were identified and analysed to investigate the potential impact of reasoning skills training on learners' interaction patterns that may contribute to language development. Swain and Lapkin (1998) defined an LRE as 'any part of the dialogue where the students talk about the language they are producing, question their language use, or correct themselves or others' (p. 326). LREs are commonly used in the literature as the unit of analysis to capture deliberations and decision-making about language choice is the LRE.

To address the first research question: *To what extent does reasoning skills training impact the quantity and quality of the learners' produced LREs?* The learners' interactions in L2

tasks were recorded and analysed for LREs. The process included identifying each LRE, then coding each one for its quality (high level of engagement vs. low level of engagement) and its focus (form-focused, lexis-focused, and mechanics-focused), following the LRE coding methodology of Storch and Alshuraidah (2020).

High-engagement LREs featured learners actively offering suggestions and counter-suggestions, often with explanations in their native language. These episodes involved learners building on each other's ideas and co-constructing understanding. In contrast, low-engagement LREs were usually triggered by a suggestion or correction but received minimal or no response. Some low-engagement episodes were lengthy but involved one learner simply repeating the spelling of a word dictated by another, indicating low interaction quality. Therefore, the analysis focused on the level of engagement rather than the length of the LRE, as length does not necessarily imply high-quality LRE.

Furthermore, LREs were also classified by focus into three types: form-based, lexis-based, and mechanics-based. Form-based LREs (F-LREs) dealt with verb tense and sentence structure issues. Below is an example of an F-LRE from Storch & Alshuraidah (2020, p 117). This example comes from the pair talk of Dosari and Mughazi during the collaborative writing activity. The LRE is triggered by other-repair. Dosari repairs Mughazi's utterance for subject-verb agreement (L76), but there is no evidence that Mughazi has noticed the repair. Thus, this LRE was coded as an F-LRE, showing a minimal engagement level.

Excerpt 7. F-LRE (minimal engagement)

Mughazi: they parent doesn't train them well

Dosari: don't

ughazi: full stop I think this is the causes of I think

Lexis-based LREs (L-LREs) dealt with lexical choices and word meanings (in L1 or L2). Excerpt 7 is an L-LRE that shows a high level of engagement and is counted as an instance of languaging found in Storch & Alshuraidah (2020, p 118). It comes from the pair talk of Otaibi and Fadhel during a peer writing review activity. As Fadhel reads the text, Otaibi notices something does not sound right (L68, 70). Fadhel realises that the phrase he read contains an error and suggests a correction (L71), explaining in Arabic that the collocation here is inappropriate (L73). Otaibi accepts the correction and repeats it (L74). This episode also shows evidence of collective language construction: Otaibi was the first to notice the error but may not have yet to learn how to correct it. Then, Fadhel offered the correction and explained the cause of the error. The joint effort resulted in a more accurate expression, and the pair wrote 'wrong word' above 'money' in the text they reviewed (by Humaid and Daham). In the revised version, this error was amended correctly.

Excerpt 8. L-LRE (high engagement)

Fadhel: poverty makes people commit money

Otaibi: HM!!!?

Fadhel: commit money

Otaibi: لحظة'lahdha' (a moment)

Fadhel: commit money...commit crimes يكتب كان'kaan yaktub' (he was writing) grammatical mistakes صح'sah' (yes)

Otaibi: Commit

Fadhel: commit money ماتجيء'maa taji'I' (is not appropriate) commit money

Otaibi: commit crime

Mechanics-based episodes (M-LREs) addressed orthographical issues like spelling, punctuation, word spacing, and handwriting clarity. Excerpt 8 contains an M-LRE showing minimal engagement found in Storch & Alshuraidah (2020, p 119). It comes from the pair talk of Shamir and Bahouth during a collaborative writing task. Shamir, the scribe, indicates that he wants Bahouth to spell the word 'commit' (L126), and Bahouth proceeds to spell it (L127, 129, 131, 133). In this lengthy M-LRE, Shamir's contribution is limited to verbatim repetitions.

Excerpt 9. M-LRE (low-engagement)

Bahouth: commit

Shamir: to commit, كيف :عربي ُانكتب 'anaktub a'raby: kaif' (we will write Arabic: how) spelling

Bahouth: C.O

Shamir: C.O

Bahouth: double M.M

Shamir: double N.N

Bahouth: double M.M, commit

Shamir: double M.M

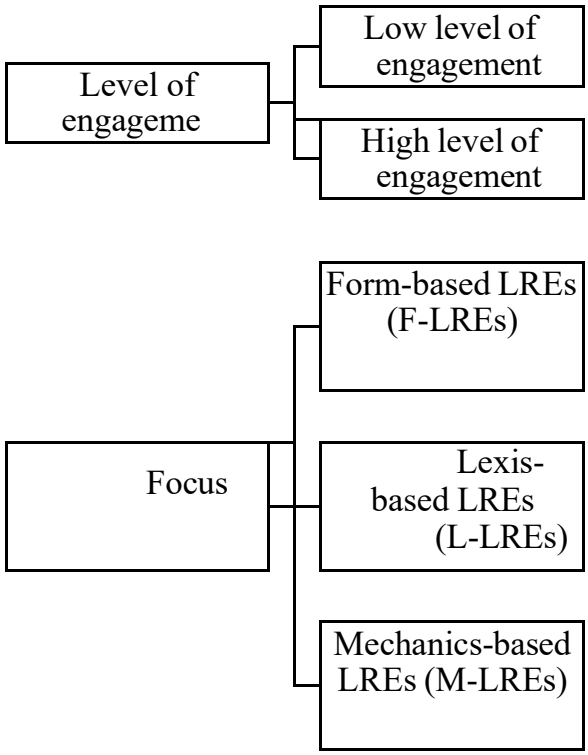
Bahouth: I.T

Shamir: I.T

LREs that may deal with two issues simultaneously were coded as two separate LREs. Figure 2 illustrates the coding system of the LREs.

Figure 1.

Categorisation of LREs



Due to the large volume of records, the researcher decided on the following process for LRE coding: first, code LREs in ELAN by marking their start and end points. Next, each LRE was categorised by level of engagement (high vs. low) and focus (lexis, form, mechanics). Then, a brief note described the topic of each LRE, such as discussions on specific language elements such as the adverb 'already' or the meaning of terms like 'basketball' (see Appendix U for a screenshot of an example of the analysis in ELAN).

3.5.2 (Micro)genetic Analysis Within Socio-Cultural Theory: Investigating Developmental Change in Language Learning

Research within SCT often involves 'process analyses' that investigate the dynamic nature of developmental change, described as 'messy, in constant flux, and difficult if not impossible to quantify' (Vygotsky, 1978, pp. 64–65; van Compernolle, 2019, p. 66). While quantification can help in 'describing some parts of a bigger picture,' it is not seen as the definitive method for explaining L2 development (van Compernolle, 2019, p. 69). Instead, SCT research typically uses (micro)genetic analyses with a few participants, focusing on how individuals engage with and respond to mediation (e.g., Swain & Lapkin, 2002; Gánem-Gutiérrez, 2006) This involves observing how individuals learn new skills, concepts, or strategies in short observational periods, often just minutes or hours (Wertsch & Hickmann, 1987). Increasing a learner's responsiveness to less detailed assistance suggests 'enhanced awareness of a given problem and emerging autonomy and self-regulation' (Lantolf et al., 2017, p. 155).

particularly Research Questions 3 and 4, namely, (RQ3) *How does reasoning skills training impact learners' collaborative dialogue?* and (RQ4) *How does collaborative dialogue, supported by reasoning skills training, promote second language development?* a (micro)genetic analysis was conducted. This analysis examined language-related episodes (LREs) produced during interactions involving four pairs of learners randomly selected from the reasoning skills training group. The use of random selection was intended to avoid selection bias and to ensure that the data reflected typical, rather than exceptional, learner interactions—a strategy often employed in qualitative research to enhance the credibility and transferability of findings (Miles, Huberman, & Saldaña, 2014). Specifically, two pairs were analysed from Task 1 and two from

Task 2, capturing their interactions during both the pre-intervention and post-intervention task completion sessions. This approach enabled an exploration of how reasoning skills training influenced learners' collaborative dialogue and their development in the target grammatical forms (i.e., past simple, past continuous, and present perfect). All LREs were fully transcribed following the transcription conventions outlined by Clift (2016) (see Appendix V).

Arabic utterances were translated into English; each placed directly below the original utterance. To enhance clarity, the translations were enclosed in brackets. The researcher, who is fluent in both English and Arabic, conducted the translations herself, drawing on her background which includes formal coursework in English-Arabic translation. Furthermore, an expert in translation reviewed the translations to ensure accuracy.

The rationale for the chosen sample is that it provides rich and sufficient data for the analysis. The four pairs produced 83 LREs together before and after the intervention, accounting for 51% of the total LREs generated by the reasoning skills group (163 LREs). Additionally, their total interaction time, including interactions from before and after the intervention, was 7 hours and 3 minutes, respectively, representing 49 % of the total recording time for the reasoning skills group interactions during collaborative task sessions, which was 14 hours and 16 minutes, respectively.

To further validate the sufficiency of the data, a methodology was used to estimate the total word count of the sample chosen for the analysis out of the total word count of the reasoning skills group's recordings. Based on the average speaking rate adjusted for silence periods in the recording to estimate the word count for 14 hours and 16 minutes (the reasoning skills group's total recorded audio time). The speakers in the audio were estimated to speak at an average rate of 100 words per minute (WPM), a standard pace for clear, conversational speech.

This rate aligns with typical speaking rates in spoken English, which generally range from 100 to 160 WPM depending on the context and individual speaker differences (Laver, 1994).

Approximately 15% of the recording time contained silence, reducing the total speaking time. Silence adjustments are a standard technique in speech analysis, as periods of silence can impact word count estimations (Jurafsky & Martin, 2008). the reasoning skills group's total recording time was 856 minutes or 14 hours and 16 minutes. Since 15% of the recorded audio included silence, the speaking time was reduced to 727.6 minutes. Following the speaking rate (100 WPM) estimate, the word count calculation resulted in an estimated word count of 72,760 words. Out of this total, the sample of interactions, totalling 8 hours and 23 minutes (503 minutes), that was selected for qualitative analysis. After adjusting for 15% silence, the actual speaking time for the sample is 427.55 minutes. Applying the 100 WPM rate, the estimated word count for this subset is approximately 42,755 words, representing approximately 58.8% of the total word count for the entire reasoning skills group recording. Thus, the total estimated word count for the entire recording is 72,760, with the sample representing 42,755 words (58.8%). This collaborative dialogue sample from the reasoning skills group offers rich data for analysis and is sufficient to meet the aims of the current study.

In the following section, I first discuss the analytical approach used to examine changes or developments in the collaborative dialogue of the eight learners during Task 1 and 2 throughout the study, as presented in (see section 4.3). Subsequently, I will address the analytical methods employed to reveal indicators of language development and the processes underlying these potential developments.

3.5.2.1 (Micro)genetic Analysis of Collaborative Dialogue

One aim of this study was to investigate how, exactly, the reasoning skills training impacted the learners' collaborative dialogue during the task completion sessions (RQ3). To address this question, the interactions of four pairs, pre and post-post-intervention, were analysed qualitatively for indications of enhanced collaborative dialogue using (micro)genetic interaction analysis. Several characteristics of high-quality collaborative dialogue were taken into consideration during the analysis. According to (Lantolf, 2007; Compernolle, 2015; Van Compernolle &Williams, 2013), good collaborative dialogue is evidenced by:

- Commitment and focus on the task.
- Expressing intentionality, such as explaining reasons for actions.
- Demonstrating a general willingness, for instance, by making efforts to elaborate on comments.
- Engaging in metacognitive activities, including reflecting on tasks and actions.
- Striving to attribute relevance and significance to things and events.

Furthermore, Mercer's view of learners performing collaboratively with high reasoning skills (i.e., Exploratory talk) was considered during the analysis. He defined Exploratory talk as a dialogue that foregrounds reasoning. 'Its ground rules require that the views of all participants are sought and considered, that proposals are explicitly stated and evaluated, and that explicit agreement precedes decisions and actions. [It is] aimed at the achievement of consensus.

Exploratory talk, by incorporating conflict and the open sharing of ideas, represents the more visible pursuit of rational consensus through conversations. [It is] a speech situation in which everyone is free to express their views and the most reasonable views gain acceptance'. (Mercer, 1995, p. 107).

3.5.2.2 (Micro)genetic Analysis of Grammatical Development

Another aim of this study was to investigate how interaction during collaborative work sessions supported by reasoning skills may bring about development in the target grammatical forms (RQ4). To address this, the interactions of four learner pairs, pre- and post-intervention, were analysed qualitatively using (micro)genetic analysis. This approach is well-suited for capturing fine-grained, moment-to-moment shifts in learners' use of language, providing insight into how learning unfolds through social interaction (Ohta, 2001; Lantolf & Thorne, 2006).

The study did not conceptualise *language development* in a broad or all-encompassing sense, but rather focused specifically on grammatical development, that is, learners' increasing ability to notice, understand, and accurately produce the target grammatical forms (past simple, past continuous, and present perfect). Several observable indicators were used to operationalise this construct, grounded in sociocultural theory and second language acquisition research.

First, following Swain's (2000, 2006, 2010) work on languaging and collaborative dialogue, learners' language-related episodes (LREs) were analysed for form-meaning negotiation. Swain argues that language learning occurs when learners are pushed to process language deeply, especially when they attempt to reconcile form and meaning. Such negotiation reveals learners' attention to gaps in their knowledge and supports internalisation. Similarly, Gass and Mackey (2006) suggest that these negotiated episodes, particularly in collaborative contexts, provide opportunities for noticing and restructuring interlanguage.

Second, the study considered learners' metalinguistic awareness, operationalised as the ability to verbalise grammar rules related to the target forms. Davin and Donato (2013) and Davin and Kushki (2021) argue that verbalisation of grammatical rules is a sign that learners are accessing and manipulating explicit knowledge, which plays a critical role in L2 development,

especially in form-focused tasks. This type of awareness indicates the learner's movement toward more controlled and conscious use of grammar, which is particularly important in the early stages of restructuring grammatical knowledge.

Third, the study drew on Vygotskian notions of regulation (Vygotsky, 1978) and Ohta's (2001) classroom-based research to trace learners' shift from other-regulation (relying on peers or the teacher) and object-regulation (using prompts or materials) to self-regulation (independently managing form use). This progression indicates increasing internalisation of grammatical knowledge. As learners rely less on external support and more on internalised strategies, they demonstrate developmental movement within their Zone of Proximal Development (ZPD). Self-regulation in this context reflects a more autonomous and confident command of the target grammatical forms.

In summary, these indicators, form-meaning negotiation, metalinguistic rule verbalisation, and shifts in regulation, represent theoretically grounded, observable dimensions of grammatical development. They allow researchers to capture nuanced changes in learners' understanding and use of specific grammatical features over time, especially in collaborative, reasoning-rich environments.

Table 7 summarises these language development indicators and how they were operationalized throughout the (micro)genetic analysis.

Table 7.

Language Development Indicators: (Micro)genetic Analysis of the Learners' Interactions

Evidence related to:	Operationalised as:

Form-meaning negotiation	Learners' ability to simultaneously notice and attend to both form and meaning.
Metalinguistic awareness	Learners' ability to explicitly verbalise the rules that govern the target forms (past simple, past continuous and present perfect).
Learners' shift to self-regulation	Learners' level of reliance on other regulation and object regulation and shifting gradually to self-regulation.

3.5.3 Analysis of Language Tests (Pre, Post, and Delayed Tests)

To address RQ2: To what extent does collaborative work supported by reasoning skills training promote second language development? A mixed Between-within-subjects design ANOVA was used based on the percentage scores from the language tests. The aim was to explore the impact of collaborative work, supported by reasoning skills training, on the development of the target language forms in this study (i.e., past tense, past continuous tense, and present perfect).

The assumptions necessary for the use of parametric statistics were tested (refer to section 4.2). These assumptions were normality of distribution (Shapiro-Wilk's test) and homogeneity of variance (Levene's test). The data from the language tests met these assumptions, allowing for the use of repeated-measures analyses of variance. The mixed between-within-subjects design ANOVA allowed for the examination of both within-subjects factors (the changes in language test scores over time: pre-test, post test, and delayed post test) and between-subjects factors (differences between the reasoning skill group, which received reasoning skills training, and the control group, which received presentation skills training). This design provided a comprehensive analysis of the impact of the intervention on the learners'

second language development in the target forms. There are several reasons why the mixed between-within-subjects design ANOVA was chosen over other statistical tests for this study.

First, this type of ANOVA allows the examination of two kinds of variables simultaneously: within-subjects (changes over time) and between-subjects (differences between groups). This dual analysis is crucial for understanding not just whether an intervention is effective but how it works overtime and across different groups. By including both within-subjects and between-subjects factors, this design controls for individual differences that might

affect the outcome, by doing so, enhancing the reliability of the findings, as it ensures that observed effects are due to the intervention rather than external variables. This comprehensive analytical approach allows researchers to draw reliable and valid conclusions (Field, 2013; Tabachnick & Fidell, 2019). Second, this design can be more efficient than a purely between- subjects design because fewer participants are needed to detect an effect since each participant is measured multiple times. In the current study, the reasoning skills group (N=22) and the control group (N=23) fit well with the mixed design ANOVA. The use of this comprehensive analytical approach allows researchers to draw conclusions that are both reliable and valid (Field, 2013; Tabachnick & Fidell, 2019).

3.6 Ethical Consideration

Before initiating the study, ethical approval was secured from both the University of Essex (see Appendix D) and Majmaah University (i.e., the site where the research was conducted) (see Appendix E for documentation of the ethical approval). Participants were verbally invited to participate on the first day of the study and provided with an information sheet. This document, read aloud by the researcher, outlined the study's purpose, procedures, and participant rights. Each participant received a copy for detailed review (see Appendix F). They

were encouraged to pose questions and seek further explanations as needed. Subsequently, written consent forms were distributed (see Appendix G and Appendix H), and participants were asked to sign to confirm their voluntary participation. They were also informed that they could withdraw from the study at any time without needing to justify it.

Another ethical issue of high importance was the privacy of the data collected. All interactions during the EFL activities were recorded on a password-protected device; only the researcher could access it. To protect confidentiality and anonymity, participants were assigned pseudonyms throughout the research whenever their real names appeared. This research involved two treatments: training in reasoning skills for the reasoning skills group and training in presentation skills for the control group. From an ethical standpoint, it was crucial to grant both groups access to all training content by the end of the study. This measure ensured equal treatment and equitable access to the educational benefits provided by the study, adhering to the

ethical principle of fairness. It also mitigated any potential disadvantages resulting from the initial group assignments. By providing equal access to all training materials, the study upheld a commitment to benevolence, maximising the benefits for all participants while minimising potential harm or perceived inequity. This approach not only preserved the fairness of the study but also bolstered its methodological integrity, ensuring that all participants were treated with utmost respect and consideration, as advocated by the American Psychological Association (2017).

4 Chapter 4: Results

This chapter presents findings from two types of data: (1) recorded interactions of learners engaging with two types of L2 tasks before and after an intervention, and (2) results from language development tests conducted at three stages of the study (pretest, post test, and delayed post test). Quantitative and qualitative research methods were employed to achieve the study's aims.

In the first part of this chapter, results from the quantitative analysis are presented to address RQ1 and RQ2: *To what extent does reasoning skills training impact the quantity, quality, and focus of the learners' produced LREs?* and *To what extent does collaborative work supported by reasoning skills training promote second language development?*

In the second part, qualitative analysis, specifically (micro)genetic analysis, is used to explore RQ3 and RQ4: *How does reasoning skills training impact learners' collaborative dialogue?* and *how does collaborative work supported by reasoning skills training promote second language development?*

4.1 To what extent does reasoning skills training impact the quantity, quality, and focus of the learners' produced LREs?

4.1.1 Learners' LREs (Frequency of Occurrences, Learners' Level of Engagement, and Focus)

In this section, interactions of 14 learners in pairs, eight in the reasoning skills group and six in the control group, were analysed using ELAN v.6.8 (Lausberg & Sloetjes, 2009). LREs were identified and coded based on learners' engagement level (high vs. low) and focus (lexis,

form, or mechanics) (see section 3.5.2). The analysis provides a quantitative overview of LRE frequency, focus, and learners' level of engagement in both groups, as shown in Tables 8 and 9.

Table 8.

Reasoning Skills Group Frequencies of Produced LREs

	Pre								Post							
Reasoning skills group	Task 1				Task2				Task1				Task 2			
ID	F	L	M	Total	F	L	M	Total	F	L	M	Total	F	L	M	Total
A3 and A7	1	1	0	2	3	2	0	5	6	5	0	11	0	3	1	4
A12 and A15	1	1	1	3	1	2	1	4	2	3	0	5	1	10	0	11
A4 and A17	0	1	0	1	0	4	1	5	1	1	0	2	1	3	0	4
A20 and A21	2	2	1	5	1	3	0	4	4	5	2	11	0	3	0	3
A1 and A 9	2	0	1	3	2	1	0	3	2	3	1	6	3	4	0	7
A5 A13	2	3	0	5	2	3	1	6	4	4	1	9	3	5	0	8
A2 and A11	0	1	0	1	1	1	0	2	0	2	0	2	1	7	0	8
A8 and A6	2	1	0	3	1	2	0	3	5	3	1	9	3	4	1	8
Total	10	10	3	23	11	18	3	32	24	26	5	55	12	39	2	53

Note. = Form-focused LREs, L= Lexis-focused LREs, M=Mechanics-focused LREs.

Table 9.

Control Group Frequencies of Produced LREs

	Pre								Post							
Control group	Task 1				Task2				Task1				Task 2			
ID	F	L	M	Total	F	L	M	Total	F	L	M	Total	F	L	M	Total
B17 And B20	3	2	1	6	2	0	1	3	2	1	0	3	0	3	0	3
B2 and B19	3	1	1	5	1	2	0	3	2	2	0	4	0	6	1	7
B11 and B5	3	1	0	4	2	1	0	3	3	2	1	6	3	2	0	5
B10 and B13	0	1	0	1	1	1	0	2	2	2	0	4	3	2	0	5
B23 and B7	3	2	1	6	3	2	1	6	2	1	0	3	1	5	0	6
B9 and B3	4	1	0	5	1	2	0	3	1	4	0	5	0	3	0	3
Total	16	8	3	27	10	8	2	20	12	12	1	25	7	21	1	29

Note. F= Form-focused LREs, L= Lexis-focused LREs, M=Mechanics-focused LREs.

Table 10 shows the proportion of these languaging episodes in the total number of LREs throughout the study (i.e., before and after the intervention). It also shows the number of these languaging episodes focused on form, lexis, and mechanics and the proportion of such episodes in the total number of such episodes before and after the intervention

Table 10.

Number of Learners' Produced LREs by Focus Area

Group	LREs	F	L	M
Control group				
Pre intervention	46 (46%)	26 (57%)	16 (35%)	5 (11%)
Post intervention	54 (54%)	19 (35%)	33 (61%)	2 (4%)
Control group Total LREs	100 (100%)	45 (45%)	49 (49%)	7 (7%)
Reasoning Skills Group				
Pre intervention	55 (33%)	21 (38%)	28 (51%)	6 (11%)
Post intervention	108 (67%)	36 (33%)	65 (60%)	7 (6%)
Reasoning skills group total LREs	163 (100%)	57 (35%)	93(57%)	13 (8%)

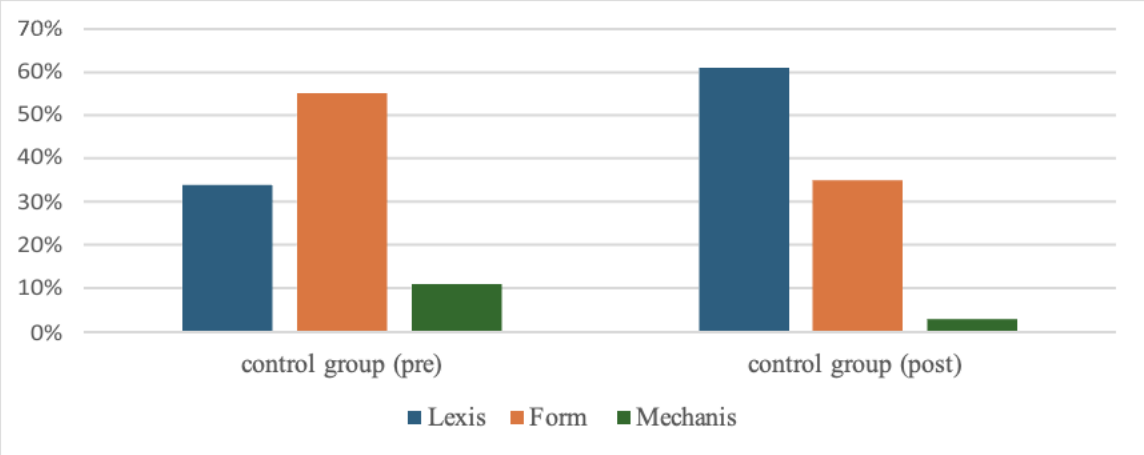
Note. F= Form-focused LREs, L= Lexis-focused LREs, M=Mechanics-focused LREs.

4.1.2 LREs Frequency of Occurrences

As illustrated in Figure 2 and Table 11, analysis of LREs showed that the production of LREs in the reasoning skills group has increased. The total number of LREs produced by the reasoning skills group before the intervention was 55 LREs (33%), and that number increased in the collaborative task completion sessions that took place after the intervention, in which the learners in the reasoning skills group produced 108 LREs (67%) which shows an increase by (33%). In the control group, the learners' total produced LREs before the intervention was 46, which slightly increased to 54 LREs after the intervention,showing an increase of only (7%).

Figure 2.

Comparative Analysis of LREs Frequencies Before and After Interventions in Control and Reasoning Skills Groups



A chi-square test of independence was conducted to examine the relationship between intervention (i.e., reasoning skills training) and learners' production of LREs during task completion sessions. Table 11 presents the observed frequencies for both groups.

Table 11.

Frequencies of LREs Before and After Intervention

Group	Pre intervention	Post intervention	Total
Reasoning Skills Group	55	108	163
Control Group	54	46	100
Total	109	154	263

The results of the chi-square test of independence showed that the relation

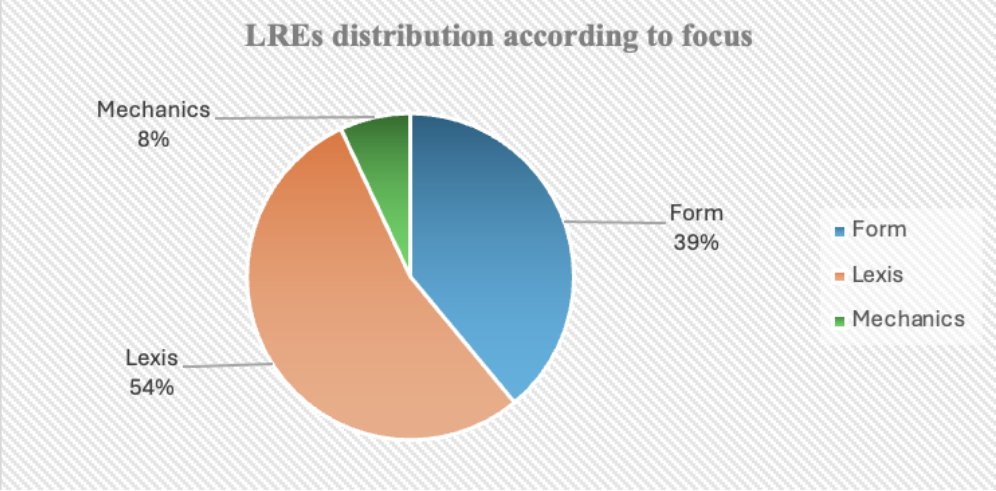
between these variables was significant, χ^2 (1, N = 263) = 10.48, p = 0.0019, p < .05. A result is significant when the p-value is below the threshold (typically 0.05 in social sciences). The effect size, measured by Cramér's V, was V = 0.20, indicating a small to moderate effect size (Cohen, 1988). This suggests that the reasoning skills training had a meaningful impact on the reasoning skills group's LRE production compared to the control group.

4.1.3 LRE Focus

Throughout the study, most LREs produced by both groups focused on lexis (54%). Form-focused LREs were the next most commonly produced LREs (39%), while those related to mechanics were less frequent (8%), as shown in Table 10 and Figure 3.

Figure 3.

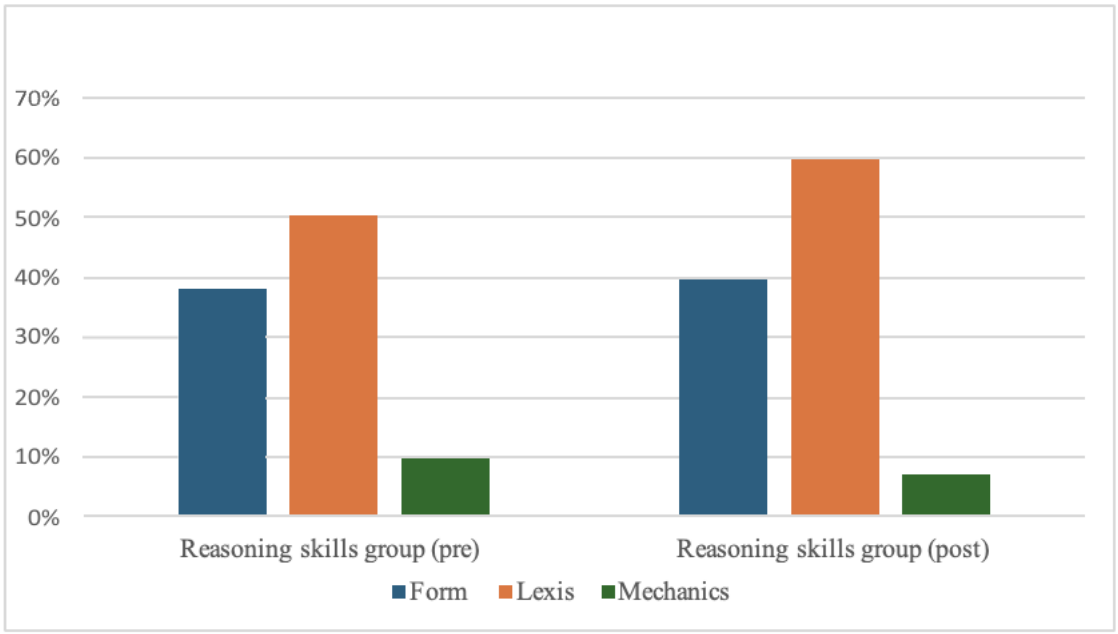
Distribution of LREs According to Focus.



In the reasoning skills group, the distribution of LRE categories remained consistent before and after the intervention, with 51% of the group's LREs focusing on lexis before and 60% after. This slight increase is depicted in Table 10 and illustrated in Figure 4.

Figure 4.

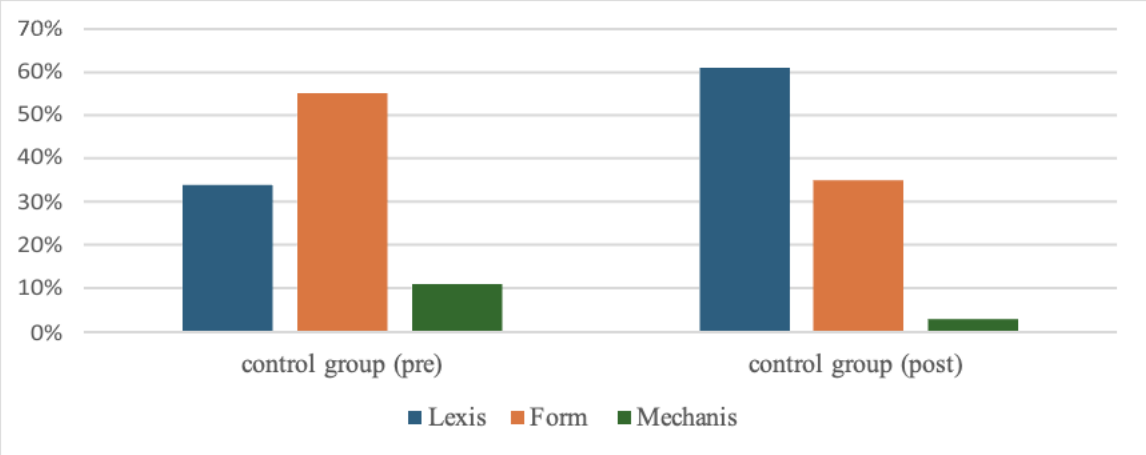
Comparative Analysis LREs Focus Before and After Intervention in the Reasoning Skills Group



On the other hand, there was a slight shift in the distribution of LRE categories in the control group. As Table 10 shows and Figure 5 illustrates, the most generated LREs in the control group before the intervention were form-focused (57%); however, after the intervention session, the most generated LRE type was lexis (61%).

Figure 5.

Comparative Analysis of the Focus of LREs Produced by the Control Group Before and After the Intervention.



4.2 To what extent does collaborative work supported by reasoning skills training promote second language development?

A mixed between-within-subjects design ANOVA was conducted to explore the impact of collaborative work supported by reasoning skills training on promoting second language development (RQ2). This analysis was based on the percentage scores derived from pre-, post, and delayed language tests (see Tables 11 and 12). These tests were conducted to assess the impact of collaborative work supported by reasoning skills training on the participants' use of the target features (i.e., past simple, past continuous, and present perfect). Each test consisted of 25 gaps, with 18 targeting the specific grammatical features and six

serving as distractors, along with one example for the learners. The tests were scored dichotomously based on a prepared answer sheet, with one point awarded for each correct

answer. The maximum possible score was 24. However, distractors were not included in the scoring; therefore, the maximum possible score for including only the target features was 18.

Table 12.

Reasoning Skills Group Test Results

ID	Pre-test	Post test	Delayed post test
A1	6	9	8
A2	10	10	11
A3	14	16	14
A4	7	8	9
A5	15	11	15
A6	13	17	11
A7	11	13	12
A8	7	15	10
A9	6	7	7
A10	4	5	2
A11	12	17	11
A12	7	16	8
A13	10	14	9
A14	3	5	5
A15	15	14	18
A16	8	9	6
A17	6	9	8
A18	5	6	15
A19	10	8	10
A20	5	14	10
A21	12	16	15
A22	8	10	6

Note. The maximum possible score for each test is 18.

Table 13.

Control Group Test Results.

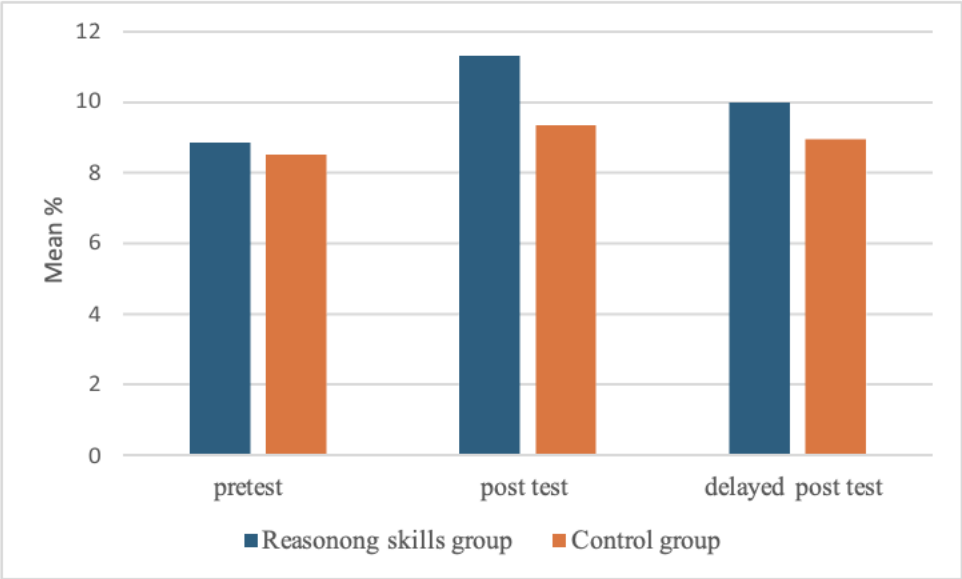
ID	Pre-test	Post test	Delayed post test
B1	11	9	7
B2	10	10	9
B3	14	13	13
B4	6	7	5
B5	15	15	14
B6	12	8	11
B7	6	12	13
B8	7	8	10
B9	7	11	7
B10	4	3	1
B11	12	11	12
B12	7	8	10
B13	6	9	11
B14	3	4	3
B15	15	18	14
B16	8	6	6
B17	10	7	6
B18	5	8	6
B19	13	10	10
B20	5	8	9
B21	10	15	13
B22	8	4	7
B23	8	11	9

Note. The maximum possible score for each test is 18.

Language tests scores across the three-time point (pertest, post test, and delayed post test) are illustrated in figure 6.

Figure 6.

Language Tests Scores Across the Three Time Point (pertest, post test, and delayed post test)



Before conducting a mixed ANOVA analysis, it's crucial to verify that the assumptions related to normality of distribution, homogeneity of variance, and sphericity are met, as these assumptions are inherent to the parametric nature of the test (Field, 2018).

The normality assumption, assessed through Shapiro-Wilk's test was satisfied, for all three language tests, as indicated in Table 14. Pretest was normally distributed at W (45) = .969, p= .25; post test was normally distributed, W (45) = .963, p= .15; and delayed post test was normally distributed, W (45) = .986, p= .87. The test rejects the null hypothesis of normality when the p-value is less than or equal to 0.05.

Table 14.

Normality of Distribution (Shapiro-Wilk's Test)

	Shapiro-Wilk		
	Statistic	df	Sig.
Pretest	.969	45	.257
Post test	.963	45	.158
Delayed post test	.986	45	.872

Furthermore, the assumption regarding homogeneity of variance, assessed through Levene's test, was confirmed for all language tests, as demonstrated in Table 15.

Table 15.

Homogeneity of Variance (Levene's Test)

		Levene Statistic	df1	df2	Sig.
Pretest	Based on Mean	.062	1	43	.804
Post test	Based on Mean	1.349	1	43	.252
Delayed post test	Based on Mean	.013	1	43	.911

For Pretest F(1,43)= .062, *p*= .80 , post test F(1,43) = 1.349, *p*= .25, and delayed post test F(1,43)= .013, *p*= .91we accept the null hypothesis of equal population variances. The test rejects the hypothesis of homogeneity of variance when the p-value is less than or equal to 0.05.

Regarding the assumption of sphericity, Mauchly's sphericity test indicated no violation for the repeated measures factor (time), $X^2(2) = .575$, p = .75 as shown in table 16. Therefore, no correction was applied (see Field, 2009). The test rejects the null hypothesis of sphericity when the p-value is less than or equal to 0.05.

Table 16.

Mauchly's Test of Sphericity

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.
Time	.986	.575	2	.750

After verifying the assumptions related to normality of distribution, homogeneity of variance, and sphericity, these assumptions are inherent to the parametric nature of the statistical test. A mixed ANOVA was conducted to assess the impact of the reasoning skills training (between-subjects factor: Reasoning skills group vs Control group) over three time points (within-subjects factor: pretest, post test, and delayed post test). Means and standard deviations are presented in Table 17. The Reasoning skills group showed improvements from the pretest (M= 8.86, SD = 3.58) to the post test (M = 11.32, SD = 4.01) and remained higher at the delayed post test (M = 10.00, SD = 3.82). In contrast, the Control group showed smaller changes, with pretest (M = 8.52, SD = 3.57), post test (M = 9.35, SD = 3.68), and delayed post test (M = 8.96, SD = 3.52) scores remaining relatively stable.

Table 17.

Descriptive statistics (Control group and Reasoning skills group)

	Group	Mean	Std. Deviation	N
Pretest	Reasoning skills group	8.86	3.576	22
	Control group	8.52	3.566	23
	Total	8.69	3.534	45
Post test	Reasoning skills group	11.32	4.005	22
	Control group	9.35	3.676	23
	Total	10.31	3.924	45
Delayed post test	Reasoning skills group	10.00	3.817	22
	Control group	8.96	3.522	23
	Total	9.47	3.666	45

The overall analysis using mixed design ANOVA (see table 18) indicated that there was a significant main effect of time Wilks' Lambda = 0.726, F(2, 42) = 7.93, p = .001, partial eta squared = 0.274, indicating significant changes in scores across the three-time points. However, there was no significant interaction between time and group, Wilks' Lambda = 0.915, F(2, 42) = 1.94, p = .156, partial eta squared = 0.085. suggesting that the groups did not differ significantly in how their scores changed over time, with a small effect size, as it falls below 0.14 (Cohen, 1988).

Table 18.

Overall Analysis Using Mixed Design ANOVA

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Time	Wilks' Lambda	.726	7.933[b]	2.000	42.000	.001	.274
Time * Group	Wilks' Lambda	.915	1.942[b]	2.000	42.000	.156	.085

Furthermore, the main effect comparing the two types of intervention (reasoning skills group vs. control group) was not significant, with F (1,43) = 1.25, p = .269, and partial eta squared = .028. This finding indicates that there was no statistically significant difference in the overall effectiveness of the interventions on the learners' language test scores (see Table 19).

Table 19.

Mixed Design ANOVA (Main Effect Analysis)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Intercept	12181.111	1	12181.111	361.351	<.001	.894
Group	42.208	1	42.208	1.252	.269	.028
Error	1449.526	43	33.710			

Although the statistical analysis showed no significant difference between the two groups' language test results across the three-time points (pretest, post test, and delayed post test), I further examined the gains made by each group using pairwise comparisons with Bonferroni adjustment to provide a detailed understanding of these changes (Field, 2018; see Table 20).

As mentioned earlier, neither the reasoning skills group nor the control group demonstrated a significant overall increase in exam scores across the three testing periods. However, within the reasoning skills group, a notable finding emerged: there was a statistically significant difference between pretest and immediate post test scores ($p < .001$), indicating an improvement right after the intervention. In contrast, there was no significant difference between pretest and delayed post test scores in this group (Table 20).

Conversely, the control group did not show significant differences between pretest scores and post test or delayed post test scores (Table 20).

Table 20.

Mixed Design ANOVA Pairwise Comparison with Bonferroni Adjustment (Both Groups Across the Three Time Periods)

Group	Time	Time	MD	Std. Error	Sig.
Reasoning skills group	Pretest	Post test	-2.455*	.584	<.001
		Delayed post test	-1.136	.540	.124
	Post test	Pretest	2.455*	.584	<.001
		Delayed post test	1.318	.596	.097
	Delayed post test	Pretest	1.136	.540	.124
		Post test	-1.318	.596	.097
Control group	Pretest	Post test	-.826	.571	.466
		Delayed post test	-.435	.529	1.000
	Post test	Pretest	.826	.571	.466
		Delayed post test	.391	.583	1.000
	Delayed post test	Pretest	.435	.529	1.000
		Post test	-.391	.583	1.000

4.3 How does reasoning skills training impact learners' collaborative dialogue and promote second language development?

To address the qualitative aspects of the current study, namely, RQ3 and RQ4: *How does reasoning skills training impact learners' collaborative dialogue?* and *How does collaborative dialogue supported by reasoning skills training promote second language development?*—a (micro)genetic analysis was conducted. This analysis examined LREs produced during interactions involving four pairs from the reasoning skills group. Specifically, the interactions of two pairs engaged in Task 1 and two pairs in Task 2 were analysed, from the pre-intervention task completion session to the post-intervention task completion sessions. The (micro)genetic analysis was done to explore how reasoning skills training impacted learners' language proficiency in specific target forms (i.e., past simple, past continuous, and present perfect) and its influence on their collaborative dialogue.

4.3.1 LREs Produced by Learners A20 and A21 While Engaged in Task 1

This Section presents the LREs produced by learners A20 and A21. Each LRE is analysed through a (micro)genetic lens. It focuses on the moment-to-moment dynamics of the interactions, examining how the learners collaborate, reason through linguistic problems, and co-construct knowledge. I compare pre- and post-intervention LREs regarding descriptive changes in the learners' collaborative dialogue and language development in order to establish the effectiveness of the intervention qualitatively. The analysis focuses on indicators of enhanced reasoning, such as task commitment, intentionality, elaboration, and metacognitive reflection.

Knowledge development is assessed through form-meaning negotiation, verbalisation of grammar rules, and shifting from other-regulation to self-regulation, reflecting learners' growing autonomy and understanding of target forms (see section 3.5.2.2)

Excerpt 10. Pre-intervention task completion session task 1 (lexis focused)

1. A20: Ahmad woke up at seven am (0.5) am لا و pm?

(or)

2. A21: um: (0.2) am. الصباح

(morning)

During the story composition task, learners A20 and A21 were required to put pictures in sequential order to tell the story's events and then write a story about such events. Before this assignment, all groups had been briefly reminded of the past simple and continuous tenses. In excerpt 10, A20 had correctly started the first sentence in the story but sought A21's confirmation about the usage of 'a.m.' correctly. A21 had first hesitated and then confirmed the correctness, providing a concise explanation in Arabic 'الصباح' meaning that 'a.m.' means morning. No verbal consensus was reached, and A20 proceeded with the task.

Excerpt 11. Pre-intervention task completion session task 1 (lexis focused)

1. A20: then he (2.5)
2. A21: preparing his bed (4.0) prepare?
3. A20: ° °prepare or (.) prepare or clean° °?
4. A21: what?
5. A20: prepare or clean?
6. A21: no:: he (.) he (.) he did his bed (.) then washed his face.
7. A20: he (.) did (.) his (.) bed (.) and washed (.) his face ((verbalising while writing))

In excerpt 11, while attempting to describe picture B (see Appendix B), A20 initiated the sentence but halted, signalling her need for assistance in completing it. A21 proposes using the verb 'preparing', which was in the incorrect form, after a brief pause, suggests another form of the verb 'prepare', which is still incorrect (turn 2). Subsequently, A20 offers a different verb, hesitantly, in a softer tone, and also in the incorrect form (turn 3). A21 requests clarification by asking 'what', prompting A20 to repeat her suggestion. Then, with enthusiasm, A21 proposes the correct sentence, 'did his bed then washed his face' (turn 6), to which A20 indicates agreement

by proceeding to write the sentence while verbalising it aloud (turn 7). It's apparent that they are attempting to employ the correct tense without full awareness of the grammar rule, essentially relying on what sounds correct when verbalised aloud.

Excerpt 12. Pre-intervention task completion session task 1, LRE 3 (mechanics focused)

1. A20: after that he preparing for his breakfast?
2. A21: yes.
3. A20: ((verbalising while writing)) then (.) he (.) make (.) his (.) break: (0.5)
4. A21: fast^, fast^

5. A20: or is it one word? (.) it is two word or one word?
6. A21: . لا(.)كيف ?
7. How? (.) no?
8. A20: breakfast?
9. A21: breakfast وحده.

(Is one word)

10. A20: ok breakfast.
11. A21: بس عادي تحطينها تحت وش الفرق

(It is ok to write it down what's the difference)

12. A20: no no one word.
13. A21: ok ok ok.

In this instance of LRE, A20 constructs a sentence to describe picture F in task 1 (see Appendix B). Upon confirming with A21, she begins writing the sentence. However, upon reaching the word 'breakfast,' A20 pauses after pronouncing the first part of the sentence, indicating she requires assistance writing it without directly asking A21 for help (turn 3).

Noticing A20's reluctance, A21 finishes the word 'breakfast' for her in turn 4. However, this kind of intervention was not the particular type of help needed by A20. So, she directly asks for help in turn 5. clear communication allowed A21 to understand precisely what was needed by A20 to provide an appropriate type of help.

Excerpt 13. Pre-intervention task completion session task 1 (form-focused)

1. A20: he prepared his breakfast and eat it (1.3) ate it?
2. A21 it ateانه اكله يعني

(It means that he ate it)

3. A20: ايه ايه(0.5) كذا ((whispering while writing)) كذا eat it (.) oh لا ate it (.)كذا (.) ate it.

(Like that) (Like that) (no) (like that)

In this LRE, the learners are still working on the same sentence as the one focused upon in the previous excerpt. A20 utters the sentence to complete it, then notices the incorrect tense of the verb ‘eat’ that she used and corrects herself, but she seems unsure (turn 1). therefore, she repeated it with verb forms, 'eat' and 'ate', while raising her voice and pausing, not requesting direct assistance. A21 noticed that and suggested the correct form in turn 2. A20 accepted the suggestion and went further to write the verb while softly verbalising aloud her thinking process (turn 3).

Excerpt 14. Pre-intervention task completion session task 1 (form-focused)

1. A21: and(.) and (.) his dog
2. A20: In the end he(.) he (.) he feeded his dog
3. A21: yes (.) he feeded
4. A20: his dog and went to school
5. A21: ok
6. A20: ((verbalising while writing)) in the end (.) he (.) feeded (0.5) he feeded?
7. A21: feeded (.) feeded^
8. A20: feed (.) ماضيها ؟

(what is the past form of it)

9. A21: feeded
10. A20: what is the spilling of feeded? ((asking a student in another group))
11. One of the students in another group: I will write it for you.
12. A21: yes yes yes (0.4) ((reading what the other student have written)) feeded ? (1.5) fee:d

fee:d fee::d.

13. A20: ((asking the teacher/researcher)) الماضي من اكل ايش

(What is the past of ‘eat’?)

14. Teacher/ researcher: ate

15. A20: لا ابي اقول اطعم الكلب

(No I want to say that he fed the dog)

16. Teacher/researcher: fed

17. A20: fed?

18. Teacher/researcher: yes fed F.E.D

19. A20: ok

20. A21: fed his dog.

In this excerpt, A20 and A21 were working together to describe picture H in task 1A (see Appendix B). A21 initiated the process by indicating ‘his dog,’ pointing at the picture to signify that they should focus on picture H next. A20 formulated the sentence in turn 2, albeit with an incorrect verb form ‘feeded’, displaying hesitation. However, A21 just repeated the verb 'feeded.'

In turn 6, A20 began to write the sentence, verbalising what she was writing aloud. When she came to the verb 'feeded,' it sounded incorrect. She addressed A21 directly again, asking what the past of ‘feed’ was. A21 repeated the wrong form ‘feeded,’ but this time with hesitation.

Consequently, in Turn 10, A20 addressed another group in the class, but instead of asking straightforwardly if 'feeded' was the correct past simple form of ‘feed’, she asked about the spelling. A learner from the other group wrote the word to demonstrate its spelling, yet A20 remained unconvinced that ‘feeded’ was the correct form of the verb. Therefore, she sought assistance from the teacher/researcher, posing a direct question in Arabic (L1) at turn 13. The

teacher/researcher provided the necessary assistance. Analysis of LREs produced by learners A20 and A21 while engaged in Task 1 (post-intervention)

On day 5, in a post-intervention task completion session, the reasoning skills group was asked to complete task 1B, comparable to task 1A in Appendix C.

Excerpt 15. Post-intervention task completion session task 1B (lexis-focused)

1. A21: and played with his friends soccer (.) مو soccer (0.5) what do you think?

(Isn't it)

2. Together: basketball ^
3. A20: ((pointing at the picture)) so this is basketball?
4. A21: aha (.) soccer اتوقع football
5. A20: الا soccer football

(Yes)

In excerpt 14, the learners were engaged in arranging the pictures in the correct sequence before proceeding to write the story. A21 initiated this mediation instance in turn 1. Initially, she believed the sport depicted in picture B (see Appendix C) was soccer, but promptly corrected herself, stating 'no', not soccer,' paused briefly, and then sought A20's opinion. Simultaneously, both provided the correct term in turn 2. A20, in turn 3, directly asked for confirmation, and A21 confirmed with elaboration in turn 4, to which A20 agreed.

Excerpt 16. Post-intervention task completion session task 1B (form-focused)

1. A20: this is 4 and 5 and [
2. A21: and six and seven
3. Together: and this eight
4. A21: ok great ^

5. A20: الحين لازم نكتب في which tense? (1.5)

(Now we should write in)

6. A21: وش which tense?

(what)

7. A20: اي زمن نستخدم ؟ الماضي و الا المضارع

(Which tense should we use? the past or the present?)

8. A21: aha:: (.) past

9. A20: ((whispering)) ° °past proprasive° °?

10. A21: past^ (.) past^

11. A20: ((asking the teacher/researcher)) what tense should we use?

12. Teacher/researcher: what do you think? (0.5) are you talking about events that have already happened or yet to happen?

13. Together: already happened.

14. A21: past^ past^

15. Techer/researcher: yes, that's correct.

16. A20: what about ؟ الماضي المستمر

(Past progressive)

17. Teacher/ researcher: you could use both the past and the past continuous for example while he was eating breakfast the dog came.

18. Together: aha::

19. A21: ok ok

20. A20: ((flipping pages)) حتى شوفي هنا الجملة الأولى Ahmad left school at 7 am (.)

(You can even see here in the first sentence)

في الماضي

(In the past)

21. A21:((giggling)) الحمدلله اننا ذكيين

(thank God that we are so smart)

22. A20: ((giggling))

The learners collaborated on reviewing the picture sequence, which they had already put in order. Then, before beginning the story composition, A20 explicitly asked which tense to use to compose the story. A21 did not understand A20's question. Therefore, she requested clarification in turn 6. A20 then re-asked her question in Arabic, elaborating on what she meant to say (turn 7). In turn 8, A21 gave a response, but A20 was still unsure and tentatively questioned whether the past progressive tense was needed. A21 asserted on using the past simple tense. A20, still unconvinced about the tense sought the teacher/researcher's help in turns 11-15. In turn 16, then, after the teacher/researcher had made it clear that it was correct to use the past tense, A20 raised another question about the past progressive, using the term 'past progressive' in Arabic, likely due to uncertainty about her English pronunciation (see turn 9). Having found a

justification for using the past tense in the task, A20 referred A21to evidence supporting their understanding in turn 20. A21 made a joke, apparently aiming to maintain intersubjectivity.

Excerpt 17. Post-intervention task completion session task 1B (lexis focused)

1. A20: Ahmad left school at 4:00 pm in in the noon?
2. A21: in the noon (.) um: (.) in the noon لا و at noon?

(or)

3. A20: at noon? (.) ما يجي (.) in the noon

(Does not fit)

4. A21: ترا كثير سويناها at^ at^

(We repeated it a lot)

5. A20: yah فابقول Ahmad left school at 4:00 pm in the noon. (I will say)

6. A21: at 4:00 pm in the noon (0.3) ok?

7. A20: ok

In Expert 17, A20 questioned the use of 'in' preceding the phrase 'the noon.' Then A21 also seemed uncertain and suggested the substitution of 'in' with 'at' in turn 2. A20 tried to use 'at' in the sentence to see if it fit but rejected it in turn 3. A21 echoed A20's viewpoint and offered a further explanation in turn 4. A20 then uttered the entire sentence once they had finalised it. A21 confirmed this by restating the sentence with emphasis on the adjectives 'in' and 'at,' which were the focal points of this mediation instance and asked for A20 confirmation. A20 agreed.

Excerpt 18. Post-intervention task completion session task 1B (lexis-focused)

1. A20: ((whispering and very hesitant)) ° °he got (.) he got (.) home ° °
2. A21: yah
3. A20: or he arrived (1.0) arrived or got? (1:5) he went he went
4. A21: he went he arrived (.) um:: he went he went كلهم في الماضي ما يفرق

(Both verbs are in the past there is no difference)

5. A20: he went he went to home.

In this LRE, A20 hesitated regarding using the verb 'got' in the sentence 'he got home' (turn1). Despite A21's agreement to use the verb 'got', A20 remained uncertain and proposed alternative options such as 'arrived' and 'went' in turn 3. A21 responded by clarifying that both verbs are appropriate because they are in the past tense form, effectively verbalising the grammar rule of the target form. A20 affirmed this by selecting one of the suggested verbs, 'went,' and

then repeated the sentence using that verb in turn 5. This interaction shows how A21's clarification helped A20 overcome her uncertainty and confidently choose a verb. It also highlights an effective peer learning moment, where verbalising grammar rules can facilitate understanding and application in language learning contexts.

Excerpt 19. Pre-intervention task completion session task 1B (form-focused)

1. A20: while he is listening.
2. Together: his mother (1:00)
3. A20: mother ((verbilising while writing))
4. A21: calleded him
5. A20: calledded him ((verbalising while writing)) to (.) to eat dinner (.) to ate or eat?
6. A21: eat
7. A20: to eat?
8. A21: yah لان فيه لان كان ذاك الوقت to eat ؟ تنفع لذاك الوقت فهمتي

(Because it happened at that time, it can be used for that time, the past)

9. A20: yah

In this excerpt, the students were writing a sentence describing picture F. As shown in turns 1–4, both participants actively contributed to completing each other's sentences, demonstrating a high level of collaboration. In turn 5, A20 asked A21 whether to use 'to eat' or 'to ate'. By that time, the two students knew they had to use the past tense form for the assigned task. However, the infinitive form 'to be' sounded unfamiliar to their ears, and they got confused. Then In turn 6, A21 suggested the correct form 'to eat.' Still, A20 was not sure, prompting A21 to explain that this form 'to eat' is used for all the tenses, including the past tense (turn 8). This explanation was crucial because it helped bridge their understanding by explaining how

infinitives function in English, particularly in specifying actions without being bound to a specific tense by themselves. This additional clarification helped alleviate the confusion, underscoring A21's role in reinforcing A20's understanding and exemplifying their collaborative approach to problem-solving.

Excerpt 20. Post-intervention task completion session task 1B (form-focused)

1. A21: then
2. A20: after that, he he [
3. A21: he played
4. A20: he (.) he go out to play with his friends
5. A21: he call [
6. A20: ha called his friend?
7. A21: ايه to go out (Yes)
8. Together: and play [
9. A21: basketball
10. A20: after that he called his [((verbalising while writing))
11. A21: friend [
12. A20: to go out [
13. A21: go out to play soccer
14. A20: go out or went out? ماضي

(Past)

15. A21: went out
16. A20: went out?

17. A21: ايه

(Yes)

18. A20: to went out?

19. A21: umm

20. A20: لا لا go out (.) to to go out (.) and play played with him

In excerpt 20, learners were engaged in describing picture F, just as they did in the preceding LRE (Excerpt 18). Similarly, as in the prior LRE, A20 encountered confusion regarding the infinitive form 'to be' (turn 14). A21's distraction during this interaction meant she could not offer the same level of assistance as in the previous instance (Excerpt 10). Nonetheless, A20 demonstrated her comprehension of the usage of the form 'to be' in turn 20, indicating a degree of self-regulation.

Excerpt 21. Post-intervention task completion session task 1B (form-focused) (continued)

1. A20: لا لا go out (.) to to go out (.) and play played with him
2. A21: play^
3. A20: لا لا played علشان الماضي ((verbalising while writing)) play:

   (because of the past)
4. A21: played basketball yah.

This excerpt is a continuation of the previous dialogue. In this LRE, A20 exhibits a sign of knowledge development through verbalising the grammar rule, which in this context is the simple past (turn 3).

Excerpt 22. Post-intervention task completion session task 1b (mechanics-focused)

1. A20: how to write played? Play (.) play (.) كيف يكتبون played?

   (How to write)

اكتبيها لي علشان اشوف كذا ((A21 writing))

2. A20: aha 'Y' فكرت تصير I

(I thought ‘Y’ it will become ‘I’)

3. A21:ايه وشفيك ((both giggling)) Y then ed.

(Yah what’s going on with you?)

4. A20: ((verbalising while writing)) played with him

In this excerpt, A20 asked A21 how to spell 'played'. Instead of asking her to spell it orally, she asked A21 to write it down. Once A20 saw the spelling, she told A21 where her confusion was: adding 'ed' to the verb 'play' (turn 2). A21 responded humorously to this, and both shared a moment of laughter. This reflects A21’s effort to maintain intersubjectivity during their interaction, ensuring that A20 did not feel embarrassed or lose face.

Excerpt 23. Post-intervention task completion session task 1b, LRE 8 (mechanics focused)

1. A21: him basketball
2. A20: um: ما ادري متاكده basketball?
3. (not sure)
4. A21: وش دعوة ترا كرة سلة ^
5. A20: basketball?
6. A21: <u>basket</u> (.) <u>ball</u>.
7. A20: aha basketball (.) كيف تتكتب طيب basketball ((trying to imitate A21’s pronunciation)).

(How to write)

8. A21: you go gir:l.
9. A20: giggling

10. A21: like this

11. A20: aha one word

12. A21: yes

13. A20: ((verbalising while writing)) basketball.

In this Excerpt, A20 hesitated to identify the sport depicted in picture C as 'basketball' and sought confirmation from A21. Then, in turn, 7, A21 confirmed A20's guess and explained that the sport's name in Arabic literally translates to 'basket' and 'ball'. In turn 10, A20 confirmed this and added a touch of humour by playfully mimicking A21's pronunciation of ‘basketball', which almost sounded native, considering the heavy Arabic accent with which A20 pronounced English. A21 appreciated the humour in turn 11 and then demonstrated the spelling of the word 'basketball' to A20.

Excerpt 24. Post-intervention task completion session task 1B (form-focused)

1. A20: after his (.) no (.) after he (.) no after that بس نقول خل مره من اكثر كثير قلنا after

(We repeated it a lot, let us just say)

2. A21: ok صح

3. A20: after (.) he finished (.) his game ((verbalising while writing)) he finished his game

4. A21: he:

5. A20: went to home

6. A21: because:

7. A20: because he has a lot of homework [

8. A21: yes: Because

9. A20: ((verbalising while writing)) because he (.) he had (.) he had ؟ صح

10. A21: ايه ايه صح ماضي ((both giggling in a lower voice)) (Yes, correct past)

11. A21: he had a lot of homework.

In this Excerpt, A20 expressed uncertainty about whether the usage of the verb 'had' was correct (turn 9). Consequently, she directly asked A21 for confirmation. A21, in response, validated A20's selection of the verb form and explained, verbalising the grammar rule associated with the target form.

Excerpt 25. Post-intervention task completion session task 1B (lexis-focused and form-focused)

1. A21: Then [
2. A20: at (.) at .. eight and 25 minutes
3. A21: يالله يالله يالله

(let's go, let's go, let's go)

4. A20: he go to bed
5. A21: ((verbalising while writing)) and at 9:25 (.) he ..went to bed ? no
6. A20: الا went to bed

(yes)

7. A21: لا he got to bed (.) he got or he went?
8. A20: I don't know he got or he went (.) he went
9. A21: he went to sleep
10. A20: yah he went (.) he went
11. A21: ((verbalising while writing)) he (1.0) went (1.0) to (1.0) sleep
12. A20: he got to bed and went to sleep.

13. A21: he went to bed

14. A20: and sleep

15. A21: لا خلاص he went to bed معناها تكفي he sleep (No its' enough) (It means)

16. A20: ok good

In this Excerpt, A21 was rushing to finish the task on time (turn 3). They struggled with choosing between the verbs 'went' and 'got' to complement the phrase 'to bed'. Despite A21 appearing preoccupied with the time constraint, she tried to assist A20 by responding to all her inquiries. Through their discussion, they have decided collaboratively that 'went' was the appropriate verb choice (turn 10). A21 offered additional clarification on the sentence's meaning and usage (turn 15).

4.3.2 LREs Produced by Learners A13 and A5 While Engaged in Task1

This section examines the LREs generated by learners A13 and A5, following the same (micro)genetic approach that was followed in the analysis of the interactions of the previous pair. It discusses how the learners interact with each other, solve linguistic problems, and co-develop knowledge. Pre- and post-intervention LREs are compared in order to assess changes in collaborative dialogue and language development. The analysis focuses on task commitment, elaboration, intentionality, and metacognitive reflection as indicators of enhanced reasoning. In addition, knowledge development is measured by means of form-meaning negotiation, grammar verbalisation, and a move from other-regulation to self-regulation, indicating greater autonomy and understanding of target forms.

Excerpt 26. Pre-intervention task completion session task 1A (form-focused)

3. A13: Sami woke up

4. A5: Sami ((verbalising while writing)) (.) Woke?

5. A13: hah?
6. A5: in the past tense?
5. A13: ايه

(Yes)

6. A5: in the past tense
7. A13: in the what?
8. A5: past tense?
9. A13: ايه woke ماضي

(Yes) (past)

In this excerpt, the two learners are composing a story based on a sequence of events depicted in a set of pictures. After arranging the pictures correctly, A13 suggests the first sentence for the story: 'Ahmad woke up.' Learner A5 then begins to write down the sentence, verbalising what she is writing to keep Learner A13 involved. In turns 3 and 7, A5 asks for confirmation on the verb form by repeating the question twice, and A13 confirms in turn 9 by providing a simple explanation: pointing that the verb is in the past by saying 'past' in Arabic.

Excerpt 27. Pre-intervention task completion session task 1A, LRE 1 (Lexis-focused)

1. A5: at the morning or in the morning?

2. A13: in (.) in the morning not <u>at</u> the morning.

In this excerpt, the learners are still working on the same sentence from the previous excerpt. A5 continues the sentence that A13 had started adding the phrase 'in the morning.' However, she is unsure which preposition comes before the word 'morning.' She is uncertain whether to use 'in' or 'at' and asks A13 for clarification by first repeating the phrase with 'in,'

then with ‘at.’ A13 responds by giving the correct form in turn 2; then she says that 'at the morning' is wrong, meaning it is grammatically unacceptable.

Excerpt 28. Pre-intervention task completion session task 1A (lexis focused)

1. A5: and (.) he (.) washed (.) his face ((verbalising while writing)) washed his face and?
2. A13: لا then ^

(No)

3. A5: ((erasing sound)) then (.) brushed (.) his (.) teeth ((verbalising while writing))

In this excerpt, A5 is writing a sentence describing one of the pictures in the task (turn 1). In turn 2, A13 notices the conjunction used at the beginning of the sentence and suggests using ‘then’ instead of ‘and.’ However, A13 does not explain why. A5 agrees and erases ‘and’, replacing it with ‘then’ (turn 3).

Excerpt 29. Pre-intervention task completion session task 1A, LRE 3, (Lexis focused)

1. A5: ahh
2. A13: then he wore his clothes (0.5) و لا got dressed up (.) الا و ?

(or) (or not)

3. A5: dressed up (.) الا احسن احسن

(yes, it is better)

A5 begins this mediation instance by implying that she does not know what they should write next (turn 1). A13 suggests a sentence in turn 2 but is unsure whether they should use ‘wore his clothes’ or the phrase ‘got dressed up’ (turn 2). A5 agrees with using ‘dressed up’ because she thinks it sounds better.

Excerpt 30. Pre-intervention task completion session task 1A (lexis focused)

1. A5: after that or then.

A13: brushed his teeth 2.

3. A5: umm maybe (.) No

4. A13: brushed his hear too (01:00)? صح

(right)

5. A5: وريني ((flipping pages)) (show me)

6.A13: الا

(yes)

7. A5: there is two person

8. A13: aha احسبه شخص واحد (.) ok

(I thought it was one person)

9. A5: ماعرف أي شخص هو (.) بس هذا الي يمشط شعره غريب

(I don't know which one is he (.) but the one combing his hair looks weird)

10. A13: No: it is the same person

11. A5: aha: ((giggling)) ((erasing)) (0:5) also ?

12. A13: ايه^

(Yes)

In this interaction, A5 and A13 are discussing what is happening in one of the pictures included in the task, which they have already put in the correct order. A5 asks A13 whether they should start the sentence with 'after that' or 'then.' However, A13 is more concerned with accurately describing what is happening in the picture and suggests the sentence in turn 2. A5 hesitates, then disagrees with A13. A13 immediately provides another suggestion (turn 4). After a brief silence, A5 does not respond, so A13 proceeds by saying, 'right?' A5 takes a moment to

look back at the pictures provided in the task and suggests that there are two different people in the pictures, rather than the same person (turns 7 and 9). A13 disagrees (turn 10). A5 laughs, deletes what they had just written, and asks A13 for confirmation about using ‘also’ before the sentence (turn 11), to which A13 agrees (turn 12). This interaction not only shows gaps in their individual linguistic knowledge but also in their ability to communicate effectively and support each other’s learning.

Excerpt 31. Pre-intervention task completion session task 1 (form-focused)

1. A13: he: gave his:
2. A5: then (.)fed ((verbalising while writing)) انت قلت fed او feed?

(you said) (or)

3. A13: aha صح

(right)

4. A5: وش ؟

(which one?)

5. A13: fed (.) then he fed his cute dog ماضي

(past)

In this LRE, the learners attempted to compose a sentence describing a boy feeding his dog as part of his morning routine. In turn 2, A5 asks A13 to clarify whether they should use the past tense form ‘fed’ or the base form ‘feed’ in the sentence. However, A13 seems confused, so A5 repeats the question in turn 4. Finally, A13 confirms that the correct form is ‘fed’, repeats the entire sentence using the past tense, and supports her choice by saying that they ‘fed’ is in the past tense.

On day 5, in a post-intervention task completion session, the reasoning skills group was

asked to complete task 1B, comparable to task 1A in Appendix C.

Excerpt 32. Post-intervention task completion session task 1A (lexis-focused)

1. A5: after that going
2. A13: go ahh[
3. A5: played] (.) going played (.) go played (.) how can we do the: continuous ؟ هذا وشو

(what is that)

4. A13: playing then (.) he went to playing (.) لا ما يصلح

(no it is not working)

5. A5: past continuous
6. A13: هي ed الا و ing ?

(is it ‘ed’ ir ‘ing’)

7. A5: past لازم ed و ing

(for the past, do we use ‘ed’ or ‘ing’)

8. A13: خلاص خل نكتب ed

(ok let’s write ‘ed’)

9. A5: ((asking the teacher/researcher)): do we use past continuous?
10. Teacher/researcher: you can use any form of the past tense weather its past simple or past continuous, when talking about events that happened in the past. Choose whatever fits the story best.
11. A5: ok, thank you after that he: ((talking to A13))
12. A13: played basketball with his friends.

13. A5: after (.) that (.) he (.) played ((verbalising while writing))

14. A13: حاولنا نخليها ing بس ما ضبطت ((soft laugh))

(we tried to use ‘ing’ btu it did not work)

15. A5: ((letting out a soft laugh))

In this LRE, the learners attempt to compose a sentence describing one of the pictures in task 1B. A5 initiates the LRE by suggesting the beginning of the sentence. A13 tries to complete the sentence, but she seems hesitant about the correct form of the verb ‘go.’A5 immediately cuts off this moment of hesitation and offers the phrase in different forms (turn 6). In turn 7, A13 also attempts to express the phrase in various forms, as they are unsure how to use the verb ‘go’ in the correct tense. Then, A5 suggests that they should use the past continuous tense, but it appears

that she does not know how to apply it properly (turn 8). A13 asks whether they should use ‘ed’ or ‘ing’ with the past continuous (turn 9). After several turns trying to figure out how to use the past continuous, A13 eventually suggests using the ‘ed’ form, indicating the past simple tense. However, A5 remains eager to understand how to use the past continuous, so she asks the teacher/researcher if they should use it (turn 12). After receiving an explanation, they decide to go with the past simple in turns 14, 15, and 16. A13 humorously comments on their attempts at using the past continuous, which was unsuccessful anyway. A5 responds with a gentle laugh.

Even as they acknowledge their initial struggle with the past continuous with humour and laughter, their trial-and-error process and willingness to engage deeply with grammatical structures highlight their effective use of reasoning skills.

Excerpt 33. Post-intervention task completion session task 1A (lexis-focused)

1. A5: do I write after that طول على الا و he going (.)he went?

(or directly)

2. A13: ايه لا تكتبين after that there is no need. (do not write)

A5 is unsure about the conjunction that should be used before the sentence they are writing in this LRE, so she asks A13 if they should write 'after that' before the sentence or just write it as it is (turn 1). A13 confirms that they do not need to write 'after that.' In turn 1, A5 initially utters the verb form incorrectly but notices the mistake and corrects herself immediately.

Excerpt 34. Post-intervention task completion session task 1A, LRE 3 (form-focused)

1. A13: he went home
2. A5: he went home على طول بدون to (.) he went to home.

(directly without 'to')

3. A13: ايه he went home على طول went home. (yah). (directly)

In this interaction, the learners continue working on the same sentence from the previous LRE. After successfully agreeing on the correct verb form, A5 raises another question, asking if they should include the preposition 'to' before the word 'home' (turn 1). A13 quickly responds, clarifying that the use of 'to' is unnecessary in this context. A13 likely understands that 'home' functions as an adverb of place in this sentence, which typically does not require the preposition 'to,' as it would with other locations.

Excerpt 35. Post-intervention task completion session task 1A (mechanics-focused)

1. A5: then he احط فاصلة?

(should I put a comma)

2. A13: where?
3. A5: before then?
4. A13: yah فاصلة because it is not the end of the sentence. (comma)

5. A5: نقطة و الا فاصلة

(full stop or comma)

6. A13: فاصلة

(comma)

7. A5: OK.

In this LRE, A5 asks whether they should use a period or a comma before the phrase 'then he' (turn 1). A13 responds in turn 4, suggesting they use a comma because it is not the end of the sentence. In turn 5, A5 asks for further confirmation, and A13 confirms their response. A5 then agrees by saying 'ok.' This exchange highlights a focus on punctuation and sentence structure. A13's explanation reflects an understanding of using commas to connect clauses within a sentence, while A5's follow-up question shows a desire to ensure total clarity before proceeding. Their collaborative approach helps them reach the correct use of punctuation in their writing.

Excerpt 36. Post-intervention task completion session task 1A (lexis focused)

1. A13: he went to watch his favourite sport (2.0) اكتبيها خمبقه اهم شي نكتب قصة (both giggling)

(write the story without attending to speeling, what is important now is that we write the story)

(2.0) Umm ؟ تصلح

(is it correct?)

2. A5: his um: favourite (.) group
3. A13: his favourite group? (.) Team^
4. A5: Team ((both giggling))

In this interaction, A13 starts by composing a sentence for the story composition task.

Then it suggests that they should not care about spelling at this point, implying that they should focus on writing the story first and return later to proofread; after a short silence, A13 seems uncertain about the phrase ‘favourite sport’ and whether it fits the context (turn 1). She asks A5 for her opinion on whether the phrase is appropriate. In response, A5 immediately suggests an alternative phrase: ‘group.’ A13 then tries to utter A5’s suggestion out loud to see if it sounds correct, but she suggests the word ‘team’ instead. A5 agrees by repeating ‘team,’ and the two share a light giggle. This interaction demonstrates their collaborative effort to refine the wording of their story. A13 shows thoughtful consideration of the context, and A5 actively contributes alternatives. After agreeing on the word ‘team’, their shared humour indicates a positive and supportive dynamic as they work through the task together.

Excerpt 37. Post-intervention task completion session task 1A (form-focused)

1. A5: at 7:00 p.m he going لا و went?

(or)

2. A13: he went احس

(I feel)

3. A5: ok (.) he (.) went ((verbalising while writing))

This interaction highlights A13’s understanding of verb tense, where ‘went’ is the appropriate past tense form. A5’s verbal agreement and immediate action of writing the sentence demonstrate both learners’ collaborative effort to resolve the grammatical uncertainty and apply the correct form in their work. The verbalisation process also suggests that A5 reinforces their understanding by thinking aloud as they write through the sentence.

Excerpt 38. Post-intervention task completion session task 1A (form-focused)

1. A5: he (.) went (.) to (.) study ((verbalising while writing)) he went studying?

2. A13:] to study
3. A5: ينفع صح ؟

   (is it correct)
4. A13: yah it works
5. A5: ((giggling)) اكتبها? (.) علشان‘ing’ بس?

   (Shall I write it? So just we can add the ‘ing’)
6. A13: yah ((soft laugh))

In this LRE, the learners continue working on the same sentence from the previous LRE. After deciding to use the past simple tense in ‘he went,’ A5 expresses uncertainty about whether to follow it with ‘to study’ or ‘studying’ (turn 1). Although A13 initially replies that she thinks ‘to study’ is the better choice, A5 seems to lean toward using ‘studying.’ A5 then asks A13 for clarification, implying that if both options are grammatically correct, she would prefer to use the phrase with the ‘-ing’ form. In turn 4, A13 confirms that ‘studying’ is also acceptable, which reassures A5. A5 giggles, indicating a light hearted moment, and asks for one last confirmation, ensuring it is acceptable to write ‘studying.’ A13 responds with a casual ‘yeah’ and lets out a soft laugh, suggesting both learners are comfortable with the choice and have settled on the phrasing. This exchange highlights the learners' collaborative approach to solving grammar issues. A5's preference for ‘studying’ and her search for validation emphasise the focus on accuracy, while the light hearted tone reflects a supportive learning environment.

Excerpt 39. Post-intervention task completion session task 1A (lexis-focused).

1. A5: he prepared (.) to (.) sleep?
2. A13: yah (2.0) to go^ to sleep
5. A5: ((erasing)) (3.0) to sleep then

6. A13: yah أحس تصلح أكثر

(I feel it fits better)

In the beginning, A5 suggests the sentence ‘he prepared to sleep’, and she verbalises it aloud while writing. A13 agrees by saying ‘yah’ but then notices something wrong with how the sentence sounds, and two seconds later, she suggests a change to 'to go to sleep' because it

sounds more natural: replacing the verb prepared with the verb go (turn 2). A5 agrees and changes the sentence to include 'to go.' This change corrects the form and fits better with what they are trying to say about the picture in their task. Changing it to ‘to go to sleep’ (turn 2). A5 agrees by erasing what she has written to add ‘to go.’

Excerpt 40. Post-intervention task completion session task 1A, LRE 9 (form focused).

1. A13; and (2.0)
2. A5:

خلاص نام he fall asleep? (he is asleep)

3. A13: wait a minute what did you write?
4. A5: it is the end
5. A13: ahaa
6. A5: here we say almost 9:30 because look at the clock ماجت تسعه ونص بعد

(it is not 9:30 yet)

7. A13: yah yah thats right
8. A5: almost nine thirty got prepare to go to sleep

9. A13: اشطبي هذا

(scratch that)

10. A5: اصبري ((erasing)) (wait)

11. A13: و اكتبي بداله he went to sleep (write this instead)

12. A5: he (.) went (.) to (.) sleep

13. A13: and that's it.

In this LRE, A13 signals to A5 to continue composing the story by saying 'and' followed by a brief pause. After two seconds, A5 responds by saying in Arabic, 'خلاص نام' (he fell asleep), implying that this is the end of the story and suggesting they write the phrase 'he fell asleep' (turn 2). A13, trying to maintain focus, reviews what they have written in the previous sentence (turn 3), but A5 directly asserts that this marks the end of the story. A13 replies with 'aha,' indicating agreement (turn 4). A5 then turns back to refining the last sentence, attempting to accurately include the time mentioned in the pictures which is part of the task (turn 6). In turn 9, A13 suggests erasing 'he fell asleep' and replacing it with the more grammatically correct phrase 'he went to sleep.' This interaction highlights A5 suggesting 'he fell asleep,' using the incorrect tense, as she signals the end of the story. A13, focused on accuracy, corrects this by proposing 'he went to sleep,' providing the proper tense. This exchange demonstrates how A13 helps refine A5's initial suggestion, ensuring the sentence is grammatically correct before it moves forward.

4.3.3 LREs Produced by Learners A1 and A9 While Engaged in Task2

This section presents the LREs produced by learners A1 and A9. Each LRE is analysed through a (micro)genetic lens. It focuses on the moment-to-moment dynamics of the interactions, examining how the learners collaborate, reason through linguistic problems, and co-construct knowledge. I compare pre- and post-intervention LREs in regard to descriptive changes in the learners' collaborative dialogue and language development in order to establish the effectiveness of the intervention qualitatively. The analysis focuses on indicators of enhanced reasoning, such

as task commitment, intentionality, elaboration, and metacognitive reflection (see section3.5.2.1). Knowledge development is assessed through form-meaning negotiation, verbalisation of grammar rules, and shifting from other-regulation to self-regulation, reflecting learners' growing autonomy and understanding of target forms (see section3.5.2.2).

Excerpt 41. Pre-intervention task completion session task 1A (lexis focused)

7. A1: ° °it is used in negative sentences° ° ((verbalising while reading))
8. A9: yes yes (.) it is not yet
9. A1: it is not yet? (the correct answer)
10. A9: yes yes the same as in Denmark

In this LRE, the learners are collaborating to complete Task 2A, which involves linking adverbs (since, yet, and already) to their definitions. A1 begins by reading one of the definitions aloud, attempting to identify which adverb correctly fits the given sentence. As A1 is reasoning through the problem, A9 interferes, suggesting that 'yet' is the correct answer. A9 challenges A1's choice by repeating her answer with a rising intonation, expressing doubt or disagreement. Afterwards, A9 reinforces the suggestion by referencing an example sentence provided in the task that uses 'yet' in the context of Denmark, intending to substantiate the claim. Despite this explanation, A1 remains silent and does not offer a verbal agreement, leaving A9's suggestion unconfirmed. This interaction highlights the collaborative problem-solving process, with one learner asserting a solution while the other hesitates to accept or reject it entirely.

Excerpt 42. Pre-intervention task completion session task 1A (lexis-focused)

1. A1: have you bought a gift for Jacob ((reading out loud))

2. A9: yet

3. A1: already
4. A9: no yet (.) have not bought yet

In this LRE, the learners collaboratively identify the correct adverb to fit the sentence. A1 begins by reading the sentence aloud; after that, A9 suggests 'yet' as a potential answer. A1 disagrees with this and suggests 'already' Turn 3. To this, A9 persists with a direct 'no, yet' and repeats the complete sentence using 'yet' (Turn 4). A1 does not continue the debate but neither objects to nor supports A9's explanation; instead, A1 continues with the following task item. This exchange suggests a lack of probing into reasons for choices, limiting the potential for more productive collaborative discussion.

Excerpt 43. Pre-intervention task completion session task 1A (form-focused)

1. A1: ° °has Bianca been invited to the party yet° ° ((reading outload)) ° °yes (.) she (.) has (.) invited to ° ° ((verbalising while writing))
2. A9: been (.) has been
3. A1: has been already invited. (4.0) how about did not yet?
4. A9: no شوفي هنا has been.

   (look here)

In this excerpt, A1 reads one of the task items aloud, immediately offers an answer, and begins writing it down while softly verbalising her thoughts, almost as if speaking to herself. A1 interrupts and corrects A9 by pointing out that 'been' is missing from the phrase 'she has invited,' which is essential for a correct answer (turn 2). A1 accepts the correction when she repeats the sentence, this time with the word 'been.' Following a short 4-second wait, A1 then gives the sentence 'did not yet.' A9 gives a firm 'no' and points at something in the task, likely the task item itself, where the past continuous tense has been used. This would be an example of

an immediate reaction to peer correction; here, A9 claims more authority in ensuring the grammatical accuracy of the sentence. Whereas initially, A1 accepted the correction, her subsequential proposal would still reflect some doubts; therefore, A9 referred back to the sentence where the form 'has been' is used in the task at hand (turn 4). Emphasis is placed on the collaborative effort in negotiating meaning and correcting mistakes; the feedback could have been better done by more elaborate explanations on why A1's suggestion was wrong so that she would understand.

On day 6, in a post-intervention task completion session, the reasoning skills group was asked to complete task 2B, comparable to task 2A in Appendix C.

Excerpt 44. Post-intervention task completion session task 2B (lexis focused)

1. A9: it come to the teacher action that the student had not revised for the exam (.)اكتبي yet

   (write)

2. A1: yet?
3. A9: aha (3.0)
4. A1: ° °because not?° °
5. A9: revised for the exam انه توه ما خلص

   (they did not finish yet)

6. A1: ok

In this LRE, the learners were working together to fill in the gaps with the correct adverb (already, yet, or just). A9 begins by reading the sentence aloud in turn 1 and immediately suggests 'yet' as the correct answer. However, A1 seems uncertain and asks for confirmation in turn 2. A9 confirms with a simple 'aha,' but A1 still seems unsure and, in a lower voice, seeks further clarification by asking, 'because not?' This indicates that A1 is questioning the logic

behind the choice of ‘yet.’ Sensing A1's doubt, A9 provides a more detailed explanation of why ‘yet’ is the correct answer, switching to Arabic for clarity. She explains that the event in the sentence has not happened yet, which justifies the use of the word ‘yet.’ This reasoning convinces A1, who acknowledges with a simple ‘ok.’

Excerpt 45. Post-intervention task completion session task 2B (lexis focused)

1. A1: longer than we can possible a:
2. A9: imagine (.) ima (.) ima (.) imagination (.) imagine ((trying to read the word))
3. A1: imagine
4. A9: imagine
5. A1: already?
6. A9: already ((reading the sentence with already in very low voice)) (.) umm never longer than?
7. A1: why never?
8. A9: just longer? for longer? no يا هي never يا just (.) ايه just longer than.

(it is either) (or) (yes)

9. A1: ok

In this LRE, A1 begins by reading the task item but struggles with pronouncing ‘imagine.’ After some collaboration, both A1 and A9 utter the word correctly. Then A1 suggests ‘Already?’ as a possible answer for the gap; she uses a rising intonation to question her answer and to ask for confirmation or feedback from A9 (turn 5). A9 proceeds to reconsider the sentence in a whisper, as if conversing with herself, and then suggests the adverb 'never' to replace 'already.' A1, sounding uncertain about this suggestion, requests further explanation (turn 6), which is responded to by A9's insistence on trying adverb after adverb as she experiments with

what would work in the context of the sentence (turn 8). After trying several options, A9 eventually settles on 'just' being the right one, which A1 agrees with. This can be considered a significant example of the negotiation of meaning and problem-solving being done iteratively by the learners. The initial doubt by A1 brought about A9's contribution, and together, they explored the possibilities that led to the correct answer. A9's soft and reflective rendering of the sentence suggests she is thinking aloud, reflecting how she is actively engaged with language tasks yet still engaged with her pair. A1's request to explain the reason for the problem also indicates her active participation in the discussion; from this, learners may gain mutual understanding and establish an answer.

Excerpt 46. Post-intervention task completion session task 2B (lexis focused)

1. A1: which off course has started (.) yet
2. A9: which of course has (.) لا ما اتوقع yet تجي مع start

   (I don't think so, yet does not fit with start)
3. A1: talking over A9: never?
4. A9: yet start لا ما اتوقع

(no, I don't think so)

5. A1: already? (.) yet? هي الي تصلح هنا

   (it fits here)
6. A9: yet for questions
7. A1: uh: (2.0) not just for questions look at here
8. A9: umm
9. A1: which of course has already^
10. A9: which has already started yes:

11. A1: already?

12. A9: already yes: (.) I am sure or maybe we are wrong ((soft laugh)) maybe we are just guessing ((giggling))

13. A1: ((soft laugh))

14. A9: the next one

In this LRE, the learners focus on selecting the correct adverb to complete a gap, one of the items in Task 2A. A1 initiates the interaction by reading the task item, pausing at the gap, and suggesting ‘yet’ as the answer. A9 then reads the entire sentence aloud, using ‘yet’ but disagrees with A1 in turn 2, explaining that she does not believe ‘yet’ is the correct answer because it does not seem to fit with the verb ‘start.’ A1 then proposes ‘never,’ but A9 looks like she's lost in thought, still contemplating over whether 'yet' might actually work (turn 3). Then A1suggests 'already,' then withdraws that, reverting to 'yet' and verbalising in Arabic her thinking about its possible appropriateness (turn 5). By contrast, A9 is uncertain about the appropriateness of 'yet,' given that this adverb is usually used, she says, in questions (turn 6). A1 challenges this opinion by pointing to one of the sentences in the task where 'yet' is assumingly used in an interrogative sentence. In turn 9, she repeats the sentence with 'already' in the blank with raised intonation. A9 shows A1's excitement and repeats the sentence again, this time confirming 'already' may indeed be the right choice. On turn 11, A1 asks for absolute confirmation. A9 agrees but playfully acknowledges that they perhaps are only guessing and may be wrong. her lets A1 break into soft giggles, whereas A9 indicates that they should move on to the next task item.

A1's initial suggestion sparks a discussion in which both learners propose alternative possibilities and provide their reasoning. A9 hesitates, reflecting the cognitive process of weighing options, while A1’s persistence and the excitement she displays upon finally

identifying the word ‘already’ highlight the learners' ability to adapt and refine their shared understanding in real-time. The humour at the end underlines that this is not necessarily an exclusively cognitive collaboration but a social-emotive one - shared in the mutual support for a jointly experienced uncertainty. This LRE represents how the learners co-construct knowledge by trial and error, negotiation, and shared decision-making.

Excerpt 47. Post-intervention task completion session task 2B (lexis-focused)

1. A9: in this one I think we answer from our mind so (.) what city: have you visited (.) what is the meaning of this word?
2. A1: recently?
3. A9: yah
4. A1: I don’t know ((the sound of flipping pages)) (13.0) what is the meaning of this word?
5. A9: government (.) يعني حكومة

   (It means government)

6. A1: ah: (.) مافيه اسم city هنا يمكن يكون جنبها recently هاذي و نفهم معناها

   (do you see a city name here where the word ‘recently’ is next to it, maybe then we can understand the meaning of recently)

7. A9: ما اتوقع recently لها دخل في الإجابة

   (I don’t think ‘recently’ is important for the answer)

In this LRE, the learners are working on composing a sentence to answer the short question provided in the task: ‘What city have you visited recently?’ A9 begins by reading the question aloud in turn 1 and immediately asks A1 for the meaning of the word ‘recently’ by pointing to the word. A1 reads the word aloud in a questioning tone, unsure of its meaning. A9 responds with a simple ‘yeah’ in confirmation (turn 3). In turn 4, A1 admits she does not know

the meaning of ‘recently’ and starts flipping through the task pages, trying to find the word in another part of the task to help her understand its meaning.

After 13 seconds of silence, A1 shifts focus and asks A9 for the meaning of another word, ‘government.’ A9 provides a translation in Arabic (turn 5), offering clarification. A1 then explains her reasoning process to A9, stating that she is looking for a city name in the task where the word ‘recently’ might appear, thinking that finding the word in another context similar to the context of the question in hand could help them deduce its meaning or use. A9, however, uses her reasoning skills to determine that the word ‘recently’ is not crucial for answering the question. She suggests they move on, stating that the word's meaning is not needed to make a sentence that answers the question, and then they complete it. This exchange also exhibits the variety of problem-solving strategies the participants employ to solve the task. A1 attempts to use contextual clues given by the task to make a possibly correct guess for the word 'recently.' She states her problem-solving strategy as searching for other examples of the word. A9, however, employs deductive skills when he decides that 'recently' is irrelevant to the solution of the task and suggests working out the answer. Their ability to balance unfamiliar vocabulary exploration and prioritising task completion further manifests their developing reasoning skills during collaborative problem-solving.

Excerpt 48. Post-intervention task completion session task 2B (form-focused)

1. A9: No, I did not
2. A1: no (.) I didn’t?
3. A9: yah (.) no I did not (2.0)
4. A1: see?
5. A9: visit

6. A1: visit (the sound of erasing) not ed?
7. A9: visit yet (.) visited yet
8. A1: with ed?
9. A9: yes, yes with ed (.) the sentence in in the past?
10. Al: بس فيه did.

    (but there is ‘did’)
11. A9: visit? yah visit without ed
12. A1: ok.
13. A9: no with ed
14. A1: ed? ok.

In this LRE, the learners are working on composing the sentence ‘I did not visit yet’ as a response to a short question in the task. A9 verbalises the answer word by word so that A1 can write it down on the task sheet. In turn 3, A9 provides part of the sentence, ‘No, I did not,’ and then pauses. A1, trying to complete the sentence, suggests the verb ‘see’ in a questioning tone, unsure if it is the right choice. However, in turn 5, A9 proposes ‘visit’ instead. A1 agrees, erases what she had previously written, and starts to write ‘visit’ instead. While A1 is writing, A9 alternates between saying ‘visit yet’ with and without the past tense ‘ed’ suffix. This uncertainty prompts A1 to ask for confirmation in turn 8, seeking clarity on whether they should use ‘visited’ or ‘visit.’ A9 confirms the use of ‘visited’ and explains that the sentence is in the past tense, implying that the verb should be conjugated accordingly. However, A1 questions this reasoning, pointing out the presence of ‘did’ in the sentence, which typically requires the principal verb to be in its base form. This causes A9 to reconsider her position, and she agrees with A1 that ‘visit’ should be in its infinitive form. However, just before finalising the decision, A9 changes her

mind again, asserting that ‘visited’ is the correct form. A1 hesitantly accepts this final suggestion in turn 14.

This exchange highlights the learners' reasoning skills and their negotiation of grammatical accuracy. A1 actively engages in the problem-solving process by questioning A9's suggestions and providing logical reasons for her doubts, such as pointing out the use of ‘did’ in the sentence structure. A9, although initially unsure, works through the options verbally and explains her choices, even though she revises her decision multiple times. Their back-and-forth exchange showcases their evolving understanding of English grammar, specifically the past tense structure, and their ability to negotiate linguistic choices collaboratively.

Excerpt 49. Post-intervention task completion session task 2B (lexis and form focused)

1. A9: how long has it been since that trip?
2. A1: trip
3. A9: (6.0) any answer?
4. A1: umm since
5. A9: he is
6. A1: no, it (.) لأن he يعني تقصيدينه هو مب مب trip

   (because he refers to him and you want to refer to trip)
7. A9: aha:

In this LRE, the learners are collaborating in answering the question, 'How long has it been since that trip? As one of the task items. A9 opens this up by first reading out the question, followed by the response of A1, who merely repeats the word 'trip’ as if this were a good clue in making their answer. Following a lengthy pause, A9 asks, 'Any answer? A1 here seems to want A1 to give more input. A1 says 'since,' meaning that this particular word must form part of the

sentence they are coming up with. A9 accepts that and starts the sentence with 'He is,' but A1 interjects to remind him that 'it' must be used instead of the trip. A9 recognises this correction with a short 'aha,' signalling acceptance.

This interaction highlights the learners' reasoning skills as they construct a grammatically correct sentence. A1's repetition of the word ‘trip’ suggests that she uses it as a cognitive anchor to guide their thinking. Although both learners initially struggle to find the proper structure, A1 identifies ‘since’ as a critical element of the answer, demonstrating an awareness of its function in time-related sentences. A9's initial attempt, starting with ‘He is,’ reflects a misunderstanding of the sentence's subject, which A1 promptly corrects by suggesting ‘it’ to refer to the trip appropriately. Their interaction shows a collaborative effort to solve a grammatical problem, with A1 demonstrating more confidence in applying grammatical structures while A9 tests out possible sentence formations. The exchange also showcases their growing ability to work through language issues, even if the process involves pauses and corrections.

4.3.4 LREs Produced by Learners A11 and A2 While Engaged in Task2

This section presents the LREs produced by learners A11 and A2. Each LRE is analysed through a (micro)genetic lens. It focuses on the moment-to-moment dynamics of the interactions, examining how the learners collaborate, reason through linguistic problems, and co-construct knowledge. I compare pre- and post-intervention LREs in regard to descriptive changes in the learners’ collaborative dialogue and language development in order to establish the effectiveness of the intervention qualitatively. The analysis focuses on indicators of enhanced reasoning, such as task commitment, intentionality, elaboration, and metacognitive reflection. Knowledge development is assessed through form-meaning negotiation, verbalisation of grammar rules, and shifting from other-regulation to self-regulation, reflecting learners’ growing autonomy and

understanding of target forms (see section 3.6.2).

Excerpt 50. Pre-intervention task completion session task 2A (lexis focused)

11. A11: طيب شوفي هاذي complete the sentences with just, yet, already (ok look at this)
2. A2: وش معناها

(what is the meaning)

3. A11: افتحي الترجمة

(use the translator)

4. A2: يمكن (3.0) خل نشوف just (4.0)

(maybe 3.0 let's see)

5. A11: (بشوف الترجمة) just فقط already و بالفعل yet حتى الآن ok (.) have read harry potter um: (I will see the translation) (just) (already) (yet)
6. A2: just (.) already
7. A11: umm I have not read harry potter a:
8. A2: yet

In this LRE, the learners are required to complete the gaps in sentences using either 'just,' 'already,' or 'yet.' A11 begins by reading the instructions for the task (turn 1). A2 then asks about the meanings of the adverbs mentioned. In response, A1 suggests using their phones to translate the adverbs (turn 3), but A2 does not fully support this idea and attempts to understand the meaning of 'just' (turn 4). After a 4-second pause, A11 translates the adverbs into Arabic in turn 5, providing a quick resolution. A11 reads the first sentence with the meanings now clear, pausing at the gap. A2 suggests 'yet', but A11 does not verbally confirm or discuss the choice, and they move on to the next task item without further exploration. This interaction shows that their collaboration lacked reasoning and verbal agreement, with minimal effort to ask each other

for opinions or explanations. Several pauses, particularly after A2's questions and before A11's translations, indicated moments of uncertainty. Although A2 suggested 'yet' for the first sentence, there was no further discussion or mutual confirmation, suggesting a passive acceptance rather than active engagement in their decision-making process.

Excerpt 51. Pre-intervention task completion session task 2A (form -focused)

1. Both: have he bought a gift yet? ((reading aloud))
2. A11: No: (.) he has
3. A2: have?
4. A11: have? (.) erasing
5. A2: have not
6. A11: he ؟ هو لمن تستخدم (2.0)

(used for what)

7. A2: لا الا

(no yes)

8. A11: he has (.) I have (.) she have (.) she have? (.) have جمع:

(plural)

9. A2: خطأ

(wrong)

10. A11: we have?
11. A2: or use or we
12. A11: we (.) we or they have? ((erasing)) they have not bought
13. A2: a gift yet

In this LRE, the learners are working together to provide a short answer to one of the

questions in the task. They begin by reading the question aloud. A11 suggests starting the answer with ‘no he has,’ but A2 interrupts, questioning the auxiliary verb and suggesting ‘have’ with a questioning tone. A11 considers this and begins erasing what she has written to replace it with ‘have.’ A2 then completes the sentence with ‘not’ (turn 4). A11, however, questions the use of ‘have’ with the pronoun ‘he’ and asks A2 in Arabic about the use of ‘he’ in this context. In turn 6, A2 immediately starts reconsidering her choice. In turn 7, A2 experiments with different pronoun-verb combinations such as ‘he have,’ ‘I have,’ and ‘she have,’ eventually realising that ‘have’ is used with plural subjects, which she states in Arabic. A2 seems confused and responds with ‘wrong?’ in Arabic, prompting A11 to provide another example, using a questioning tone. A2 agrees and provides another example of ‘have’ used with a plural subject in turn 10. In turn 11, A11 provides the correct auxiliary verb ‘have’ for the sentence, and A2 completes it in turn 12.

Despite constructing a grammatically correct sentence, it is not the correct answer to the question, ‘Has he bought a gift yet?’ This interaction highlights the learners' lack of high-quality collaboration skills. While they engage in some discussion and negotiation, their interaction is marked by confusion, trial-and-error, and a focus on grammar rules rather than addressing the task meaningfully. They rarely ask for clarification or constructively challenge each other's reasoning. Their attempts to correct each other rely heavily on experimenting with forms rather than fully understanding the question's required linguistic structure. Additionally, the frequent code-switching into Arabic highlights their reliance on L1 to clarify their understanding of English grammar. Although they eventually produce a grammatically correct sentence, their inability to focus on the question's meaning shows the limits of their collaboration, where reasoning, mutual understanding, and task focus are underdeveloped.

On day 6, in a post-intervention task completion session, the reasoning skills group was asked to complete task 2B, comparable to task 2A in Appendix C.

Excerpt 52. Post-intervention task completion session task 2B (lexis-focused)

1. A11: it come to the teacher attention that students have not
2. A2: تبين حبر و الا رصاص

   (would you like pen or pencil)
3. A11: كله اخطاء بيكون (.) رصاص not revise for the exam (.) had not revised for the exam yet (.) already

   (pencil because there will be a lot of mistakes)
4. A2: ° °already revised for the exam° °
5. A11: خل نعديها he spose that some of them (let's skip it)
6. A2: خل نفكر (.) خل (.) خل never ما تجي لان فيه not (.) not (.) ever umm تجي و الله

   (Let's (.) let's (.) let's think 'never' doesn't fit because there is 'not' in the sentence 'not ever' I swear it will fit)
7. A11: um:
8. A2: تجي صح ؟

   (it works right?)
9. A11: never و ever كلهم نفي

   (both 'never' and 'ever' are negative
10. A2: هاذي المشكلة (.) هو not yet او just

    (that is the problem it is either 'not yet' or 'just')
11. A11: طيب وش رايك نعديها بعدين نرجع لها ؟

    (how about we leave it for now and come back to it late, what do you think)
12. A2: Ok

In this LRE the students work together to complete the missing word in the first sentence given in task 2B. A11 begins aloud to say the sentence, and in turn 3, she tries different adverbs, ending up with ‘already’ as a try to see if it fits. At the same time A2 works on the sentence privately, trying it with ‘already.’ A11 then suggests skipping the current task item and moves on to the following sentence (turn 5). A2, however, intercedes and suggests they try each adverb in turn to see which one fits. She starts to discuss 'never' and 'ever.' She says that 'never' cannot be used due to the presence of 'not' in the sentence, but she is more enthusiastic about suggesting 'ever' might work. A11 is uncertain and gives only a minimal response, producing merely 'um'. This prodA2 to solicit agreement directly in turn 8. A2 reasons that ‘never’ and ‘ever’ convey a negative meaning and then suggests ‘not yet’ or ‘just’ as possible answers. A11, respecting A2’s input, asks for her opinion on leaving the task unresolved and revisiting it later, and A2 agrees.

Their interaction shows strong reasoning and collaboration skills. A2 takes the lead in exploring different possibilities, carefully weighing the options and explaining her thought process. A11 listens attentively, allowing A2 to articulate her ideas and participate in decision-making. Instead of rushing to a conclusion, they both agree to leave the task unfinished temporarily, demonstrating a thoughtful and collaborative approach to problem-solving. Their ability to consider and evaluate different options together highlights their effective teamwork, with A2’s detailed reasoning complementing A11’s willingness to engage in the discussion and keep the process open-ended for further consideration.

Excerpt 53. Post-intervention task completion session task 2B (lexis-focused)

1. A11: the beginning of recorded history, humankind's close relationship with other animal species is obvious and unquestionable ((reading aloud)) (.) since
2. A2: since?

3. A11: yah since because it mean؟لأنها تعني من البداية (.) من بداية التاريخ (.) فهمتي

(Because it means from the beginning (.) from the beginning of history (.) do you understand?)

4. A2: oh yah خل نرقمهم أحسن عشان ما نكتب كل مره

(let's number them so that we don't have to write them each time)

5. A11: لا عادي سهل

(no, it's ok it's easy)

This brief exchange highlights both learners' strong collaboration and reasoning skills. A11 initiates the discussion by confidently suggesting an adverb and is prepared to explain her reasoning when challenged. This shows her active engagement and understanding of the task. A2, instead of passively accepting A11's suggestion, questions the choice, demonstrating her critical thinking and willingness to explore alternatives. By doing so, she encourages deeper reasoning. A11's ability to explain her choice through translation and contextual understanding reflects her problem-solving skills and ensures that the decision is based on a shared understanding. A2's eventual agreement shows that their collaboration is built on mutual respect and thoughtful dialogue. Together, they engage in meaningful reasoning, where questioning and explanation lead to a consensus, enhancing the overall quality of their collaboration.

Excerpt 54. Post-intervention task completion session task 2B, (lexis-focused)

1. A11: for longer than we possibly imagine
2. A2: نقدر نعيدها

(can we repeat them)

3. A11: ايه نقدر

(yah we can)

4. A2: how many question

5. A11: ما حطينا for اصلا (.) for longer (.) never longer ما تجي (.) ever longer ما تجي than ما تجي (.) for longer [

(we did not use ‘for’ yet (.) for longer (.) never longer doesn’t sound right (.) ever longer doesn’t sound right (.) than doesn’t sound right (.) for longer)

6. A2: احس for اقرب شي

(I feel longer is the most suitable thing)

7. A11: yah for

In this LRE, the learners work collaboratively to find the correct adverb for the gap in the sentence provided in the task. A11 begins by reading the sentence aloud, and when she reaches the gap, she immediately fills it with ‘for,’ which is the correct answer. Nevertheless, A2 does not appear informed of this as she proceeds with the reasoning about the alternatives provided for the answer that the exercise requests. Then, A2 asks A11 whether it would be allowed to use one of the adverbs more than once in different gaps. A11 reassures her that repeating adverbs is OK if necessary; however, such repetition is unnecessary in this case because 'for' has not been used in any of the other gaps. A11 continues to try out various other adverbs orally - turn 5 - but both learners eventually believe that 'for' is the correct answer. This exchange demonstrates the learners' ability to reason and construct meaning collaboratively in a positive atmosphere. A11's suggestion shows her focus on using the adverb that best communicates the idea of having

already visited a place. At the same time, A2’s questions reflect her engagement in ensuring that the sentence is grammatically correct. Their playful interaction, including joking and laughing, fosters a supportive environment where both learners feel comfortable exploring different options and refining their understanding of the task. It highlights how a relaxed and

positive atmosphere can enhance learning by encouraging creative thinking and problem-solving.

Excerpt 55. Post-intervention task completion session task 2B (lexis-focused)

1. A11: although mine has (.) never
2. A2: never
3. A11: never recently]
4. A2: recently
5. A11: no (.) has already recently (.) no
6. A2: yet recently
7. Together: no
8. A11: has just recently umm
9. A2: has ever recently
10. A11: has ever recently been? (.) has just recently
11. A2: just recently
12. A11: no recently means just
13. A2: yah ما تجي

    (it does not fit)

14. A11: نخليها و نرجع لها

(let's leave it for now and we will come back to it)

15. A2: yah

A11 initiates this LRE by reading one of the sentences provided in the task, which contains a gap to fill with one of the adverbs listed in the rubric. However, upon reaching the gap, A11 immediately chooses an adverb from the options: ' never'. Upon completing the sentence, she reevaluates her choice, revisits, and contemplates the alternative adverb options.

By doing so, A2 echoes A11's work of articulating all the chosen adverbs aloud, thus dramatising A11's thinking. In this, A2 suggests the adverb 'yet' and says the sentence with this insertion included. In the next moment, both participants reject 'yet' as a fitting alternative, and they do this simultaneously, as shown in turn 7. They collaboratively test other adverbs aloud, demonstrating a dynamic engagement in trial and error.

In turns 10 and 11, they consider the use of the adverb ‘just,’ which is, in fact, the correct answer. However, A11 raises a thoughtful objection: she questions the appropriateness of ‘just’ because the word ‘recently’ follows the gap in the sentence. A11 reasons that since ‘recently’ and ‘just’ have similar meanings, using them together would be redundant. Although A11's reasoning is incorrect in this context, it reveals a strong attempt at logical analysis and an understanding of language nuances. This displays her developing reasoning skills as she tries to apply her knowledge of adverb meanings to make sense of the sentence structure. A2, recognising the logic in A11's reasoning, agrees with her interpretation. Consequently, A11 suggests leaving this particular gap unresolved and returning to it later, allowing them to consider other possibilities or approach the task with fresh insight. A2 verbally agrees to this plan, demonstrating their collaborative approach to problem-solving and willingness to consider multiple perspectives before arriving at a final answer.

Excerpt 56. Post-intervention task completion session task 2B (lexis-focused)

1. A11: that you have not
2. A2: not yet given (.) no (.) not
3. A11: just given me your homework (.) yet?
4. A2: just just
5. A11: just?

6. A2: not just (.) Aa:

7. A11: ما تجي not just

(doesn't fit)

8. A12: ايه ما تجي

(yah doesn't fit)

9. A11: not for given?

10. A12: given for not (.) ما تجي هي يا هاذي يا هاذي (.) since (.) ما تجي

(since doesn't fit, it is either this or this)

11. A11: لحظه خل نعيدها (.) Has it ever occurred to you that not only are you late for class, which of course has already started, but you have not even (.) فيه even?

(wait a minute, lets repeat it)

12. A2: لا

(no)

13.A11: خل نحطها بس و نشوف لان احس صح

(let's use it because I feel it is correct then will see)

14. A2: صح

(that is correct)

In this LRE, the learners work together to fill in one of the gaps in a sentence provided in the task. A11 begins by reading the sentence aloud, as she has done throughout most of their interactions in this task but pauses when she reaches the gap. A2 initially suggests filling the gap with 'yet,' which is the correct answer, but immediately changes her mind (turn 2). The learners then collaborate by experimenting with all the adverbs provided in the task rubric but ultimately conclude that they cannot find a suitable adverb for the gap. In turn 11, A11 proposes that they

take a moment to read the entire sentence aloud from the beginning, attempting to understand the context better and determine the correct adverb. As she reads and reaches the gap, she suggests using ‘even’ and asks A2 if ‘even’ is included in the list of options. A2 responds that it is not.

However, A11 creatively suggests using ‘even’ anyway, reasoning that it sounds correct and that they can see what happens later, likely referring to the teacher's feedback. Interestingly, ‘even’ is a correct choice and fits the context well. This interaction highlights the learners' ability to manage reasoning and be creative while working through the task. A11 demonstrates an open-minded approach by considering an option outside the provided choices, showing flexibility in her thinking. Her decision to prioritise what sounds correct over strict adherence to the given options reflects a willingness to take risks and test her understanding.

Excerpt 57. Post-intervention task completion session task 2 B (form focused and lexis focused)

1. A11: have you ever visited
2. A2: what city
3. A11: what city have you ever visited I never (.) no (.) have^ you visited
4. A2: وش الي تعني visited?

   (which of them means visited?)
5. A11: I already been to (.) umm Canada
6. A2: الله عليك

   (you are awesome)
7. A11: ما نيب سهله

   (I am not easy)
9. A2: ((giggling)) (.) I (.) already (.) been (.) to (.) Canada ((verbalising while writing))

(.) يحتاج نحط visited ال عشانtense? او كذا واضحة

(do we need to add visited to show the tense?)

9. A11: I been كذا واضحة

(it is clear this way)

10. A2: ok

In this LRE, the learners are working together to provide a short answer to one of the questions in the task. They are required to use one of the adverbs provided in the task rubric and construct a meaningful sentence. The LRE begins with A11 reading the question aloud, but A2 interrupts to read the first part of the sentence that A11 seems to have missed (turn 2). A11 then repeats the entire question and initially suggests using the adverb ‘never’ but quickly dismisses this option. She emphasises the phrase ‘have you visited’ by raising her tone, focusing on the question's meaning and the appropriate adverb. A2 asks which adverbs fit the context, seeking to find one that correctly aligns with visiting a place. A11 suggests the sentence ‘I have already been to Canada,’ correctly choosing the adverb ‘already’ to convey that the action has occurred. In turn 6, A2 praises A11 for her suggestion, and A11 responds with a light-hearted joke in turn 7, prompting A2 to giggle. This creates a positive and relaxed atmosphere as A2 begins writing down the sentence while verbalising the words. After writing, she questions whether they should include the verb ‘visited’ in the sentence, with her focus on conveying the correct form. A11 responds by repeating ‘I been’ from their composed sentence and argues that the meaning is evident, showing her understanding that ‘been’ conveys the correct form. A2 agrees verbally, indicating acceptance of A11’s reasoning.

This exchange demonstrates the learners' ability to reason and construct meaning collaboratively in a positive atmosphere. A11's suggestion shows her focus on using the adverb

that best communicates the idea of having already visited a place. At the same time, A2's questions reflect her engagement in ensuring that the sentence is grammatically correct. Their playful interaction, including joking and laughing, fosters a supportive environment where both learners feel comfortable exploring different options and refining their understanding of the task. It highlights how a relaxed and positive atmosphere can enhance learning by encouraging creative thinking and problem-solving.

Excerpt 58. Post-intervention task completion session task 2 B (lexis-focused)

1. A11: how long has it been since the trip?
2. A2: let's use um: just تجي ?(.) um:: لازم وحده منهم ?

   (does it fit?) (does it have to be one of them?)
3. A11: ايه لازم وحدة

   (yes, it should be)
4. A2: لأنها عن الوقتsince احس (.) since

   (I feel it is since, because it is about time)
5. A11: صح sinceعن الوقت

   (that is correct it is about time)
6. A2: طيب يالله خل نحطها

(ok let's use it)

7. A11: مره احس فيني النوم(.) هاه شوفي هنا (.) pages)) ((flipping since خل ندور شي فيه

(let's look for a sentence with 'since' in it (.) oh look here (.) I feel so sleepy

8. A2: حلو يالله نكتبها

   (great let's write the sentence)

In this LRE, the learners are working together to compose a short answer to the question,

‘How long has it been since the trip?’ They are required to use one of the adverbs provided in the task rubric and ensure the sentence is in the correct tense. A11 begins the LRE by reading the question aloud. A2 initially questions whether ‘just’ would sound correct but then changes her mind and suggests using ‘since’ in turn 3. She provides a reason for her choice, explaining that ‘since’ is appropriate because it relates to time, which is correct. A11 enthusiastically agrees with A2 and her reasoning in turn 5. Before they begin composing the sentence, A11 suggests they look in the task for a sentence that includes ‘since’ to use as a guide for structuring their sentence (turn 7). A2 agrees verbally, and they find an example sentence, which helps them proceed to complete their task.

This interaction showcases the learners' ability to reason and justify their choices while relying on prior knowledge and context clues. A11's mention of referring to a model sentence shows a strategic approach to problem-solving, and A2's ability to reason that ‘since’ fits the context point shows growing language awareness. Their collaboration, marked by agreement and mutual support, yet again evidences a critical ability to think and use all the resources available to construct a grammatically correct sentence.

5 Chapter 5: Discussion

5.1 Revisiting the Research Questions

This section provides a concise summary of the key findings in response to each research question, which serves to frame the discussion that follows.

1. To what extent does reasoning skills training impact the quantity, quality, and focus of the learners' produced LREs?

The findings indicated that reasoning skills training had a positive effect on learners' collaborative dialogue. Specifically, learners in the reasoning skills group produced a greater number of LREs compared to the control group. These LREs also showed a higher level of engagement, with more instances of elaboration, negotiation, and mutual scaffolding. In terms of focus, although the tasks were grammar-oriented, the majority of LREs across both groups were lexis-based, suggesting that lexical issues were more salient to learners during task completion. However, learners in the reasoning group showed increased attention to form-focused LREs in the post-intervention sessions, possibly reflecting greater metalinguistic awareness.

2. To what extent does collaborative work supported by reasoning skills training promote second language development?

While statistical analysis showed no significant difference in test performance between the reasoning and control groups, (micro)genetic analysis revealed qualitative gains in learners' metalinguistic awareness and increased self-regulation. These included improved attention to tense use, verbalisation of grammar rules, and decreased reliance on peer or teacher support. These findings suggest that collaborative dialogue supported by reasoning skills training can facilitate language development in nuanced and process-oriented ways, even if not immediately captured through quantitative measures.

3. How does reasoning skills training impact learners' collaborative dialogue?

The training appeared to enhance learners' ability to engage in high-quality collaborative dialogue. Learners demonstrated more extended and reflective interactions, often engaging in joint reasoning, providing explanations, and challenging each other's ideas. This aligns with previous findings from sociocultural theory suggesting that reasoning and argumentation are central to effective peer collaboration.

4. How does collaborative dialogue, supported by reasoning skills training, promote second language development?

The analysis of learners' interactions pre- and post-intervention showed that collaboration enabled by reasoning training helped scaffold learners' understanding of grammar rules and usage. This was evidenced by learners' increased ability to explain rules, negotiate tense use, and shift from other-regulation to self-regulation, suggesting internalisation of language knowledge.

This summary provides a foundation for the following sections, which will explore these findings in greater detail and in relation to the wider literature.

5.2 The Impact of Reasoning Skills Training on the Quantity, Quality, and Focus of Learners' Produced LREs

The current study aimed to accomplish two main goals: first, to determine quantitatively how reasoning skills training influences learners' LREs and L2 development (the first and second research questions), and second, to analyse the impact of reasoning skills training on these areas qualitatively (the third and fourth research questions). The following section will present and discuss quantitative results addressing the first and second research questions.

Regarding identifying the impact of reasoning skills training on the learners' LREs in terms of the number of occurrences, focus, and level of engagement (the first research question).

To achieve this goal, I began by analysing learners' attention to language while engaged in different EFL tasks, using LREs as units of analysis. Subsequently, I conducted a more detailed examination of these LREs to determine whether they exhibited a high level of engagement from all group members in discussions concerning language issues and language selection. Following this, the LREs were categorised into three focus types: lexis-focused, form-focused, and mechanics-focused. LREs

5.2.1 Frequency of Occurrences

Analysis regarding LREs revealed that the reasoning skills group exhibited a notable increase in their generated LREs following the intervention (i.e., the reasoning skills training), surpassing double the number of LREs produced during the pre-intervention sessions, suggesting the positive impact of the reasoning skills training on the learners' collaborative dialogue. These findings support the claims of Mercer (2000), Wegerif and Dawes (2004), and Mercer and Littleton (2007) regarding the beneficial impact of proficient reasoning skills among learners on the quality of collaborative dialogue. However, previous studies reporting on the positive effects of learners' enhanced reasoning skills on the learners' collaborative dialogue were focused on young learners. To my knowledge, the current study is the first to examine the influence of reasoning skills training on collaborative dialogue among adult L2 learners. Therefore, I cannot offer any comparisons in this respect.

Upon retrospective examination of research investigating Saudi learners' collaborative learning (see section2.4.4), it was apparent that a common theme across studies is the manifestation of positive attitudes among Saudi learners towards collaborative learning.

Nevertheless, a recurrent challenge in these studies pertains to the need for collaborative skills, consequently impeding high-quality collaborative dialogue. However, the current study

presents a departure from the theme (i.e., The low-quality collaborative dialogue among Saudi EFL learners reported by previous studies). Through the integration of reasoning skills training within the training session and the subsequent application during post-intervention task-completion sessions, learners in the present study were equipped with the necessary skills acquired during training. This facilitated a redirection of focus towards linguistic aspects, thereby fostering the emergence of a more significant number of LREs.

The current study contributes to the body of knowledge by shedding light on an essential factor contributing to the quality of learners' collaborative dialogue: learners' level of proficiency in reasoning skills. Previous studies exploring collaborative dialogue and its role in the EFL classroom have established that different factors can positively influence learners' collaborative dialogue. These factors include task modality (e.g., Swain & Lapkin, 2001; de la Colina & García Mayo, 2007), the use of L1 (Antón & DiCamilla, 1998; Ohta, 2001; Swain & Lapkin, 2000)., group dynamics (Swain & Lapkin, 2001; de la Colina & García Mayo, 2007; Storch & Aldosari, 2013; Storch, 2002). However, there is a lack of studies exploring direct factors, such as reasoning skill training, on the learners' quality of collaborative dialogue and language development. The present study reports the effectiveness of the reasoning skills training in enhancing the quality of the learners' collaborative dialogue, evidenced by the higher number of high-quality LREs produced by learners in the reasoning skills group.

5.2.2 Overall Focus of LREs

As part of understanding how the reasoning skills training influenced the learners' collaborative dialogue and produced LREs in particular, the present study analysed LREs' focus alongside their frequency of occurrences and learners' level of engagement to provide a more comprehensive analysis. LREs, according to their focus, can be categorised as one of three:

• Lexis-focused LREs: Concentrate on vocabulary and word choice, addressing issues such as word meaning, usage, or selection.

• Form-focused LREs: Deal with grammatical structures and syntax, emphasising correct sentence construction and the use of grammatical rules.

• Mechanics-focused LREs: Concern with the technical aspects of writing, such as punctuation, spelling, and capitalisation, ensuring adherence to writing conventions.

Although the tasks were designed with a grammatical focus (targeting past simple, past continuous, and present perfect), the majority of LREs observed were lexis-focused. This pattern is consistent with prior studies (e.g., Alegria & Garcia Mayo, 2007; Storch, 1998), which have shown that meaning-oriented tasks tend to elicit more lexical attention from learners, even when there is an explicit grammatical target. In this study, both Task 1 (storytelling) and Task 2 (short responses) were meaning-focused and required learners to collaboratively construct content, often prompting negotiation of vocabulary choices.

The LRE analysis revealed that lexis-focused and form-focused LREs predominated during the pre- and post-intervention collaborative sessions in both the reasoning skills and control groups, with lexis-focused LREs slightly outnumbering form-focused ones. This distribution appears to be strongly influenced by task design and the type of instructions learners were given (e.g., Garcia Mayo, 2002; Alshuraidah & Storch, 2019, 2021). For example, the storytelling task prompted learners to agree on how best to articulate shared narratives, while the short answer task encouraged clarity and succinctness, both of which demanded lexical precision.

Importantly, the consistency in LRE distribution before and after the intervention suggests that reasoning skills training influenced the quality rather than the type of language-

related episodes. In other words, while learners continued to focus primarily on vocabulary and grammar, their collaborative engagement likely shifted, becoming more reflective and dialogic. This aligns with the work of Swain (2006) and Mercer (2000), who argue that reasoning and dialogic interaction enhance the depth of learner engagement even when the surface focus of their language attention remains the same.

5.2.3 LREs Focus Before and After the Intervention

In both groups, lexis-focused LREs and form-focused LREs were predominant during the collaborative task-completion sessions before the intervention, with lexis-focused LREs slightly outnumbering form-focused LREs. After the intervention, this distribution remained stable in the reasoning skills group. In contrast, the control group saw a slight shift, with form-focused LREs outnumbering lexis-focused LREs. Nevertheless, across both time points and groups, lexis- and form-focused LREs continued to dominate overall.

This stable pattern suggests that reasoning skills training did not alter the type of LREs learners produced but may have enhanced the quality of their interaction. This outcome is not unexpected, as the training aimed to develop exploratory talk, encouraging learners to request contributions, justify their ideas, listen to differing viewpoints, and reach shared decisions. In essence, the training supported deeper engagement with language, rather than shifting the specific linguistic focus.

Interestingly, although the collaborative tasks were explicitly grammar-focused, lexis-based LREs emerged more frequently. This may be due to the communicative immediacy of vocabulary during peer interaction. Learners may have perceived lexical choices as more urgent for successful meaning negotiation, whereas grammatical issues, unless particularly salient, were sometimes backgrounded. This supports findings from prior research suggesting that learners

often attend more to vocabulary during meaning-focused collaboration (e.g., Kim, 2008; Watanabe & Swain, 2007).

Additionally, it is plausible that learners felt more autonomous in identifying and correcting grammar individually but relied on peers when facing lexical uncertainty, thus generating more lexical discussion during interaction. Moreover, while the task instructions targeted grammar, the open-ended and communicative nature of the tasks may have allowed for flexibility in learners' attention, further encouraging vocabulary-oriented exchanges.

Another factor contributing to the stability in LRE focus distribution is the consistency in task type and instructions across both phases. As both the reasoning skills and control groups completed the same tasks before and after the intervention, the nature of LREs remained largely unchanged. This reinforces the idea that task design and instructional context have a substantial impact on learners' attention to language form during collaboration (Alshahrani & Storch, 2014), potentially outweighing the influence of reasoning skills training on the type of LREs produced.

5.3 The Impact of Collaborative Dialogue Supported by Reasoning Skills Training on Second Language Development: Discussion of Language Test Results

One objective of the present study is to investigate the impact of collaborative dialogue supported by reasoning skills on learners' language development (RQ2).

The overall analysis of the learners' language test results showed no significant difference in performance between the control and reasoning skills groups. In other words, there was no significant statistical difference in test results between the learners of the control group and those of the reasoning skills group. However, it is noteworthy that the reasoning skills group exhibited significantly higher scores in the immediate pretest, which indicates language development, although they could not sustain that gain in the longer term, i.e., three weeks after intervention.

Several factors may account for these findings. Firstly, one contributing factor to the learners' test outcomes is the nature of instruction they received regarding the target forms focused upon in this study. According to Swain et al. (2009), within a sociocultural theory framework for effective learning, learners should be provided with several components: (a) a coherent understanding of the underlying concepts related to the target language use; (b) appropriate mediating tools (such as explanatory texts or diagrams) to aid in internalising these concepts; (c) opportunities for languaging, where conceptual understanding guides subsequent linguistic performance; and (d) chances to apply the internalised conceptual knowledge. In the present study, the first component was not directly addressed within the research but presumably occurred before the study during instruction by the course instructor. However, the quality and coherence of the delivery of knowledge about the concepts underpinning the use of the target language were not assessed, which could impact learners' comprehension of the target forms examined in the current study. This observation aligns with the arguments of Swain et al. (2009) and Benhamlaoui & Gánem-Gutiérrez (2022), emphasising that for effective mediation to occur, various elements must be present, and the absence of one element can detrimentally affect the learning process.

Secondly, it could also be argued that learners in this study did not reach the level of internalisation necessary to recall concepts discussed in collaborative sessions and apply them accurately in language tests, especially in delayed post tests. This observation supports the assertions of sociocultural theory, which describes learning as occurring within different zones of proximal development. We need alternative assessment methods that recognise the importance of mediation to help reveal what a learner can do independently and what they can do with the guidance of a more skilled other, for example, dynamic assessment.

5.4 The Impact of Reasoning Skills Training on Learners' Collaborative Dialogue and Second Language Development: Discussion of (Micro)genetic Analysis Results

The theoretical framework foregrounding this research is based on the belief that interaction is a collaborative process in which zones of proximal development may be created. It was assumed in the SCT approach that learning and development are mediated in

interaction and also facilitated by constructed artefacts, such as language, concepts, and material tools. Consequently, our study aimed to achieve two main objectives: firstly, to determine the extent to which reasoning skills training impacts learners' LREs on one hand and learners' L2 development on the other hand (the first and second research questions). Secondly, to examine *how* reasoning skills training impacted learners' LREs and L2 development (the third and fourth research questions). In the subsequent section, I will discuss the (micro)genetic analysis findings previously presented, which aimed to address the third and fourth research questions.

5.4.1 Indications of Development in The Learner's Collaborative Dialogue

The statistical analysis of LREs quantity and quality before and after the intervention (i.e., the reasoning skills training) for both groups (i.e., the reasoning skills group and the control group) showed that the reasoning skills training had a positive impact on the learners LREs in which the number of LREs showing a high level of engagement have increased in the reasoning skills group after the intervention but not in the control group (see section4.1). In this section, I aim to investigate how this influence occurred (RQ3: *How does reasoning skills training impact learners' collaborative dialogue?*)

Looking into the learners' interaction before the reasoning skills training, several issues that might hindered the quality of their collaborative dialogue can be identified. Most of the time,

when the learners were asking for assistance, they asked for assistance implicitly, such as A20's utterance in Excerpt 11 (turn 1), 'then he', uttered at the beginning of the sentence, then paused, signalling to A21 that she needed help completing the sentence. This implicit type of assistance request might be misunderstood. Another example is in Excerpt 42, in which A1 reads one of the task items aloud, immediately offers an answer, and begins writing it down while softly verbalising her thoughts, almost as if speaking to herself. This is an implicit attempt to keep A9 involved and possibly correct any mistakes that she might notice in A1's answer. Furthermore, learners' use of indirect requests for assistance while working collaboratively lowers the opportunity for LREs and mediation instances in their dialogue because this type of assistance request can be easily unnoticed or dismissed.

In the reasoning skills training, learners were trained to ask their peers for their assistance, opinions, or suggestions directly and clearly using question words such as what, why, and how. The impact of the reasoning skills training on the learners' asking for assistance can be noticed in the post-intervention collaborative work session interactions. In Excerpt 15 (turn 1), there were several instances of learners using questions such as 'What do you think?'

Another indication of development in the learners' reasoning skills is how learners expressed agreement before and after the intervention. In the pre-intervention collaborative

learning session, it was noticed that the learners would start an LRE and move on without an explicit agreement from both learners. For example, Excerpt 10Excerpt 50. In which learners moved on without clear mutual agreement. One of the fundamentals of Mercers's (2002) Exploratory talk, which was adopted in the present study, is the importance for learners to have explicit agreement preceding decisions and actions to reach the ultimate goal for an exploratory talk, which is the achievement of consensus (Mercer, 1995) in the reasoning skills training

session, the concept of consensus and explicit agreement was discussed with learners. Learners were encouraged to practice seeking the opinions of everyone in the group while working collaboratively by asking questions such as ‘Do you agree?’ or ‘What do you think?’. Consensus can also be achieved by giving reasons and explanations for one’s opinion using phrases such as ‘I think’ and ‘because’. They were instructed in the reasoning skills exercises (see Appendices P and Q) included in the training session to practice using this concept (i.e., explicit agreement and the achievement of consensus) while engaging with the tasks. According to Mercer (1995, 1996) and Wegerif & Mercer (1997a, 1997b), frequent use of specific linguistic features like 'because,' 'agree,' and 'I think' is associated with talk which had other exploratory features. Employing language typical of ‘exploratory talk’ helps learners work more effectively on problem-solving tasks.

The impact of the training mentioned above was observed on the learners’ interaction patterns in the post-intervention collaborative learning sessions. For example, Excerpt 15 (turn 1), Excerpt 24 (turn 9-11), Excerpt 37 (turn 1) and Excerpt 39 (turn 3). In these examples, the learners sought each other’s agreement before making a linguistic decision.

It was also noticed that there was a lack of explanations and elaborations in the pre-intervention task-completion sessions. In the post-intervention sessions, learners tended to give explanations and follow their opinions with elaborations, as seen in Excerpt 15 (turn 4), Excerpt 35 (turn 4), and Excerpt 46 (turn 7). In all these examples, learners provided explanations, elaborations, and justifications for their choices. There was also a noticeable change in the learner’s overall collaborative performance. In the pre-intervention task-completion sessions, most of the LREs were brief and filled with pauses. For example, during the interaction between A20 and A21, it was noticed that in the pre- intervention LREs, A20 initiated most of the LREs

with hesitation, and A21's input was minimal. However, in the post-intervention collaborative work session, LREs became lengthier with fewer pauses, and A21's input increased substantially.

The transformation in the learners' collaborative performance suggests that the reasoning skills training provided during the intervention sessions and subsequent task-completion sessions played a significant role in fostering a supportive learning environment. This environment enabled the learners to freely express themselves and find pleasure in collaborative activities, as evidenced in (Excerpt 16, Excerpt 23, Excerpt 36, and Excerpt 57) where learners engaged in joking and giggling. LREs observed in the post-intervention task-completion sessions, as depicted in 4.3 serve as an exemplar of successful interaction. The learners demonstrated crucial aspects of working within the ZPD: engaging in mediated activity that supports change through contingent assisted performance and, importantly, co-action. They were able to lead each other toward the subsequent levels of development by utilising various regulatory tools, like other regulation, self-regulation, and object regulation. This complex process was grounded on both intra-personal or cognitive and inter-personal or social functioning, as suggested by Vygotsky (1978). Furthermore, for developmental activity to occur, learners must be capable and willing to collaborate. Throughout the learners' post-intervention task completion sessions, their interaction was characterised by 'active reception' (Lantolf, 2007, 2011b) and 'participation' (van Compernolle, 2015; Van Compernolle & Williams, 2013), evidenced by:

- Commitment and focus on the task.
- Expressing intentionality, such as explaining reasons for actions.
- Demonstrating a general willingness, for instance, by making efforts to elaborate on comments.

- Engaging in metacognitive activities, including reflecting on tasks and actions.
- Striving to attribute relevance and significance to things and events.

5.4.2 Claims of Language Development

Another aim of this present study was to investigate how interaction during collaborative task-completion sessions, supported by reasoning skills, may bring about L2 developmental opportunities. RQ4: *How does collaborative dialogue, supported by reasoning skills training, promote second language development?* To address this question, learners' interactions pre- and post-intervention were analysed qualitatively for indications of language development using (micro)genetic interaction analysis (see section3.5.2 for more explanation on qualitative analysis of L2 development).

Although the statistical analysis suggested that the intervention did not impact the learners' language development in the target forms (past simple, past continuous, and present perfect) (see section4.1), the (micro)genetic analysis of the learners' interaction while engaged in Task 1 and Task 2 before and after the intervention revealed differences in their metalinguistic awareness of the target forms. Regarding tense, it was noted in the pre-intervention collaborative work sessions that learners A20 and A21 paid less attention to verb forms; most of the time, they did not question their use of tense, as evident in Excerpt 11 and Excerpt 12. However, in the post-intervention collaborative work session, learners focused more on the target form (the past tense). Learners began to question their use of tense and endeavoured to collaborate in addressing both form and meaning, as demonstrated in Excerpt 16, Excerpt 19, and Excerpt 20.

This development was captured through learners' language-related episodes (LREs), which are understood to represent moments of metalinguistic reflection. While not all LREs directly lead to learning, they provide valuable opportunities for learners to attend to linguistic

forms in a meaningful context. Through form-meaning negotiation, learners co-construct understanding and test hypotheses about language use, which may support the internalisation of linguistic knowledge over time (Swain, 2006; Storch, 2002). These findings align with Swain's (2000, 2010) conclusions, in which learners are believed to acquire forms when they successfully negotiate form and meaning.

Another indication of language knowledge development focused on in this analysis is the verbalisation of the grammar rule. A20 and A21's interaction analysis in the post-intervention collaborative work session (Task 1) revealed two instances of A21 verbalising the grammar rule (i.e., the past tense) in Excerpt 18 (turn 4) and Excerpt 19 (turn 8), in which A21 was providing A20 with an explanation. Verbalisation of the grammar rule was also found in the interactions of A5 and A13 in the post-intervention task completion sessions, as seen in Excerpt 32, in which the learners discussed using the past simple and continuous. Similarly, it was noted in the interactions of A11 and A2 during these sessions, as presented in Excerpt 48 (turn 9).

Verbalising grammar rules is considered a marker of metalinguistic awareness and is linked to L2 development, as it involves articulating and reflecting on language forms. This kind of explicit reflection has been shown to enhance both comprehension and production, supporting longer-term retention and transfer (Qi & Lapkin, 2001; Swain & Lapkin, 1998, 2002). This finding aligns with the work of Swain and her colleagues, who have shown that discussing language is a fundamental aspect of L2 learning. Their research also indicated that language-related activity promotes learners' writing and speaking development. Regarding speaking, LREs also provide an important contribution, highlighted by Tocalli-Beller and Swain (2005, 2007), especially in collaborative settings where learners verbalise and negotiate language use, thus supporting oral language development. Such findings also agree with studies conducted in other

domains, including biology and physics, where researchers such as Chi et al. (1989, 1994) found positive effects due to verbalisation in conceptual learning. This was later echoed by Davin and Kushki (2021), who found that the verbalisation of grammar rules reflects metalinguistic awareness of target forms. This awareness, in turn, improves language development by using those grammar rules in current and future performances in L2.

Another sign of knowledge development captured in this study is how learners depend on other regulation and object regulation, gradually shifting to self-regulation as they move from one ZPD to another until they reach the level of internalisation in the development process. In the pre-intervention collaborative learning session, A20 relied heavily on other regulation. In some instances, she would start a sentence and pause, waiting for A21 to finish it, as seen in Excerpt 11 (turn 1) and Excerpt 14. Moreover, in most of A21 and A20's interactions during the pre-intervention collaborative learning sessions, A20 could not produce a sentence or a verb correctly without asking A21 or the researcher/teacher for validation. However, in the post-intervention collaborative work session, it was noted that A20's reliance on other regulation decreased, with several instances indicating a shift to self-regulation, as in Excerpt 17, Excerpt 18, and Excerpt 25. This suggests that as learners become more responsive to simpler forms of assistance, it reflects an 'improved awareness of a particular issue and the emergence of autonomy and self-regulation' (Lantolf et al., 2017, p. 155). Furthermore, the study also reported the learners' use of psychological tools that mediate human mental activity, such as repetition, verbalisation, and L1.

5.4.3 Learner's Use of Psychological Tools for Mediation

In the present study, I discuss how learners utilise socially grounded symbolic tools to aid reasoning and mediation. One such tool is repetition, which can be self-repetition or echoing what

others say (Wertsch, 1985; Mercer, 2000). For instance, in Excerpt 11 (turns 1-3), A20 echoed A21's use of the verb ‘repair’ twice before suggesting an alternative, ‘clean.’

This pattern of repetition was observed in several instances throughout the study, including Excerpt 17 (turns 1-3), Excerpt 18 (turn 3), and Excerpt 20. Research has shown that verbatim repetition of oneself and/or others can sustain interaction and facilitate problem- solving (McCafferty, 1994; Roebuck & Wagner, 2004). This is not limited to facilitating reasoning but serves as a tool to regulate the appropriation of language (Buckwalter, 2001).

Moreover, it plays a role in promoting intersubjectivity, which involves the collaborative establishment of a shared perspective on a task that is crucial for successful joint endeavours, such as the co-construction and maintenance of mediation instances (as discussed by DiCamilla & Antón, 1997).

Another observed mechanism through which L2 learners externalise and regulate their cognitive process is verbalisation, such as reading aloud or articulating thoughts verbally. When verbalising, the learners make their thinking visible, which might help organise their thoughts, clarify meaning, and therefore enhance their level of understanding. Secondly, by articulating complex ideas, the learners develop an awareness of their cognitive strategies by voicing them aloud; such self-awareness has been considered an essential effect of self-regulation (Zimmerman, 2000). This was most clearly evidenced by the fact that the learners, such as A20, had incorporated new sentences into the story composition task by reading or discussing these sentences aloud, as in Excerpt 20 (turn 10), Excerpt 21 (turn 3), Excerpt 24 (turn 3) A20 reinforced her understanding and facilitated a shared focus with her peer. These acts of verbalisation assisted the learners in sustaining collaboration and evaluating their language production during the task. An example of how verbalising helps learners make their thinking

visible can be seen in Excerpt 31 and Excerpt 57. In Excerpt 31, A5 verbalises while incorporating the second half of the sentence they are working on collaboratively. As she verbalises the sentence aloud, she questions their use of tense in the sentence in hand (turn 2). In Excerpt 57, after A11 and A2, compose a sentence to answer one of the short questions provided in task 2. A2 questions whether they should include the verb 'visited'. She verbalises the sentence out loud while writing it down, which prompts her to reflect on their choice of wording (turn 8).

Several studies have reinforced the importance of verbalisation in a collaborative L2 learning setting concerning managing tasks and arriving at a better understanding of concepts. For example, Lapkin, Swain, and Knouzi (2008), Storch (2002), Swain and Lapkin (1998, 2002), and Knouzi et al. (2010) provided evidence that the process of verbalising enables a learner to monitor their cognitive and linguistic choices and develops a greater sense of agency and control over their learning processes. Besides producing better outcomes concerning the immediate task, these discursive activities help learners acquire the necessary skills to self-regulate similar tasks in future learning contexts.

Learners also employ their native language (L1) as a tool for cognition and mediation. For instance, throughout A20's and A21's interaction, there were several occasions where learners utilised L1, such as in Excerpt 13 (turn 2), Excerpt 18 (turn 4), and Excerpt 19 (turn 8). Another example of the use of L1 is found in the interaction of A1 and A9, as seen in Excerpt 47, where A9 provides a translation of the word 'government' in Arabic (turn 5), offering clarification. A1 then explains her reasoning process to A9 in Arabic (turn 6). It was observed that when learners encountered high levels of cognitive engagement, they turned to their L1 to provide explanations, elaborations, or sometimes translations from the target language (L2) to their

native language. Furthermore, during interactions, learners resorted to their L1 when they lacked proficiency in the L2 to maintain communication. These findings align with previous studies, highlighting the significant role of L1 in the L2 classroom for achieving intersubjectivity and externalising inner speech (i.e., private speech) during cognitively challenging tasks (Antón & DiCamilla, 1998). Moreover, using L1 aids in making meaning from texts, solving language-related issues, generating ideas, controlling tasks, and sustaining dialogue (Villamil & de Guerrero, 1996).

5.4.4 The Use of Playfulness and Laughter to Maintain Intersubjectivity

Another important point related to this matter that I would like to shed light on is the role of playfulness and laughter in learners' interactions. As I have reported in the discussion above (Section 5.4.3), learners used repetition and L1 to maintain intersubjectivity. Intersubjectivity is the intermental point of fusion at which separate minds share a common perspective and an equal degree of commitment to the task (Swain & Lapkin, 2002). Establishing and maintaining intersubjectivity is essential for development within the ZPD (see section 2.1.5). The present study reports learners' use of playfulness and laughter to achieve intersubjectivity, evident in Excerpt 16 (turn 21-22), Excerpt 23 (turn 8-9), and Excerpt 46 (turn12-13) endorsing a complex and intricate demonstration of sociocognitive and emotional interactions. Learners employed humour to jest about their mistakes in the target language. By joking about mistakes in the target language, they aim to transform negative feelings of embarrassment into positive emotions of playfulness that they would share. When learners used giggling to maintain intersubjectivity, it

enabled them to explore cognitive decisions leading to their choices in the target language. This analysis supports the view of emotion as inseparable from cognition (Streeck et al., 2011; see Swain, 2013; Poehner & Swain, 2016). While SCT studies of playfulness have

primarily focused on play and private speech (e.g., Lantolf and Thorne, 2006: 190; McCafferty, 2002; Ohta, 2001), previous researchers have called for a broader view of this potentially key mechanism to be considered and further studied. I agree with this perspective: emotions influence cognitive processes such as attention, memory, and decision-making, while cognitive evaluations can shape emotional responses. This inseparability suggests that understanding learners' different patterns of interactions while working collaboratively requires acknowledging the dynamic interplay between emotional states and cognitive functions.

5.5 Reasoning Skills as Mediational Tools in Peer Collaboration

According to previous studies (Ohta, 2000; Storch, 2002; Swain & Lapkin, 1998) and as evidenced in the current study's findings, the importance of collaborative dialogue lies in its ability to foster critical sociocultural learning concepts such as mediation, the ZPD, and regulation. Collaborative dialogue allows participants to use language as a cognitive tool and to restructure and develop those aspects of their L2 that are not yet entirely self-regulated. There is considerable evidence that learners can positively influence one another's development (e.g., Ohta, 2000; Storch, 2002; Swain & Lapkin, 1998). In an interaction, learners can ask for assistance, mediate each other's knowledge, and gradually progress from relying on external regulation to self-regulation. In the final learning stages, they achieve internalisation, applying newly learned concepts or skills independently and correctly.

This study explores the relevance of *reasoning skills* as a lens for understanding peer interaction within Sociocultural Theory (SCT). While SCT traditionally emphasises symbolic tools (e.g., language) as central mediators of learning, it tends to focus less on the specific cognitive tools learners may draw upon during peer collaboration. The current study addresses

this conceptual gap by identifying reasoning skills, such as justifying opinions, negotiating meaning, and resolving conflict, as essential internal tools that mediate collaborative dialogue.

In this context, reasoning skills serve not just a practical function but a conceptual one: they are internal psychological tools that support external mediation, helping learners to engage effectively in their Zone of Proximal Development (ZPD). Rather than redefining SCT, this view adds depth to our understanding of how mediation may occur, particularly by highlighting that learners' participation in collaborative dialogue depends not only on linguistic ability but also on their capacity to reason through interaction. Reasoning skills, as proposed here, can be understood as a bridge as between the *intermental* and *intramental* planes, facilitating the internalisation of social interaction into individual cognitive growth, a core process in Vygotskyan theory.

While constructs such as metacognition and critical thinking overlap conceptually with reasoning, this study distinguishes reasoning skills as uniquely relevant to dialogic interaction. They are not only reflective but also inherently social emerging in real time as learners co-construct meaning, solve problems, and navigate disagreement. Thus, reasoning may be viewed as both a cognitive and interactive resource that supports and is shaped by social mediation. The findings from this study indicate that developing learners' reasoning skills significantly enhances collaborative dialogue, providing more learning opportunities. In this light, reasoning can be seen as an internal psychological tool that enriches language-related problem-solving and scaffolding within peer interaction. This positions reasoning not only as a practical strategy, but also as a useful interpretive lens through which to better understand how mediation and regulation unfold in collaborative settings.

Furthermore, this perspective makes aspects of SCT more pedagogically actionable. While SCT provides a powerful explanatory framework, it often lacks specific guidance on how to operationalise its principles in classroom settings. By drawing attention to reasoning skills, this study offers practical insight for educators seeking to foster effective peer collaboration, thereby extending the pedagogical reach of SCT without altering its foundational assumptions. The need for reasoning skills training is particularly pronounced when learners lack the tools required for successful collaborative learning. For instance, studies by Alkhalaf (2020) and Aldossary (2021) involving Saudi learners revealed learners' positive attitudes toward collaborative learning. However, they pointed out several constraints that limit their coordinated work:

• **Inability to collaborate on opposing opinions**: Some participants in the EFL class were unwilling to listen to or consider diverse opinions, which created conflicts within groups.

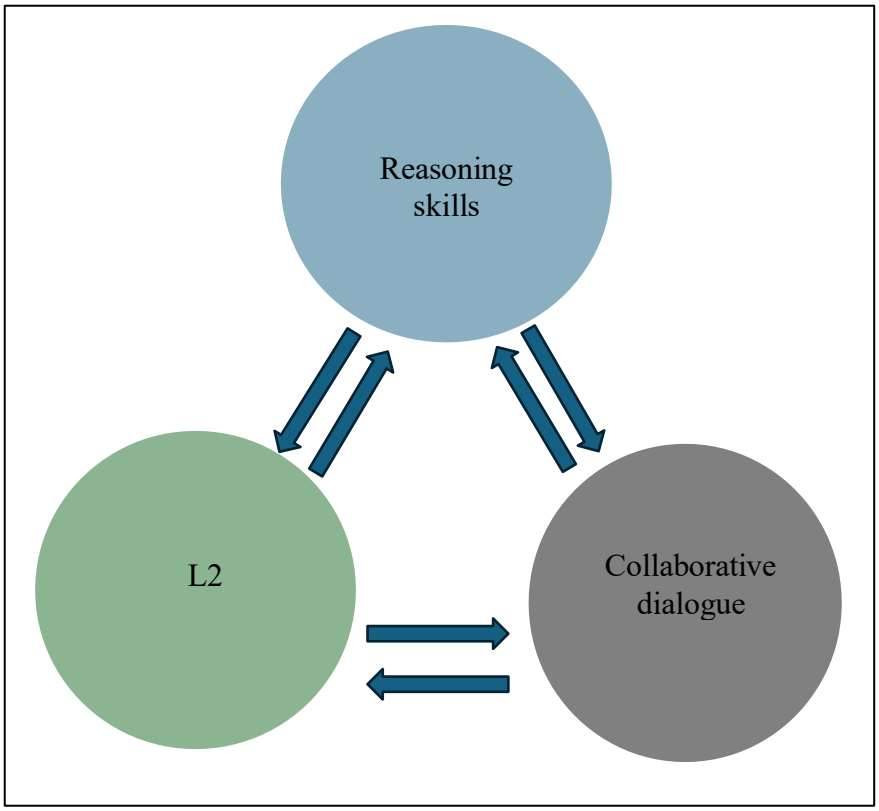
• **Unproductive group members**: Learners have struggled with group members who passively agreed with others instead of participating, leading to unproductive collaboration.

• **Reluctance due to lower proficiency level**: Learners revealed that lower proficiency levels made them hesitant to participate effectively in group discussions.

As depicted in Figure 7, these findings indicate that, teaching the necessary reasoning skills for better collaborative dialogue and, hence, better language development could minimise such barriers to practical collaborative work.

Figure 7.

Collaborative Dialogue Supported by Reasoning Skills Training



The relationships illustrated in Figure 7 are cyclical and multidirectional: reasoning skills influence collaborative dialogue, which in turn fosters further development of reasoning skills. Likewise, external mediation and internal regulation dynamically reinforce one another across collaborative tasks.

This model (Figure 7) corroborates Vygotsky's (1978) suggestions regarding instrumental (social) activity promoting intramental (individual) psychological development. It theoretically extends SCT by emphasising reasoning skills as a mediational tool that facilitates the transition from other-regulation to self-regulation within collaborative tasks. This model

aligns with Vygotsky's (1978) idea of social activity promoting individual psychological development. Rather than proposing a theoretical revision, it emphasises how reasoning skills might operate as mediational tools within collaborative contexts, helping to explain the transition from other-regulation to self-regulation. It underscores the dynamic and reciprocal relationship between cognitive strategies and social interaction.

Moreover, this study clarifies how reasoning skills interact with core SCT constructs from a pedagogical standpoint: they enhance the quality of mediation by enabling learners to scaffold and evaluate language use; they help learners co-construct meaning in the ZPD; and they facilitate both other- and self-regulation by encouraging internalisation of language practices. These observations underscore the value of attending to reasoning within SCT-based pedagogy and suggest directions for further research and instructional design. When reflecting upon collaborative dialogue, one must look at the big picture, not just a part of it. Although reasoning skills are a vital factor in enhancing collaborative dialogue, as depicted in the results of this research, other elements also strengthen collaborative learning. One well-recognised factor is task modality. According to Swain and Lapkin (2001), problem-solving tasks elicit more LREs than the other task types employed in their study. Likewise, Alshuraidah and Storch (2020) note that collaborative writing tasks generate more LREs than those requiring learners to respond to a text written by another group or where they are individually invited to revise their text in light of peer feedback.

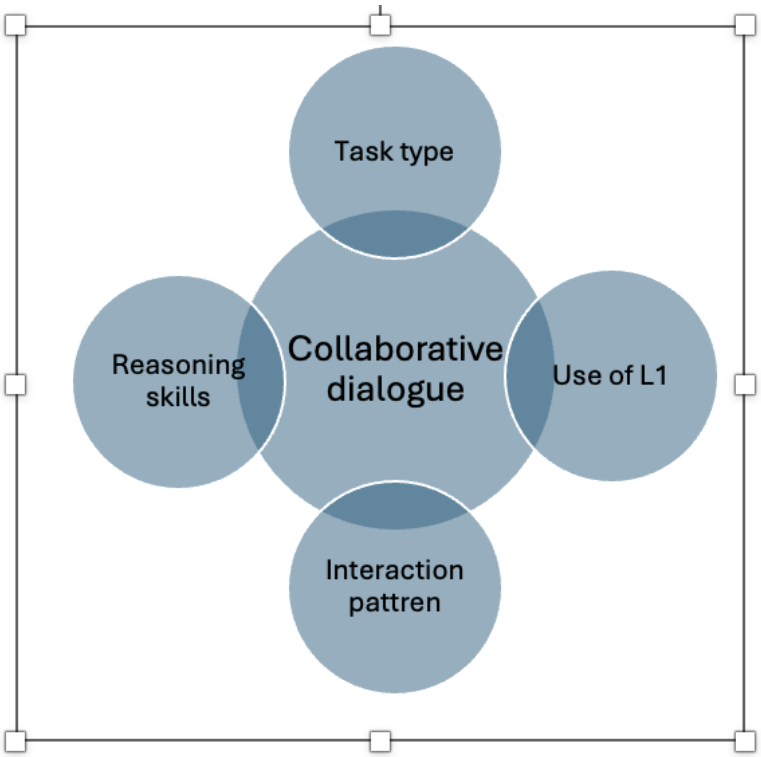
Group dynamics also play a significant role in the success of collaborative dialogue. Storch (2003) discovered that pairs with a collaborative orientation (collaborative and expert/novice) offered more opportunities for learning than pairs with a non-collaborative orientation (dominant/dominant and dominant/passive). Another contributing factor is the use of

L1. Researchers have found that L2 learners use their L1 to understand a text, solve language-related problems, generate ideas, gain control of the task, and maintain dialogue (Villamil & de Guerrero, 1996).

By exploring reasoning skills as part of the broader ecology of collaborative dialogue, this study offers insight into how internal cognitive resources may interact with external social processes in supporting L2 development. See Figure 8.

Figure 8.

Factors Affecting the Quality of Collaborative Dialogue in the EFL Classroom



By implementing this model, educators can address the challenges identified by learners and enhance the overall effectiveness of collaborative learning in L2 contexts. This is discussed in the next section.

5.6 Pedagogical Implications

Reasoning, in particular, is an essential skill for successful collaboration. Several studies have reported the positive effects of learners' high reasoning skills on the quality of their collaborative dialogue and knowledge development (Mercer, 2000; Wegerif & Dawes, 2004; Mercer & Littleton, 2007). Reasoning skills equip learners with significant collaborative abilities that facilitate effective collaborative dialogue. Learners with strong reasoning skills attend to all participants' views, clearly state and evaluate proposals, and ensure that overt agreement

precedes decisions and actions. The aim of reasoning, in this context, is to attain unanimity by incorporating conflict and encouraging the free exchange of ideas, thereby pursuing rational consensus through discourse. In the EFL classroom, the implementation of reasoning skills seeks to create a communicative environment where everyone can express their views and where the most reasonable perspectives gain acceptance (Mercer, 1995). The present study offers recommendations for curriculum developers, educators, and textbook authors, as well as a guide for teachers to develop reasoning skills in the EFL classroom.

5.6.1 Enhancing Collaborative Dialogue and Reasoning Skills in Adult EFL Classrooms: Recommendations for Curriculum Developers, Educators, and Textbook Authors

This study examines the significance of reasoning skills in fostering collaborative dialogue and promoting fundamental learning mechanisms such as mediation, ZPD, and regulation. It offers practical recommendations for integrating these skills into EFL curricula and textbooks. Curriculum designers and textbook authors should adopt a comprehensive approach encompassing content selection, instructional strategies, and assessment methods. Central to this approach is the promotion of collaborative learning in adult EFL classrooms. Group work and peer discussions allow students to reason collectively, exchange diverse viewpoints, and build on each other's knowledge. Based on the treatment group in the study, the reasoning skills

implementation demonstrated clear and shared principles such as encouraging all group members to speak, sharing relevant information, expecting reasons, respecting contributions, accepting challenges, making decisions collectively, discussing alternatives, and striving for consensus.

This can also be extended to incorporating reasoning tasks into the language exercises themselves: grammar, vocabulary, and comprehension exercises will all be devised to include aspects of reasoning, such as justifying answers, explaining processes, and making predictions

based on given data. It is also appropriate to detail the reflective practices. Encouragement to reflect on the learning experience and thinking processes increases learners' awareness of reasoning skills. Reflective journals, self-assessment checklists, and class discussions of learning strategies may facilitate reflective development. The teacher training regarding applying reasoning skills in an EFL classroom is equally important. They need knowledge, skills, and strategies to teach effectively and elicit appropriate reasoning from their students. Through professional enhancement workshops and educational resources, teachers can be prepared to use collaborative learning and the process of reasoning while teaching skilfully.

5.6.2 Enhancing Collaborative Dialogue and Reasoning Skills in Adult EFL Classrooms: A Teacher's Guide to Developing Reasoning Skills

Implementing training in reasoning skills to improve the outcomes of collaborative dialogues in an EFL classroom would involve several stages. The objective is to render the learner critical in thought, clear articulation, and constructive in engaging the peers. Based on the findings and observations of this study, the following are suggested:

- Assessment of current reasoning skills: The teacher should start by assessing the learners' current reasoning skills using a questionnaire, observational checklists, or informal assessments during group activities.

Reasoning Skills Indicators: Teachers should recognise the behavioural indicators showing reasoning skills, such as asking clarifying questions, giving evidence to support a claim, and challenging others' thinking respectfully.

- Embedding into the curriculum: When learning a foreign language, reasoning skills training must be integrated into an existing EFL curriculum. In addition, it is essential to provide learners with certain activities, gradually moving from simple to complex tasks. Start with

simple activities that provide a background for reasoning skills development and then more complicated ones, including collaboration.

- Explicit Instruction: Teachers can conduct some sessions to explicitly instruct learners about reasoning skills. They can design activities to help the learners demonstrate and practice these skills, such as solving problems or making decisions. For examples of reasoning skills practice tasks, refer to Appendix P and Appendix Q.

- Feedback and Reflection: To ensure the learners' development, the teacher must actively provide feedback on their performance and progress in developing their reasoning skills. Emphasise strengths and weaknesses and explain how these can be improved. Besides, it supports learners in reflecting on the processes of reasoning and collaboration through journaling or discussion forums. Reasoning skills in the EFL classroom would thus be implementable through systematic integration within the curriculum, carried out with explicit instruction and rich opportunities to practice and receive feedback. In such a pedagogical approach, educators could foster reasoning and thus raise the quality of collaborative dialogue and language learning. It also enhances the efficacy of collaborative learning for L2 learners by further developing the ability to engage in critical thinking and self-regulated learning, which is significant through language acquisition.

6 Chapter 6: Conclusion: Contributions, Limitations, and Recommendations

This chapter summarises the contributions, limitations, and recommendations of the research study. First, the research aims were discussed to explore collaborative learning within the sociocultural theoretical framework and examine the impact of training in reasoning skills on collaborative dialogue and language development of learners. It then considers an overview of the theoretical, methodological, and pedagogical implications of the research findings. It also addresses the limitations of the study. Some recommendations are given for future study: recommendations that can align with continuing this study and complementing its limitations in furthering our knowledge of collaborative learning in EFL classrooms.

6.1 Research Aims

The primary aim of this study was to investigate collaborative learning in the EFL classroom through the lens of sociocultural theory. Previous research in this area has identified particular benefits for language development that arise from collaborative dialogue (e.g., Bao, 2020; Brooks & Swain, 2009; Donato, 1994; Lapkin et al., 2002; Storch, 2007; Swain & Lapkin, 2002; Watanabe & Swain, 2007), enabling fundamental learning mechanisms, such ZPD, mediation, and regulation to be promoted (Vygotsky, 1978). However, the effectiveness of collaborative dialogue (e.g., level of engagement and number of LREs) is influenced by several factors. According to previous studies, these factors include task modality (Swain & Lapkin, 2001), learners' level of proficiency (Watanabe & Swain, 1997; Watanabe & Swain, 2007) and group dynamics (Storch, 2002; Watanabe & Swain, 2007). An additional factor emphasised in the present study is learners' reasoning skills. Several studies have reported low-quality collaboration due to learners' lack of necessary skills for effective collaboration (Watanabe & Swain, 2007; Alkhalaf, 2020; Aldossary, 2021; Scotland, 2022). However, to my knowledge, no

studies have explored the impact of collaboration skills training (e.g., reasoning skills training) on learners' collaborative dialogue. Therefore, this study sought the following goals.

First, the study aimed to explore the impact of reasoning skills training on learners' collaborative dialogue. It focused on the emergence of LREs during learners' interactions while engaged in two types of L2 tasks. This involved conducting a comparative analysis of LREs produced by the control and reasoning skills groups, examining the quantity, quality, and focus of these episodes.

I chose to analyse both the frequency and the quality of the LREs since more learning opportunities are likely to be created through high-quality rather than low-quality LREs.

Moreover, comparing the focus of LREs- such as lexis-focused, form-focused, and mechanics- focused- can also explore whether training in reasoning skills impacts the focus of the LREs produced by the learners. Additionally, this study aimed to statistically explore the impact of collaborative dialogue, supported by reasoning skills, on learners' language development, focusing on three target language forms: past tense, past continuous, and present perfect. This involved a comparative analysis of the control and reasoning skills groups using results from three language development tests administered as pre-tests, post tests, and delayed post tests. In doing so, the study sought to address a gap in the literature, where most previous research on this topic has been qualitative, concentrating on the processes governing peer interactions during collaborative EFL tasks (e.g., Swain and Lapkin, 1998; Van de Pol et al., 2010; Swain & Lapkin, 2001; Watanabe & Swain, 2007; Storch, 2002; Hovardas et al., 2014), in which quantitative analysis of language development resulting from learners' collaborative dialogue has not received the same level of attention.

The third aim was to explore *how* the reasoning skills training influenced learners'

collaborative dialogue. This entailed conducting a qualitative comparative analysis of the interaction between two learners from the reasoning skills group before and after the intervention (i.e., reasoning skills training). The analysis involved a (micro)genetic examination of their interaction, explicitly focusing on different interaction patterns and language usage indicative of improvements in their collaborative dialogue. This is crucial for delineating the processes and tools that learners experienced and utilised, leading to enhancements in their collaborative dialogue.

The fourth objective was to investigate *how* collaborative dialogue, supported by reasoning skills training, influenced language development. This involved conducting a qualitative analysis of the interaction between two learners from the reasoning skills group before and after the intervention (i.e., reasoning skills training) while participating in an EFL task. (micro)genetic analysis was employed, focusing on examining various processes indicating language development. These indicators included the verbalisation of grammar rules and the gradual transition of learners from external regulation to self-regulation during their interaction. Furthermore, the analysis explored the learners' utilisation of psychological tools that mediate human mental activity, such as repetition, verbalisation, and the use of L1.

6.2 Summary of Key Findings

This study is situated within the general framework of sociocultural theory. This quasi-experimental study investigated the effect of reasoning skills training on L2 learners' collaborative dialogue and subsequent language development. The findings showed that training enhanced learners' collaborative dialogue across multiple dimensions. The (micro)genetic analysis of learners' interactions before and after the intervention revealed that training enhanced

the way learners request assistance: from ambiguous and indirect requests for help to

direct and explicit requests for assistance, opinion, or suggestion through the use of question words such as ‘what,’ ‘why,’ and ‘how’. Besides, learners developed the ability to show agreement by first seeking consensus before making linguistic decisions. While the interactions during pre-training lacked explanations and elaborations, in the post-intervention interactions, learners had explanations and elaborations followed by opinions.

Furthermore, the study highlights learners' use of several psychological tools (Gánem-Gutiérrez & Harun, 2011; Antón & DiCamilla, 1998; Ohta, 2001; Swain & Lapkin, 2000) to facilitate mediation and reasoning, including repetition, verbalisation, and the use of L1. The study also reports on learners’ use of playfulness and laughter to achieve intermental convergence, where separate minds share a common perspective and equal commitment to the task (intersubjectivity). This playfulness and laughter enabled learners to explore cognitive decisions, leading to informed choices in the target language and showcasing a complex interplay of socio-cognitive and emotional interactions.

The result showed that the students in the reasoning skills group had significantly higher scores on the immediate post test, which denotes language development. They were unable to sustain such gains three weeks after the intervention. Nevertheless, a (micro)genetic analysis of interactions of eight learners from the reasoning skills group did show some development of language rise in metalinguistic awareness of the target forms, verbalisation of grammar rules, and even several times a correct usage of the target form, the past tense. These findings indicated a general positive effect of the training in reasoning skills on the learners' language development in the target forms. A change in the pattern of collaborative performance suggests that the training in reasoning skills provided during the intervention sessions and the post-intervention sessions of

collaborative work was reasonably practical in establishing a supportive, collaborative learning environment.

6.3 Overview of Key Contributions

The present study enhances our understanding of second language learning by highlighting the role of reasoning skills in improving collaborative dialogue and incorporating insights into ELT. The study's findings demonstrate that developing learners' reasoning skills significantly improves collaborative dialogue, creating more learning opportunities. This process is dynamic and ongoing; as learners practice their reasoning skills, the quality of their collaborative dialogue is enhanced, maximising learning opportunities and promoting the use of reasoning in future collaborative tasks. The present study introduced a learning model to increase collaborative dialogue effectiveness in the EFL classroom through reasoning skills training. This model suggested that developing learners' reasoning skills leads to better collaborative dialogue, thus creating more learning opportunities. It emphasises the dynamic nature of the process: as learners practice their reasoning skills, the quality of collaboration improves, resulting in maximised learning opportunities and fostering a culture of reasoning within collaborative tasks.

Another significant contribution of the current study is its holistic view of collaborative dialogue. It identifies three factors from the literature that contribute to successful collaborative dialogue: task modality (Swain & Lapkin, 2001), group dynamics (Storch, 2002; Watanabe & Swain, 2007) and the use of L1 (Villamil & de Guerrero, 1996). It also adds another critical factor to this framework: reasoning skills. In terms of study design, most previous related research has been qualitative, focusing on analysing the processes that govern peer-peer interaction during collaborative EFL tasks (e.g., Swain and Lapkin, 1998; Swain & Lapkin, 2001; Storch, 2002;

Watanabe & Swain, 2007; Van de Pol et al., 2010; Hovardas et al., 2014). However, quantitative analysis of language development resulting from learners' collaborative dialogue has not received the same attention. My research contributes to the body of knowledge by exploring the impact of reasoning skills training on adult learners' collaborative dialogue and their ability to co-construct knowledge by employing a mixed research design.

This study employs a research design that aligns with Vygotskian theory, focusing on the processes that govern pair interactions to understand how knowledge is co-constructed and how developmental opportunities emerge in such peer-to-peer interactions. It utilises a mix of descriptive (micro)genetic analysis and quantitative analysis of collaborative dialogue patterns, providing a deeper understanding of the data. Additionally, the inclusion of a quasi-experimental design offers solid evidence of the impact of reasoning skills training on learners' collaborative dialogue (operationalised in terms of LREs quantity and quality) and on language development through a comparative analysis of performance between the control group and the treatment group.

Furthermore, few studies report on the long-term benefits of collaborative dialogue on language development. This study addresses this gap by incorporating an analysis of the long-term effects of the intervention program (e.g., reasoning skills training) on learners' language development. By adding a delayed post test to the research design, the study provides insights into the sustained impact of the intervention on learners' language development in the target forms.

Pedagogically, it offers specific suggestions for the curriculum developer, instructor, and textbook writer on ways of promoting reasoning skills into the EFL curriculum through selected content, approaches, and assessment, yet at the same time allowing for collaborative learning,

group work, and discussion among peers based on shared principles aimed at promoting participation, information sharing, and consensus building. It is also recommended that, during language exercises, reasoning tasks be incorporated, such as justifying answers and explaining processes. Reflective practices like journals and self-assessment develop in learners' reasoning awareness. It also points out that reasoning skills in the EFL classroom require training for the teachers themselves, which would provide them with the knowledge and strategies needed to develop such skills effectively in students. The professional development of teachers and resources is required to assist teachers in integrating collaborative learning and reasoning into their practice. Based on observation and findings, it provides some guidelines on how the teacher can effectively develop reasoning skills within the EFL classroom setting. These include current skills assessment, recognition of reasoning behaviours, embedding the training within the curriculum, explicit teaching, and feedback and reflection opportunities. Such a structured approach also reinforces collaborative dialogue and critical thinking, even language learning processes.

6.4 Limitations and Recommendations for Further Study

This research sought to contribute to the understanding of collaborative dialogue in the EFL classroom. However, several limitations should be noted. While the study was informed by the sociocultural theory framework outlined by Swain et al. (2009), it did not directly assess the quality of conceptual instruction related to the target language forms. Although instruction likely addressed relevant language concepts, a more explicit evaluation of how these were delivered and internalised could have strengthened the findings. Future studies may wish to incorporate a clearer focus on all components suggested by SCT, including mediating tools, language opportunities, and application tasks.

The study also focused on three specific grammatical forms. This narrow linguistic scope

allowed for in-depth analysis but may limit the generalisability of the findings to broader areas of language development. In particular, the reliance on written tasks (e.g., cloze tests) does not capture how reasoning skills might support learners in oral or communicative settings, which are central to SCT. Including a wider range of language skills in future studies, especially speaking, would offer a more complete picture.

Additionally, the study was conducted with female university students at a women's university in Saudi Arabia. While this provides valuable insights within a specific educational and cultural context, it limits generalisability to more diverse learner populations, including mixed-gender or younger learners, and those in under-represented or under-resourced educational settings. Expanding participant demographics in future research would help explore how collaborative dialogue functions across different learning contexts.

Finally, the relatively short time frame of the study did not allow for examination of long-term effects of reasoning skills training. Longer-term investigations could help determine whether the observed benefits are sustained over time and extended to other areas of language use.

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3 Appendices

Appendix A: Language Development Pretest

Name……Age:…… Level: …….

The purpose of the following test is to evaluate your language knowledge of topics that you have covered recently in your language studies. Please make sure to use correct spelling and grammar. Good luck ☺

Instructions:

- Complete the following passage by putting the verb in brackets in the appropriate form.
- The answer could be one word, two words or three words.
- The first gap is done for you as an example.

The Driving Test

It was a cloudy Monday morning; I _____woke up___ (wake up) early that morning because I (1) _____(have) a driving test that morning! I had to be at the driving school at 8:15 am. I was nervous about the test because I (2) _____(already-take) the test two times and failed each one. this time I am more optimistic because I (3) _____(practice) every

day, three times a day.

When I woke up that morning, it (4) _____(rain). I hoped the rain would stop by the time of my driving test. When I went downstairs my mom (5) _____(cook) breakfast but because I was in a hurry, I decided to skip eating breakfast. I (6) _____(ask) my father to take me to the driving school; having my father's support made me feel much better. On our way to the driving school, I (7) _____(feel) really hungry I (8) _____(try) to remember when was the last time I (9) _____(eat)? 'oh' I said to myself 'I haven't had anything to eat since yesterday's lunch' while I (10) _____(think) about food my father

(11) _____(interrupt) and said, 'would you like us to stop for breakfast?' and I immediately said 'yes'. We stopped at a falafel shop, and I had the most delicious falafel wrap that I (12) _____(ever-taste) in my life. We (13) _____(arrive) at the driving school at 8 O'clock in the morning, and I went to (14) _____(meet) the examiner while my father (15) _____(wait) in the car.

The examiner, Mr Khaled, asked me to (16) _____(drive) in heavy traffic around rush hour, which is something that I (17) _____(never-do) before; however, I thought that I did an excellent job of it. Mr. Khaled then (18) _____(instruct) me to drive out of town. After driving in traffic, I felt very confident to drive out of town; I (19) _____ _____(think) I could do this. Thinking that I had passed the test, I began to (20) _____(enjoy) my test, as I was no longer nervous. The examiner was satisfied with my driving, and with a smile, he said, 'Just one more thing, Mr. Ahmad let us suppose that a young child unexpectedly crosses the road in front of you. When I (21) _____(tap) on the window, I want you to (22)

_____ (stop) the car instantly. I continued driving the car, and a few minutes later, Mr. Khaled tapped loudly. although the sound was very clear, I do not (23) _____(know) why responding took me a long time. I suddenly hit the brake pedal so hard we were both thrown forward. The examiner looked at me sadly. 'Mr. Ahmad, he said, in an unhappy voice, you (24) _____ (just-kill) that child!'

Appendix B: Task 1A

Names: 1-…….. Date: ……..Group number: ……

2- ……...

Working together collaboratively, you and your partner will have 30 minutes to:

First: put the sequence of events shown in the following pictures in the correct order.

Second: write a story of 100-150 words, describing the sequence of events.

Make sure to use a variety of vocabulary. Also, make sure to use correct grammar and spelling. The first sentence is done for you as an example.

Today Ahmad woke up at …….

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Story Composition A (Model Answer)

Today Ahmad woke up at 7:00 am. The first thing he did after waking up is making the bed. Then, he went to the bathroom, washed his face, combed his hair, and brushed his teeth. After that, Ahmad got dressed. He wore his school uniform and headed to the kitchen for breakfast. He sat on the kitchen table all smiles. He had some cereals with milk and toast with butter. He seemed to enjoy his breakfast very much. After he finished his breakfast, he made sure to feed the dog. At eight o'clock in the morning, he left his house to go to school.

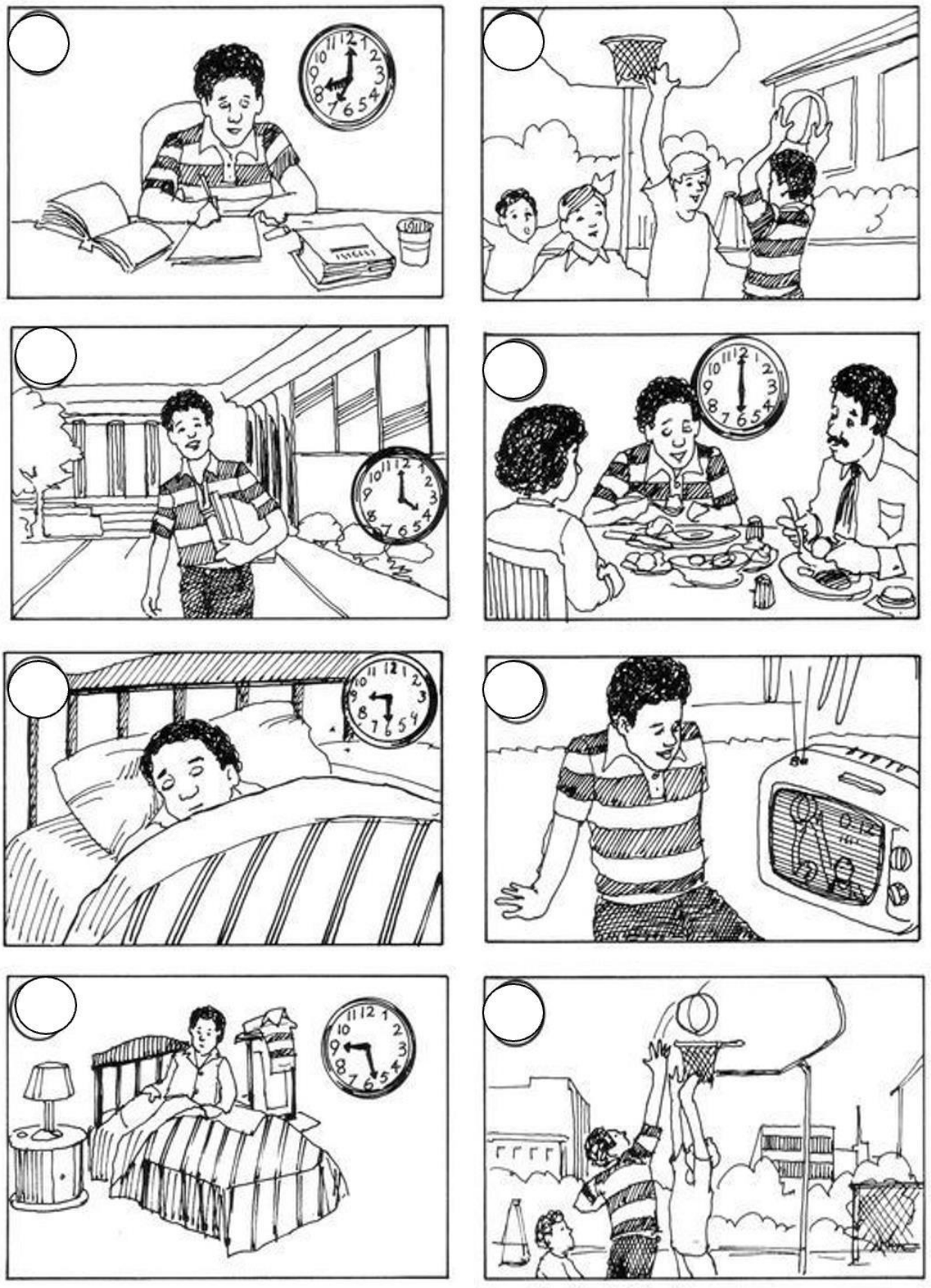
Appendix C: Task 1B

Working together collaboratively, you and your partner will have 30 minutes to:

First: put the sequence of events shown in the following pictures in the correct order.

Second: write a story of 100-150 words, describing the sequence of events.

Make sure to use a variety of vocabulary and describing words. Also, make sure to use correct grammar and spelling. The first sentence is done for you as an example.



Ahmad left school at

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Story Composition B (Model Answer)

Ahmad left school at 4 o'clock in the afternoon. After school, he went to the basketball court to play basketball with his friends. He met Khaled, Abdullah, and Saad. They split into two teams and played against each other. Ahmad felt excited and victorious when he shot a goal.

Ahmad went home at six o'clock in the evening to have dinner with his family. They all sat down together around the dining table and had a delicious dinner prepared by his mom. After he finished his dinner, he went to his room to do his homework, which took him about an hour.

Then, he watched some TV. Ahmad is a big fan of the sports channel. At 9:30 p.m., Ahmad went to his room to get ready for bed. He put on his pyjamas and laid down in bed. He was asleep five minutes later!

Appendix D: Essex University Ethical Approval

University of Essex

04/07/2023

Ms Bayan Almghamis

Language and Linguistics

University of Essex

Dear Bayan,

Ethics Committee Decision

Application: ETH2223-2234

I am pleased to inform you that the research proposal entitled "Mediation in The EFL Classroom: The Case of Saudi Learners' Use of Collaborative Dialogue" has been reviewed on behalf of the Ethics Sub Committee 3, and, based on the information provided, it has been awarded a favourable opinion.

The application was awarded a favourable opinion subject to the following conditions:

Extensions and Amendments:

If you propose to introduce an amendment to the research after approval or extend the duration of the study, an amendment should be submitted in ERAMS for further approval in advance of the expiry date listed in the ethics application form. Please note that it is not possible to make any amendments, including extending the duration of the study, once the expiry date has passed.

Covid-19:

Please note that the current Government guidelines in relation to Covid-19 must be adhered to and are subject to change and it is your responsibility to keep yourself informed and bear in mind the possibility of change when planning your research. You will be kept informed if there are any changes in the University guidelines.

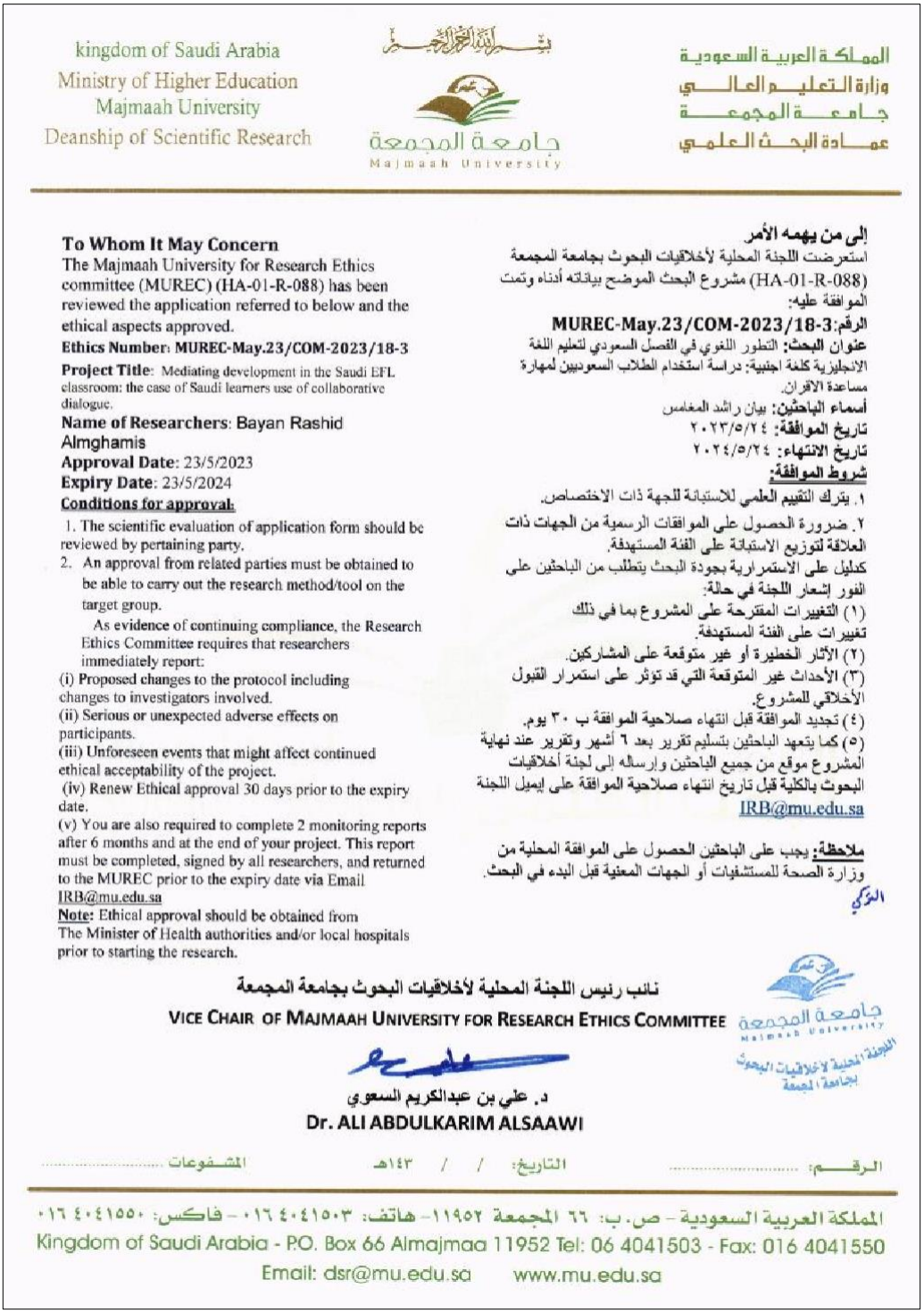
Yours sincerely,

Natalia Rodriguez Vicente

Colchester Campus
Wivenhoe Park
Colchester CO4 3SQ
United Kingdom

T 01206 873333

Appendix E: Majmaah University Ethical Approval



kingdom of Saudi Arabia
Ministry of Higher Education
Majmaah University
Deanship of Scientific Research

بسم الله الرحمن الرحيم

جامعة المجمعة
Majmaah University

المملكة العربية السعودية
وزارة التعليم العالي
جامعة المجمعة
عمادة البحث العلمي

To Whom It May Concern

The Majmaah University for Research Ethics committee (MUREC) (HA-01-R-088) has been reviewed the application referred to below and the ethical aspects approved.

Ethics Number: MUREC-May.23/COM-2023/18-3

Project Title: Mediating development in the Saudi EFL classroom: the case of Saudi learners use of collaborative dialogue.

Name of Researchers: Bayan Rashid Almghamis

Approval Date: 23/5/2023

Expiry Date: 23/5/2024

Conditions for approval:

1. The scientific evaluation of application form should be reviewed by pertaining party.
2. An approval from related parties must be obtained to be able to carry out the research method/tool on the target group.

As evidence of continuing compliance, the Research Ethics Committee requires that researchers immediately report:

(i) Proposed changes to the protocol including changes to investigators involved.
(ii) Serious or unexpected adverse effects on participants.
(iii) Unforeseen events that might affect continued ethical acceptability of the project.
(iv) Renew Ethical approval 30 days prior to the expiry date.
(v) You are also required to complete 2 monitoring reports after 6 months and at the end of your project. This report must be completed, signed by all researchers, and returned to the MUREC prior to the expiry date via Email IRB@mu.edu.sa

Note: Ethical approval should be obtained from The Minister of Health authorities and/or local hospitals prior to starting the research.

إلى من يهمه الأمر

استعرضت اللجنة المحلية لأخلاقيات البحوث بجامعة المجمعة (HA-01-R-088) مشروع البحث الموضح بياناته أدناه وتمت الموافقة عليه:

الرقم: MUREC-May.23/COM-2023/18-3

عنوان البحث: التطور اللغوي في الفصل السعودي لتعليم اللغة الانجليزية كلغة اجنبية: دراسة استخدام الطلاب السعوديين لمهارة مساعدة الاقران.

أسماء الباحثين: بيان راشد المغامس

تاريخ الموافقة: ٢٠٢٣/٥/٢٤

تاريخ الانتهاء: ٢٠٢٤/٥/٢٤

شروط الموافقة:

١. يترك التقييم العلمي للاستبانة للجهة ذات الاختصاص.

٢. ضرورة الحصول على الموافقات الرسمية من الجهات ذات العلاقة لتوزيع الاستبانة على الفئة المستهدفة.

كدليل على الاستمرارية بجودة البحث يتطلب من الباحثين على الفور إشعار اللجنة في حالة:

(١) التغييرات المقترحة على المشروع بما في ذلك تغييرات على الفئة المستهدفة.
(٢) الآثار الخطيرة أو غير متوقعة على المشاركين.
(٣) الأحداث غير المتوقعة التي قد تؤثر على استمرار القبول الأخلاقي للمشروع.
(٤) تجديد الموافقة قبل انتهاء صلاحية الموافقة ب ٣٠ يوم.
(٥) كما يتعهد الباحثين بتسليم تقرير بعد ٦ أشهر وتقرير عند نهاية المشروع موقع من جميع الباحثين وإرساله إلى لجنة أخلاقيات البحوث بالكلية قبل تاريخ انتهاء صلاحية الموافقة على إيميل اللجنة IRB@mu.edu.sa

ملاحظة: يجب على الباحثين الحصول على الموافقة المحلية من وزارة الصحة للمستشفيات أو الجهات المعنية قبل البدء في البحث.

التركي

نائب رئيس اللجنة المحلية لأخلاقيات البحوث بجامعة المجمعة

VICE CHAIR OF MAJMAAH UNIVERSITY FOR RESEARCH ETHICS COMMITTEE

جامعة المجمعة
Majmaah University
اللجنة المحلية لأخلاقيات البحوث بجامعة المجمعة

د. علي بن عبدالكريم السعوي
Dr. ALI ABDULKARIM ALSAAWI

الرقم: ..... التاريخ: / / ١٤٣هـ المشفوعات .....

المملكة العربية السعودية - ص.ب: ٦٦ المجمعة ١١٩٥٢ - هاتف: ٠١٦ ٤٠٤١٥٠٣ - فاكس: ٠١٦ ٤٠٤١٥٥٠
Kingdom of Saudi Arabia - P.O. Box 66 Almajmaa 11952 Tel: 06 4041503 - Fax: 016 4041550
Email: dsr@mu.edu.sa www.mu.edu.sa

Appendix F: Participants Information Sheet

University of Essex

Participant Information Sheet

Mediating development in the Saudi EFL classroom: the case of Saudi learners' use of collaborative dialogue

August 2023

My name is Bayan Almghamis and I am a postgraduate student, studying Applied Linguistics at the University of Essex. Before you decide whether or not to take part, it is important for you to understand why this research is being done and what it will involve. Please take time to read the following information carefully.

What is the purpose of this study?

We are investigating how Saudi university EFL students provide assistance to each other while engaging in a collaborative EFL tasks.

Why have I been invited to participate?

You have been invited to participate in this study because you represent the group of learners that this study aims to investigate which is adult EFL learners.

Do I have to take part?

Your participation in this study is strictly voluntary. If you do decide to take part, you will be asked to provide written consent. You are free to withdraw at any time, without giving a reason. Withdrawal with have no impact on [e.g., your marks, assessments, or future studies]. If you choose to withdraw, your data will be destroyed immediately. If you have a question about the ethical nature of this study, please contact the researcher, Bayan Almghamis (ba21355@essex.ac.uk)

What will happen to me if I take part?

This study requires participants to participate in a total of eight face-to-face sessions each lasting approximately thirty to forty minutes. One session will be a training session and four sessions will involve working in pairs and three sessions involving short language tests. In the collaborative work sessions, you will be given some EFL tasks which you will complete collaboratively with your partner. These sessions will be audio recorded so that I can then analyze the conversations as part of my postgraduate research. In addition, while these interactive sessions are taking place I, the researcher, will be observing your interaction and taking notes. Your words may be quoted or summarised in the findings of the study. You will not be identifiable as your real names and any personal data will not appear in this study.

What are the possible disadvantages and risks of taking part?

By participating in this study, the utmost care will be taken that no harm to your psychological wellbeing, physical health values or dignity will be affected. Taking part also means that participants must give up some of their free time. Please note that you will be involved in eight sessions each will last between 30-45 minutes.

What are the possible benefits of taking part?

The benefit of this study is that it will further our understanding of how Saudi university EFL students provide assistance to each other while engaging in a collaborative EFL tasks.

Will my information be kept confidential?

Only the researcher and the researcher's supervisor (see name and contact details below) will have access to the data. Your privacy will be respected at all times and all information collected will be anonymous and remain completely confidential. Pseudonyms or numbers will be used to anonymise participants. All data will be treated as personal under the 1998 Data Protection Act, and they will be secured electronically in my own laptop which contains a secure password.

What is the legal basis for using the data and who is the Data Controller?

Should you agree to take part in this study, you will be asked to sign a consent form before the study commences. The GDPR states that consent must be freely-given, specific, informed and unambiguous – given by a statement or a clear affirmative action.

The Data Controller will be the University of Essex and the contact will be the University Information Assurance Manager (dpo@essex.ac.uk).

Ethical approval

This project has been reviewed on behalf of the University of Essex Social Sciences Ethics Sub-Committee and has been given approval.

What will happen to the results of this study?

The results of this study will form part of the report for my dissertation at the University of Essex. Please remember that the results are anonymised and therefore participants will not be identifiable. If you choose to participate, a copy of this study can be sent to you upon request.

What should I do if I want to take part?

If you wish to take part in this study, please let me know via email Bayan Almghamis (ba21355@essex.ac.uk)

Concerns and complaints

If you have any concerns about any aspect of the study or you have a complaint, in the first instance please contact the researcher (see contact details below). If are still concerned or you think your complaint has not been addressed to your satisfaction, please contact the Departmental Ethics Officer (Dr Natalia Rodriguez, natalia.rodriguezvicente@essex.ac.uk). If you are still not satisfied, please contact the University's Research Governance and Planning Manager, Sarah Manning-Press (sarahm@essex.ac.uk).

Contact details

Researcher
Bayan Almghamis (ba21355@essex.ac.uk)
Supervisor
Dr Adela Gánem-Gutiérrez . (aganem@essex.ac.uk).

Appendix G: Sheet to Participate in Research

Ki ngdom of Saudi
Arabia Ministry of Education
Majmaah University
Dean s hip of

جامعة المجمعة

المملكة العربية
السعودية وزارة
التعليم جـامـعـة

MAJMAAH UNIVERSITY
CONSENT TO PARTICIPATE IN RESEARCH

جامعة المجمعة
إقرار موافقة بعد التبصير للمشاركة في بحث علمي

Titie: Mediating development in the Saudi EFL classroom: the case of Saudi learners' use of peer scaffolding

عنوان البحث:التطور اللغوي في الفصل السعودي لتعليم اللغة الانجليزية كلغة أجنبية: دراسة استخدام الطلاب السعوديين لمهارة مساعدة الأقران

Principal Investigator: Bayan Almghamis
Enai1: b.almehams. mu.edu.sa
Phone: 05646427 b0

Advisor Dr Ade la Ganem Gutierrez

الباحث الرئيس: بيان المغامس

05646427
80 :

b.aImqhams.mu.edu.sa : Y!

DrAdela Ganem Gutierrez : ! !

Exptanatioa aad Purpoee of tbe Research

We are investigating how do Saudi university EFL students provide peer scaffolding to each other while engaging in a collaborative problem solving activity.

نحن نهدف لدراسة الأنماط المختلفة لمساعدة الأقران بعضهم بعض في تطوير لغتهم الثانية أثناء العمل بشكل تعاوني علي حل نشاط لغوي.

Description of Procedures

You will be involved in 6 Lask solving sessions and one training session, each session will last for thirty minutes. In the task solving sessions, the learners will be divided into peers and then asked to solve a task cooperatively. While you are engaged in the face to face collaborative activity, the researcher will audio record each peer's

سوف تشارك في ٦ جلسات ن حل تمارين لغوية. مدة كل جلسة ما بين ٣٠ دقيقة. في جلسة حل التمارين سوف يقوم الباحث بتوزيع المتعلمين الي مجموعات. سوف يتم تسجيل محادثات المتعلمين أثناء حل التمارين بشكل تعاوني صوتيا.

Kingdom of Saudi Arabia
Ministry of Education
Majmaah University
Deanship of Scientific Research

جامعة المجمعة
Majmaah University

المملكة العربية
السعودية وزارة
التعليم جامعة
المجمعة
عمادة البحث العلمي

Potential Risks

Noe

Participation and Benefits

Developing reasoning skills.
Developing collaboration for learning skills.
Practicing speaking in English.

Questions Regarding the Study

الخطوره المحتمله من المشاركة:
لا يوجد خطورة

فوائد المشاركة:

تطوير مهارة الحوار باللغة الانجليزية.
تطوير مهارة التحدث باللغة الانجليزية.
تطوير مهارة العمل التعاوني.

أسئلة عن البحث:

_____ _____
Signature of Participant
Date

_____ _____
توقيع المشارك
التاريخ

*If you would like to know the results of this study, tell us where you want them to be sent:

Email: _____
or
Address:

_____

_____

** اذا كنت تريد الحصول على نتائج البحث، فضلا ضع الايميل اسفل:
الايميل: _____
العنوان:

_____

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Appendix H: Essex University Consent Sheet to Participate in Research

University of Essex

CONSENT FORM

Title of the Project: Mediating development in the Saudi EFL classroom: the case of Saudi learners' use of Collaborative Dialogue

Researcher: Bayan Almghamis (Department of Language and Linguistics)

Please initial box

1. I confirm that I have read and understand the Information Sheet dated August 2023 for the above study. I have had the opportunity to consider the information, ask questions and have had these questions answered satisfactorily. ☐
2. I understand that my participation is voluntary and that I am free to withdraw from the project at any time without giving any reason and without penalty. ☐
3. Participating involves being audio recorded while engaged in EFL collaborative tasks. In addition, Participating involves completing few short questionnaires and language test. ☐
4. I understand that the identifiable data provided will be securely stored and accessible only to the researcher and supervisor, and that confidentiality will be maintained. ☐
5. I understand that my fully anonymised data will be used in a report, which will summarise the findings of the project. The report will be submitted to the University of Essex as part of my coursework. ☐
6. I agree to take part in the above study. ☐

Participant Name	Date	Participant Signature
_____	_____	_____

Researcher Name	Date	Researcher Signature
_____	_____	_____

Appendix I: Past Simple Review

Past simple review

The past simple shows us that an action was in the past, not in the present. Regular past simple verbs have -ed at the end (e.g., called, played, arrived). Irregular verbs have a different form, usually with a different vowel sound. (e.g., wake → woke, break → broke, feel → felt).

Example: My parents called me yesterday.

We make the negative with didn't and the infinitive verb. Example: My parents didn't call me yesterday.

We make the question form with did and then the subject and infinitive verb. Example: Did you wake up early this morning?

Past continuous

- The past continuous shows us that the action was already in progress at a certain time in the past.

Example: What were you doing at 8 p.m. last night? I was studying.

This means that I started studying before 8 p.m. and continued after 8 p.m.

- The past continuous can also show that an activity was in progress for some time, not just for a moment.

Example: We were cleaning the house all morning.

- We make the past continuous with was or were and the -ing form of the verb.

Example: She couldn't come to the party. She was working. Three years ago, we were living in

my hometown. What were you doing this time last year?

Past continuous and past simple

- When we use these two tenses together, it shows us that the past simple action happened in the middle of the past continuous action while it was in progress.

Example: While I was studying, I suddenly felt sleepy.

- We often use these tenses to show an action interrupting another action.

Example: I broke my leg when I was skiing.

Appendix J: Present Perfect Review

When do we use the Present Perfect tense?

We use the present perfect for a past action whose time is not mentioned but is related to the present. We are not interested in its time but in the action itself.

Example: I have never been to London.

We often use the present perfect tense for actions that happened in the past, and that affect or result in the present.

Example: I've washed my hair. (My hair is wet now)

We use it for an action which began in the past and is still happening now.

Example: My grandparents have lived in Florence for sixty years. (They are still living in Florence.)

Just, Already, Since, Never, Ever, and Yet

Just, Already, and Yet are terms usually used in the Present Perfect tense. We use **'just'** to express a recently completed action.

Example: The guests have **just** arrived.

We use **'already'** to express that something has happened sooner than expected. Example: Is Adam going to buy a new car?

No, he isn't. He has **already** bought it.

We use **'yet'** in interrogative and negative sentences, and it suggests a time later than expected.

Example: Have you done your homework?

No, I haven't done it **yet**.

We use **'since'** when you are mentioning a time or event in the past and indicating that a situation has continued from then until now.

Example: I haven't seen Lacy since 2014

We use 'for' to say how long something has lasted. Example: I haven't seen him *for* two years.

Both **'never'** and **'ever'** are adverbs that express a time before now. However, **'ever'** means at any time, while **'never'** means at no time or not at any time.

Example: Have you **ever** been to New York?

I've **never** been to New York.

Appendix K: Task 2A

Fill in the gaps: Just, already, or yet

Names: 1-…….. Date: ……..Group number: …….

2- ……...

You will have 30 minutes to complete the following task collaboratively. Please make sure to use correct grammar and spelling.

A. Write *just*, *already* or *yet* in the gaps to complete the rules and examples.

1. Just is used in affirmative sentences for things that have happened very recently.

Example: I have just cut my hair. Do you like it?

2.....is used in negative sentences and questions to say or ask about things that haven't happened but probably will.

Example: Have you read Harry Potter .....? I haven't read Harry Potter .....

3.....is used in affirmative sentences to say something has happened before now.

Example: I have.....seen Titanic. It was a good movie.

B. Complete the dialogue with *just*, *already,* or *yet.*

Bianca: I've (1) ..... been invited to Jacob's

surprise party. Mary called me a few minutes ago. Have you been invited (2) ?

Isak: Yes, I've (3)..... been invited. I'm helping Mary plan the party.

Bianca: I haven't confirmed with Mary (4) ..... , but I think I will come.

Isak: Perfect! I have (5)..... put you on the list of names because I thought you would

come.

Bianca: Have you bought a gift for Jacob (6) .....?

Isak: No, I haven't bought a gift (7)....., but I'm going shopping tomorrow.

Bianca: I know what I want to buy for him, but I'm not sure how much it will cost (8) .....

I've (9) ..... checked my bank account. I've been paid from work, so money isn't an

issue.

Isak: Great, let's go shopping together. I've (10) .....saved money for a gift.

Bianca: Okay, see you tomorrow.

Answer the questions about the dialogue.

Example: Has Isak been invited to the party yet? *Yes, he has already been invited.*

1. Has Bianca been invited to the party yet? ……..

2. Has Bianca confirmed with Mary yet? ……..

3. Has Isak put Bianca on the list yet? …….

4. Have Bianca and Isak bought a gift yet? …….

Appendix L : Task 2B

Fill in the gaps: present perfect tense review

Names: 1-…….. Date: ……..Group number: …….

2- ……...

You will have 30 minutes to complete the following task collaboratively. Please make sure to use correct grammar and spelling.

Complete the sentences with the words from the box below. Some words may be used more than once.

never	ever	for	already	since	yet	just

1. It came to the teacher's attention that the students had not..... revised for the exam. He suspected that some of them had.....revised for an exam in their lives.

2.....the beginning of recorded history, humankind's close relationship with other animal species is obvious and unquestionable. Some say this relationship has defined us ..... our earliest origins, ... longer than we can possibly imagine.

3. Although the mine has.....recently been closed by the government, many former miners are demanding it be reopened, or they be given the compensation they have to receive from the government.

4. Has it ..... occurred to you that not only are you late for class, which of course has ..... started, but you have not..... given me your homework from last week's class also?

Answer the questions in sentence form using the words from the box in Exercise A as appropriate. Write one more related present perfect question of your own at the end and answer it.

2. What city have you visited recently?

.....

3. How long has it been since that trip?

.....

4. What is the most beautiful city you have ever visited?

.....

5. What city have you been to before but wouldn't like to return to?

.....

6. What city haven't you visited yet that you would like to?

.....

6.....?

.....

Appendix M: Language Development Immediate Post Test

Name……Age:…….. Level: …….

The purpose of the following test is to evaluate your language knowledge of topics that you have covered recently in your language studies. Please make sure to use correct spelling and grammar. Good luck ☺

Instructions:

- Complete the following passage by putting the verb in brackets in the appropriate form.
- The answer could be one word, two words or three words.
- The first gap is done for you as an example.

An E-mail from a Friend To: Sara

Subject: Catching up Hi!

I have been meaning to write for ages, and finally, today, I'm actually _____doing____(do) something about it. Not that I'm trying to (1) _____(make) excuses for myself, it's been really hard to (2) _____(set) down and write, as I have been moving around so much. Since we (3) _____(see) each other last time, I (4) _____(unpack) my bags in four different cities. This job (5) _(turn) out to be more of a whirlwind than I expected, but it's

all good! while I (6) _____(replay) on some emails this morning, I suddenly fell asleep and woke up two hours later. So, it is now 10:30 pm, and I am struggling to (7) _____(sleep), so I thought I would write you this so long waited email.

I (8) _____(move) from London to Prague to (9) _____(set up) a new regional office there. I (10) _____(never-be) to Prague before, and you know how I have always- wanted to go to Prague, but maybe I (11) _____(imagine) Prague in spring when I used to (12) _____(talk) about that. Last winter in Progue (13) _____(is) really hard, with minus 15 degrees in the mornings and dark at 4:00 in the evening.

From there, I was on another three-month mission to oversee setting up the office in New York. Loved, loved, loved New York! It's like being in one big TV show, as everywhere looks just a little bit familiar. I (14) _____(do) every tourist thing you can think of when I (15) _____(not-work), I spent most of my salary on eating out. It was hard to leave for the next job; New York is the most fun city I (16) _____(ever-be) to.

So, then I (17) _____(post) to LA by the company, which felt like a whole other country compared to the East Coast. I could definitely get used to that kind of outdoor beach lifestyle.

Still, I didn't spend as much time getting to know California as I could have because I (18) _____(fly) back to see my friends in New York every other weekend. I (19) _____(spend) three months in LA, and then I was off again to Dubai, which is where I am now. Dubai feels like you are living in a city from the future. There are skyscrapers everywhere, and the streets are wide and clean. I (20) _____(never-see) a place like Dubai in my life. There is so much diversity here, and the locals are very friendly. While I (21)

_____(shop) in Dubai Mall, I (22) _____(meet) my new friend Fatema. She works at the information center. She is adorable, and we (23) _____(go) out together a couple of times during the last few weeks. I think the company wants me to stay in Dubai for a while, and I don't mind at all, even though the summer in Dubai is scorching, because they have air conditioners everywhere. Since I am staying in Dubai for a while, why don't you come and (24) _____(visit)? It will be so much fun!

Anyway, tell me all your news, and I promise not to leave it so long this time! Lots of love,

Noor

Immediate post test answers sheet

1.	make (distractor)	13.	was
2.	sit (distractor)	14.	did
3.	saw	15.	wasn't working
4.	have unpacked	16.	have spent
5.	has turned/ turned.	17.	was posted
6.	was replaying	18.	was flying
7.	sleep (distractor)	19.	spent
8.	moved	20.	have never seen
9.	set up (distractor)	21.	was shopping
10.	have never been	22.	met
11.	was imagining	23.	went
12.	talk (distractor)	24.	Visit (distractor)

Appendix N: Language Development Delayed Post Test

Name……Age:…… Level: …….

The purpose of the following test is to evaluate your language knowledge of topics that you have covered recently in your language studies. Please make sure to use correct spelling and grammar. Good luck ☺

Instructions:

- Complete the following passage by putting the verb in brackets in the appropriate form.
- The answer could be one word, two words or three words.
- The first gap is done for you as an example. An E-mail from a friend

To: David

Subject: Coming to Riyadh

Hi, it has been a while! How are you doing? Sorry I did not _____answer____(answer) your call yesterday. I (1) _____(watch) TV when you called and could not hear the phone ringing. I'm dropping you an email to say 'hi' and tell you about what I've been up to.

My biggest news is that I (2) _____(just-join) a gym! Last week, As I (3) _____(leave) my office, I saw an old friend 'Khaled' I am sure you remember him. He was on his way to the gym when I stopped him to say 'hi'. We (4) _____(talk) for a few minutes, and he (5) _____(recommend) that I join the gym too since it was very

close to my office.

Things at work are going well. Since we saw each other last time, I (6) _____(finish) two projects and am (7) _____(work) on the third one. A friend of mine (8) _____(invite) me to play tennis on Friday evening. Would you like to join us? I (9) _____(never-play) tennis before; I think it would be nice to try a new sport! If you decided to join us for tennis, how about we (10) _____ (meet) at the tennis court at 6:00 pm).

There is a new Shawarma place in town! Last week I (11) _____(go) there with Abdulaziz and tried their Shawarma; it is delicious! The best I (12) _____(ever try) before. After tennis, we could have dinner there.

Also, we need to (13) _____(decide) what to do on Saturday. We could either go camping in the desert (I'm sure you would love the beautiful scenery) or stay in the city and watch a football match. Alhilal VS Alnassr match will (14) _____(start) at 7:15 pm. Which activity would you rather do?

I wanted to ask your advice about something. I (15) _____(just start) to learn Italian, but I only have one hour of lessons every week. Can you give me some advice on how to improve my Italian as quickly as possible? Just one final thing. You (16) _____(tell) me in your last message that you have a new scooter. Could you bring it with you to Riyadh? I would love to have a go at it.

All the best, Ahmad

To: Ahmad Ali

Subject: Re: Coming to Riyadh

Hi Ahmad, Thanks for your email. It is great to hear from you. I can't wait to meet! So, about Friday ... I would love to join you for tennis but while I (17) _____(play) football last week I (18) _____(twist) my ankle, and the doctor (19) _____(advise) me not to play sports for at least two weeks.

On Saturday, I would prefer to go camping in the desert. I'm not a football fan, to be honest. The camping trip sounds much more relaxing! I am sure that I will enjoy the weather in Riyadh. It is so cold in London when I woke this morning, it (20) _____(snow).

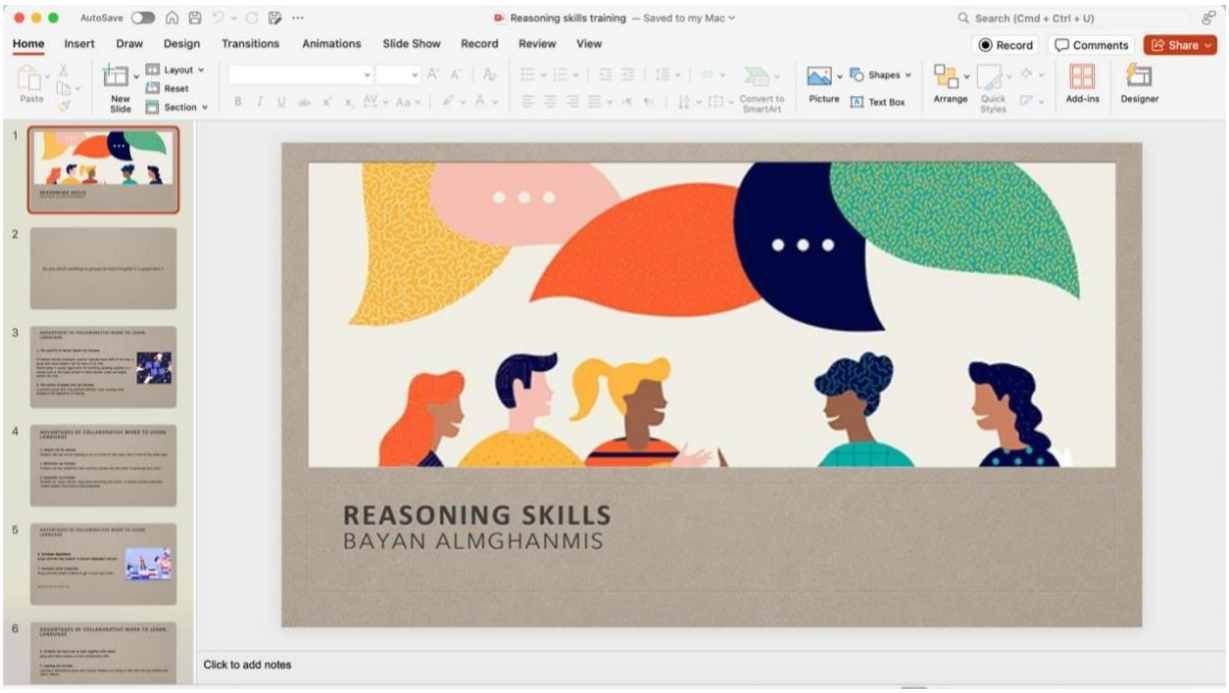
I am really glad to hear that you have joined the gym! It is going to be good for your health. So, you are learning Italian? I'm impressed! My friend Nasser used to take French classes last year and he (21) _____(improve) really fast because he used to practice his English outside the class. Why don't you try and find an Italian to practice speaking with? If you find someone who (22) _____(speak) Italian and wants to learn English, you could do a language exchange. It is the best way to learn. You (23) _____(ask) about my scooter.

I'm sorry, but I can't (24) _____(bring) it with me to Riyadh. I have loads of stuff, and it is too big to fit in my suitcase.

I'm looking forward to seeing you! Best wishes,

David

Appendix O: Screenshot of the presentation used in the reasoning skills training



Appendix P: Reasoning Skills Training Task 1

Are these useful rules for discussion?

Rules	Yes, No or Maybe (give your reasons!)
1. The best reader should decide.	
2. Ask everyone in turn for their opinion.	
3. Ask for reasons why.	
4. Talking takes too much time – write the first idea	
5. Be critical of the idea, not the person who put it forward.	
6. If people challenge your ideas, you can give reasons for them.	
7. Choose as quickly as you can so that you get finished.	
8. Discuss all the alternatives before deciding.	
9. If a wrong decision is made, point out who is to blame.	
10. If you hear a good reason, you can change your mind.	
11. If you know something important, keep it to yourself. Otherwise people cheat.	
12. If you want to be heard you have to speak forcefully or shout.	
13. Stick your fingers in your ears – you know your own mind!	
14. Make sure the group agrees after talking.	
15. Make up your own mind straight away and stick to it.	
16. Respect other people's ideas.	
17. The group tries to agree before making a decision.	
18. The most naturally talkative person should speak most.	
19. The group should try to stick to the topic.	
20. The oldest person should lead the talk.	
21. There should be a leader and the group does what they say.	
22. You should always agree with your friends.	
23. All relevant information is shared among the group.	
24. Build on what the previous speaker said.	
25. Be prepared to change your mind - it shows you have listened and can accept good reasons.	
26. Look at and listen to the person who is talking.	
27. If you don't like someone, make sure they don't get heard.	
28. In the end it doesn't matter what is decided. Whatever is ok.	
28. If someone gives a reason you don' t think is good, you should question it.	

Our Ground Rules for Exploratory Talk

Names of our group:

Talk together to decide on your group's suggested ground rules for talk.

Think carefully about how you can best put your rules in written form.

When your list is ready, decide together on an order of importance for your rules.

	Ground Rule for Talk	Order of importance A B C D E F
1		
2		
3		
4		
5		
6		

Please discuss and comment on these questions:
Was the way your group talked successful?
Did people follow the ground rules?
What suggestions would you make to improve the quality of your group's discussion?

Appendix Q: Reasoning Skills Training: Task 2

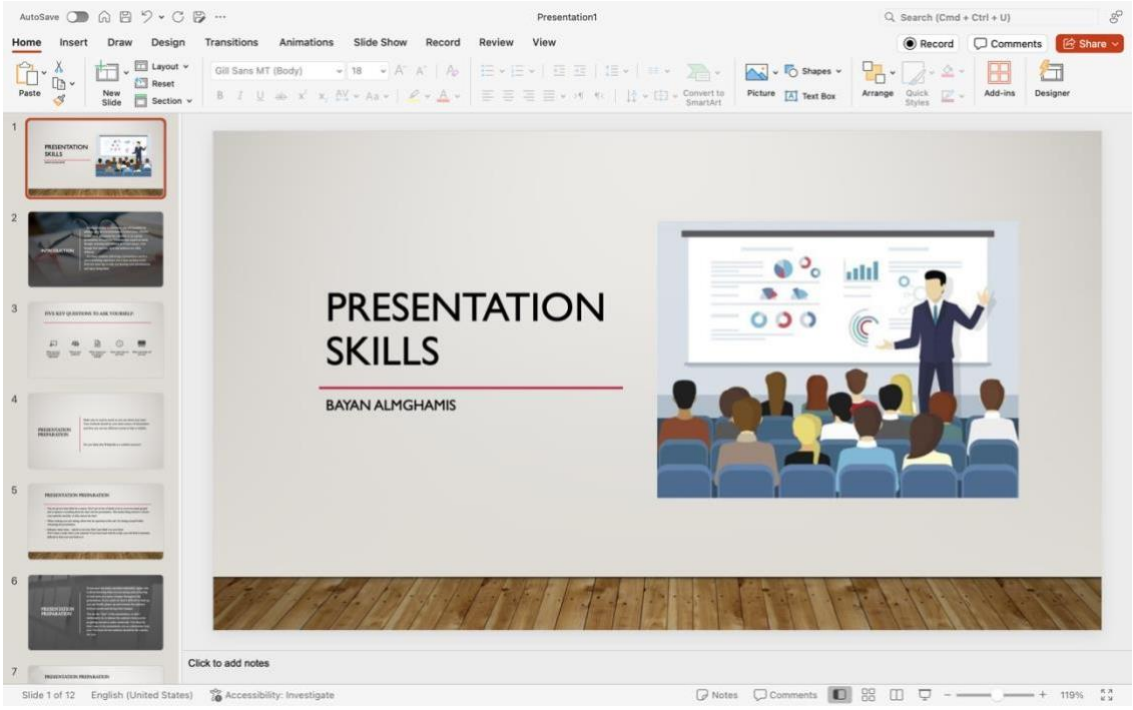
'Ihlking Points: Money

Talk together to share your ideas.
Listen carefully and think about the reasons others give.
Can you work towards a group agreement to share with everyone

Are these statements true, false, or is your group unsure? Prepare a group response with your reasons.

1. Money causes a lot of problems for people.
2. Money does not make people happy.
3. Everyone should have enough money, but not too much.
4. It is important to have rich people because they support all sort SOf charities to help others.
5. Poor people are lazy.
6. All children the same age should have the same pocket money.
7. We can think of things to do with the money if we won the Lottery.
8. Some people, like footballers, get paid too much.
9. If you have a problem, money usually helps.
10. A sensible ambition is to get rich.

Appendix R: Screenshot of The Presentation Skills Training Session Slides



Appendix S: Presentation Skills (Task 1)

Task 1

Based on what you have learned in today's workshop decide which of the following statements is a good presentation tip or not by ticking yes or no Infront of each statement.

1. I should immediately go to the point and not give introduction; an introduction in the presentation is a waste of time.	Yes	No
2. Wikipedia is not a reliable resource.	Yes	**No**
3. I should include in the slides all the information and details that I will present about.	Yes	**No**
4. I should rehearse the presentation out loud as much as I can	Yes	**No**
5. While a presentation I should be facing the audience the whole time.	Yes	**No**
6. While preparing for the presentation I should include as much as I can of visual aids such as pictures and videos so I can speak less during the presentation.	Yes	**No**
7. If I am doing a group presentation and I want to link the speech to another group member, I should just end my part by stop talking and looking to the next group member that should present next.	Yes	**No**
8. While preparing for the presentation I like to include pictures in the slide that I like for decoration.	Yes	**No**
9. During the presentation I should divide my look between the slides and the audience	Yes	**No**
10. I should not introduce myself because it is irrelevant.	Yes	**No**
11. While giving the presentation I should Pause at the ends of key points and slides. This gives you time to gather yourself and prepare for what comes next.	Yes	**No**
12. While the presentation I could say "There's time for one more question" to signal that I am ending the questions sections.	Yes	**No**

Appendix T: Presentation Skills (Task 2)

Task 2

Presentation Topics

1. Effective language learning habits
2. Benefits/drawbacks of playing video games 3. How to make a good first impression

4. Your favorite restaurant
5. A product recommendation
6. A book or movie recommendation

B. Take 2 minutes to write a simple outline for your presentation. The outline should include the main idea and a list of supporting ideas with additional examples and explanations. Write keywords and phrases and not complete sentences as in the example below.

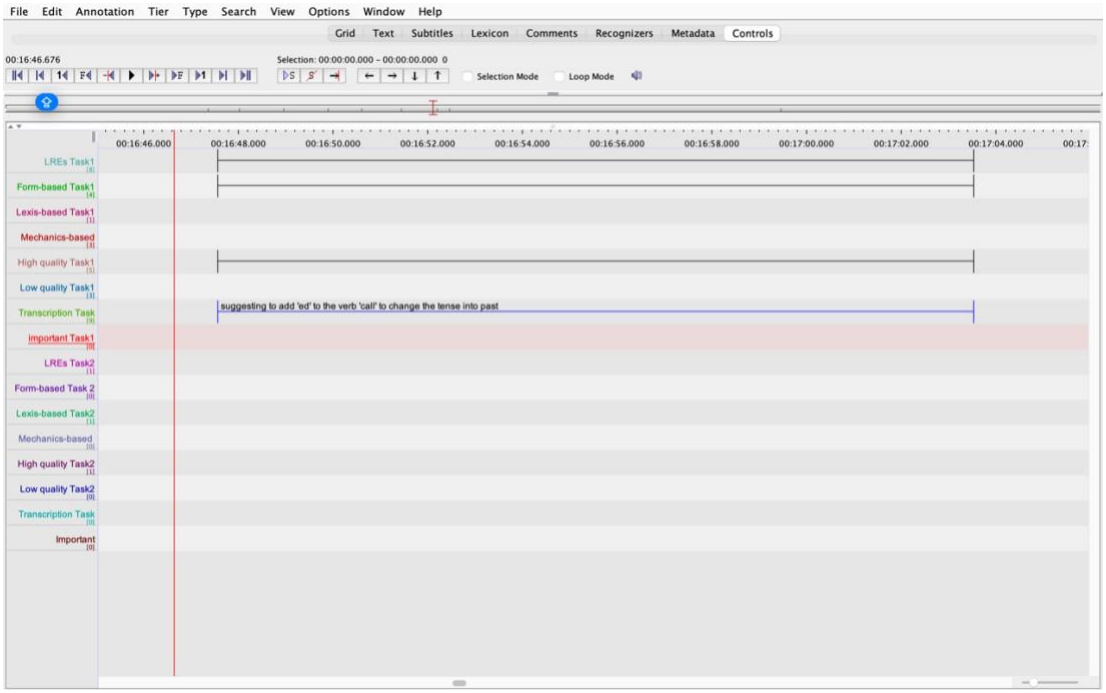
Example Outline

Main idea: *Japan – good travel choice*
Supporting idea 1: *good sightseeing – Mt. Fuji, temples, and traditional villages*
Supporting idea 2: *delicious food – ramen, sushi, and Michelin star restaurants*
Supporting idea 3: *local people – Friendly, polite, and fun-loving.*

Your Outline

.....

Appendix U: Analysing an Audio Record on ELAN (Screenshot from This Study)



Appendix V: Transcription Conventions Adapted from Clift (2016: 53–63)

[	Indicates a point of overlap onset, whether at the start on an utterance or later
=	Indicates no discernible silence between speaker lines
(0.5)	Silence in tenths of a second (as measured in Elan)
(.)	A micropause
?	Rising intonation
,	Continuing intonation
:	Indicates the prolongation of the sound preceding them
word	Indicates stress or emphasis
↓↑	Indicate sharp rise or fall in pitch
(( ))	Transcriber's description of events
° °	Indicates that the talk between the degree signs is softer than the talk around it