

Investigating Common L2 Schema Effects On ESL Learners' Responses To Reading Comprehension Task

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Abstract:

The current study examines the effects of L2 schema on ESL learners' reading comprehension and academic writing in the Pakistani higher education context. Using a qualitative design, data were collected from 26 BS English Linguistics students at the Islamia University of Bahawalpur through reading comprehension and writing tests.¹ The analysis was carried out using a schema-based rubric, revealing that while learners showed developing content and linguistic schemata, major deficiencies existed in formal, cultural, and inferential schemata. L1 transfer appeared as the most influential factor affecting performance which was followed by grammatical, pragmatic, and logical connector schemata. These schema gaps negatively affected text organization, coherence, inference-making, and academic conventions in writing. The findings confirm a strong interrelationship between schema activation, reading comprehension, and academic writing, highlighting the need for targeted schema-based instructional interventions to improve graduate-level ESL academic literacy.

Keywords: L2 Schema, ESL Learners, Reading Comprehension Task, L1, Academic Writing.

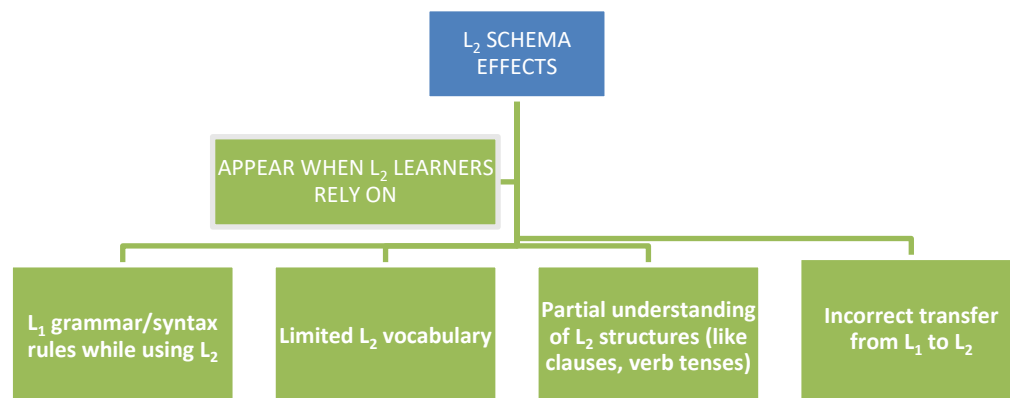
1. Introduction

Academic writing proficiency is a critical skill for ESL learners at the graduate level, yet it remains a persistent challenge, particularly within the Pakistani context. Linguistic challenges reported in prior research include limited vocabulary, grammatical errors, incorrect sentence structures, inadequate cohesion and coherence, and inappropriate use of academic conventions (Umar, Ajmal, & Ajmal, 2023; Ahmad Shah, Farid, & Israr, 2024; Ramzan, Mushtaq, & Ashraf, 2023). Beyond these structural issues, learners often experience writing-related anxiety, low self-efficacy, and avoidance behaviors, which further constrain their writing development and motivation to engage in academic tasks (Ubaid Ullah Ubaid et al., 2023; Anwar, Zahid, & Khan, 2023) leading to comprehension and L2 schema-based problems. These problems prove to be the psychological barriers for the learners to accommodate well with the L2 forms.

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In this connection, the studies to explore comprehension and L2 schema-based issues of Pakistani learners have not been conducted so far. It is necessary to explore and explain the deficiencies of these learners in comprehending L2 forms by highlighting their schema-based lacks. L₂ schema effects refer to the influence of a student's existing language knowledge (L₁ and interlanguage) and limited exposure to L₂ (English) on how they interpret vocabulary, understand text structure, formulate grammar, and express ideas in writing. These effects appear in the following form:



Learners' prior knowledge and experiences serve as critical scaffolding for L2 schema activation in academic writing. Content schema derived from disciplinary knowledge allows students to integrate familiar concepts into their writing, thereby demonstrating subject mastery. Additionally, cultural schema shaped by prior exposure to academic conventions influences their ability to align with discourse norms such as citation practices, hedging, or critical argumentation. Learners with broader exposure to English-medium education often show stronger formal schema, enabling them to structure their essays effectively. Conversely, learners with limited prior academic exposure may struggle to transfer their content knowledge into linguistically and rhetorically appropriate forms, underscoring the uneven influence of prior experiences on schema activation and writing proficiency.

Thus this paper undertakes the given set of research questions:

- i. What are the common L2 schema effects on ESL learners' written responses?
- ii. What impact do these effects leave on ESL learners' L2 competence?

2. Literature Review

The concept of L2 schema refers to the mental frameworks learners develop for organizing knowledge, interpreting information, and linking new input to prior experiences in the target language. Research suggests that activating L2 schema through reading not only enhances comprehension but also positively impacts writing proficiency by providing learners with cognitive scaffolding for text structure, vocabulary usage, and argumentation strategies (Cao, Zhong, & Wang, 2025; Xu, 2025).

Moreover, schema theory offers critical insights for curriculum design and instructional practices in L2 reading. As Kirschner and Hendrick (2020) argue, meaningful learning occurs when new content is linked to prior knowledge leading to the accumulation and organization of knowledge structures. Each structure exists as an object, idea or event, and also as a set of

attributes that connect to the other structures of knowledge (Rasakumaran and Patrick, 2019). As Kirschner and Hendrick (2020) note, “For optimal learning, new knowledge must be related to the knowledge that students have already acquired.”

To present the nature of schemata, Rumelhart’s (1977, 1980) work is noteworthy. According to him, schemata have variables as they represent concepts with flexible, context-dependent features. Second, schemata are hierarchical and embedded as higher-level schemata (e.g., “teach”) can encompass sub-schemata (e.g., “lesson plan” or “classroom”). Third, schemata range in abstraction as abstract schemata can be accessed through more concrete or specific ones. For example, the concept of “school” may be linked through educational or architectural schemata. Fourth, Schemata represent knowledge rather than definitions for they encapsulate experiential, encyclopedic knowledge, enabling learners to draw semantic connections beyond rigid dictionary meanings. Rumelhart (1980) concluded that schemata exist at all cognitive levels, from cultural norms to letter recognition, emphasizing their foundational role in cognitive architecture.

Similarly, Anderson (1976) integrated schema theory into educational psychology, particularly within reading comprehension. He emphasized the interplay between bottom-up and top-down processing. Bottom-up processing involves decoding information directly from the text without prior contextual understanding. Top-down processing utilizes existing schemata to interpret and infer meaning from new information. According to him, effective learning occurs when both processes operate in tandem. When learners lack relevant schemata, comprehension is impaired, regardless of their ability to decode words.

3. Methods

The present study is a qualitative design. This design involves taking test (see Appendix) of ESL learners studying at graduate level in the Department of English Linguistics, the Islamia University of Bahawalpur. The criteria used to select the sample of the study were:

- i. Graduate students enrolled in BS English Linguistics Program
- ii. Had passed half of the semesters
- iii. Had intermediate English proficiency
- iv. Had reached the semester when they receive content-specific knowledge
- v. Had nice understanding of their academic domain
- vi. Had exposure to various academic reading and writing tasks

The sample of the study was purposively selected from BS Program 6th Semester. 26 students turned out to be the participants who were involved in the research process. Participants were required to take a test that assessed their academic reading and writing skills. The test contained structured tasks aligned with the research aim, such as reading comprehension and essay writing, to reveal learners’ actual level of proficiency. Tests ensured a holistic picture of learners’ current L2 competence.

The test provided quantitative performance scores in academic reading and writing. The study was conducted with a relatively small cohort of graduate-level ESL learners from a single institution. While the sample provided valuable insights into the targeted population, the limited size and context restrict the generalizability of the findings to broader ESL populations, including learners at undergraduate levels or in different cultural or institutional settings. The study deliberately focused on graduate-level ESL learners enrolled in academic programs to investigate the effects of schema activation on advanced academic writing

proficiency. This intentional boundary allowed for concentrated analysis of higher-order language skills in a specific academic context.

The importance of tests lies in i) providing the opportunity to explore L₂ schema effects on participants' reception, comprehension and production of English language; ii) facilitating the process of planning Intervention in future; and iii) adapting appropriate materials for the future Intervention. Thus, the descriptive analysis of tests of these learners proved to be very insightful and helped in knowing the participants' lacks and learning needs. This insight will be significant to plan the IRT intervention, select text-types with end exercises and set the appropriate tasks to let the participants have better chances to improve their lacks.

The test observation was done manually with help of following rubric:

Sr. No.	Topic	Categorised Schema	Justification	Development Status
1	Background Knowledge	Content Schema	Relates to activating learners' prior knowledge to understand new text.	Developing → Developed (moved from fair levels to strong "good/very good" performance)
2	Important Ideas	Formal Schema	Involves identifying main concepts, definitions, and explanations.	Developing (improved to good levels but limited "very good" performance)
3	Inferring	Content Schema	Requires linking prior knowledge with reasoning to derive implicit meaning.	Developing → Developed (growth into "good/very good" with some "excellent")
4	Monitor and Clarify	Cognitive Schema	Engages learners' metacognitive skills in reconstructing meaning and checking comprehension.	Developing (steady progress but mostly "fair" and "good")
5	Predict and Set Purpose	Cognitive Schema	Involves higher-order thinking to anticipate meaning and guide understanding.	Developing → Developed (appearance of "very good" and "excellent" levels)
6	Questioning	Linguistic Schema	Depends on use of correct sentence structures and interrogative forms to explore meaning.	Developed (significant improvement to "good/very good")
7	Story Structure	Formal Schema	Focuses on organization of narrative texts, plot, and textual conventions.	Developing → Developed (majority reaching "good" with some "very good")
8	Summarise	Cognitive Schema	Requires condensing information and reconstructing meaning at a higher-order level.	Developing (progress visible but not many at "very good")
9	Text	Formal	Involves recognition of	Developing (shift

	Structure	Schema	organizational patterns and conventions in texts.	toward “good,” limited “very good”)
10	Visualise	Cognitive Schema	Involves mental representation and meaning reconstruction beyond literal text.	Developing → Developed (more learners reached “good/very good”)

4. Analysis

4.1. Tests Scores of Reading Comprehension Task: The analysis of the tests was conducted qualitatively which was quantified and presented in tables and graphs. The obtained scores on each schema out of 10 marks in total are listed below:

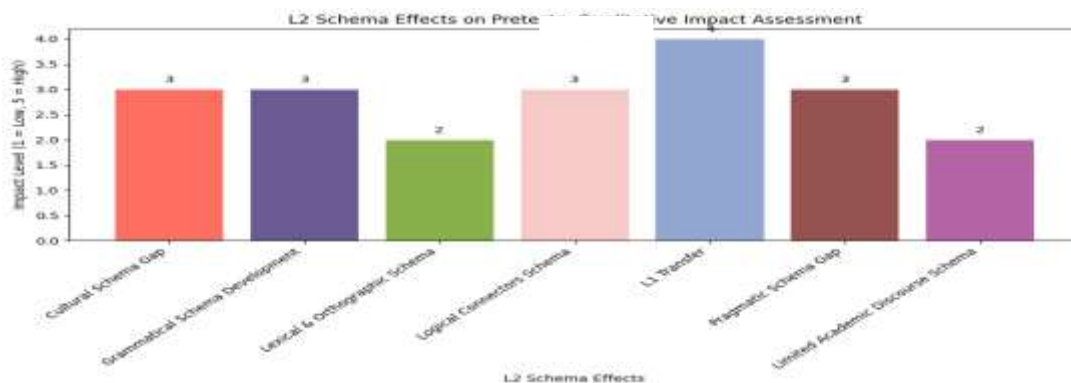
Sr.#	Observation	Tests Scores	Development Status
1.	Content Schema Reference to familiar concepts such as death, cure, life, diseases, science, etc.	4	Developing
2.	Formal Schema Use of explanation formats like listing causes/effects or describing processes.	2	Under-developed
3.	Linguistic Schema Use of grammar, vocabulary, and sentence structure	5	Developing
4.	Lexical Schema Use of the right (meaning-making) vocabulary, connectors and cohesive devices	4	Developing
5.	Inferential Schema Ability to draw inferences beyond explicit text (e.g., future hopes, rejuvenation, medical science progress).	3	Under-developed
6.	Cultural Schema Difficulty or success in interpreting culturally unfamiliar concepts (e.g., cryogenics, entombment, rejuvenation)	2	Under-developed
7.	Task Schema Understanding of how to complete comprehension tasks based on instructional prompts.	5	Developing

- i. Content Schema (4) Observation: Students can refer to familiar concepts such as death, cure, life, diseases, and science. This score indicates medium to low understanding of these schemas and can get the related background knowledge activated leading to developing connections to the text. Thus, this schema is in developing state.
- ii. Formal Schema (2) Observation: Test scores are low and depict participants' incompetence to present academic explanation formats such as listing causes/effects and describing processes. This low score depicts that formal schema processing is a challenge for the participants. Thus, this schema is under-developed.

- iii. Linguistic Schema (5) Observation: These scores reflect participants' capacity to integrate linguistic competence with comprehension that is better. The participants exhibit medium understanding of L2 grammar, vocabulary, and sentence structure and they could manage to reduce L1 interference to much extent. Thus, this schema is in developing state.
- iv. Lexical Schema (4) Observation: Like content schema, lexical schema scored between medium to low. This score indicates participants' L2 competence in terms of vocabulary usage, including connectors and cohesive devices. Thus, the participants need to be more precise in choosing words that support meaning-making and discourse flow. More practice is still needed in paraphrasing and using advanced academic vocabulary. Thus, this schema is in developing state.
- v. Inferential Schema (3) Observation: The participants have shown low ability to draw inferences. This mid-range score suggests that inferencing remains a challenging area requiring further scaffolding. Thus, this schema is under-developed.
- vi. Cultural Schema (2) Observation: Like content schema and formal schema, participants face a considerable challenge to process culturally unfamiliar concepts like cryogenics, entombment, and rejuvenation. Such novel cultural references in academic texts become barriers to comprehension. Thus, this schema is under-developed.
- vii. Task Schema (5) Observation: Like linguistic schema, this score indicate participants' understanding of how to complete comprehension tasks to be medium. Their understanding to follow instructional prompts and applying reading strategies effectively is medium and they still need to practice the task multiple times to improve task-schema development. Thus, this schema is in developing state.

4.2. Impact of L2 Schema Effects on Tests

The L2 schema effects identified in all tests leave impact on students' performance. This impact has been measured keeping in view the number of occurrences of each L2 schema effect on these tests. The bar chart titled "L2 Schema Effects on Tests: Qualitative Impact Assessment" provides a visual representation of the qualitative assessment of various second language (L2) schema effects on learners' test performance. The chart assesses the impact level of seven different schema categories, measured on a scale from 1 (low) to 5 (high). Each bar represents one L2 schema effect and is annotated with its corresponding impact score. The analysis below offers a detailed interpretation of the trends, patterns, and implications represented in this data visualization.



Each of these categories reflects a distinct type of knowledge or skill that learners bring or fail to bring with them when acquiring a second language, and how these affect their performance during tests.

Explanation of the Impact:

i. Highest Impact: L1 Transfer

The most prominent finding from the chart is the high impact score (4 out of 5) attributed to L1 Transfer. This indicates that the influence of a learner's first language (L1) on their L2 performance is substantial. It may manifest as either positive transfer (facilitating learning through similarities) or negative transfer (interference due to differences). The high score suggests that L1 interference remains a significant challenge for learners, impacting grammatical structure, vocabulary use, or even discourse patterns. Educators need to be particularly mindful of these transfer effects when designing instruction or assessments.

ii. Moderate Impact Categories

A cluster of four schema categories, Cultural Schema Gap, Grammatical Schema Development, Logical Connectors Schema, and Pragmatic Schema Gap, all received a moderate impact score of 3. This suggests that each of these areas plays a meaningful but not overwhelming role in learners' test performance.

- a. Cultural Schema Gap refers to the lack of cultural background knowledge that may hinder comprehension, especially in reading and listening tasks. The moderate impact indicates that while not the most severe issue, it still poses a barrier for some learners.
- b. Grammatical Schema Development emphasizes learners' mastery of syntax and morphology. A score of 3 reflects that grammatical errors are present and affect performance, but not to the extent of L1 transfer issues.
- c. Logical Connectors Schema relates to the use and understanding of discourse markers (e.g., however, therefore, although). These are crucial for cohesion and coherence in both written and spoken texts. The moderate score suggests learners may struggle to use these appropriately or to interpret them correctly, affecting overall comprehension and fluency.
- d. Pragmatic Schema Gap captures the learners' ability to use language appropriately in different social contexts (e.g., formality, politeness strategies). The impact of pragmatics is important for communicative competence, and a score of 3 suggests that such gaps can lead to misinterpretation or pragmatic failure, especially in interactive tasks.

iii. Lowest Impact: Lexical & Orthographic Schema and Limited Academic Discourse Schema

Two schema effects 'Lexical & Orthographic Schema' and 'Limited Academic Discourse Schema' have received the lowest impact score of 2, indicating a relatively lesser effect on pretest performance. These effects are discussed below:

- a. Lexical & Orthographic Schema involves vocabulary knowledge and spelling. While essential for language competence, this lower score may indicate that test items were less sensitive to spelling errors or that basic vocabulary was already accessible to most learners.
- b. Limited Academic Discourse Schema reflects difficulty in using or understanding academic styles of communication, such as structured argumentation or formal tone. The low score might suggest that the pretest

tasks did not heavily emphasize academic language, or that learners were somewhat prepared in this domain.

5. Discussion

The analysis sheds light on important findings. First, limited lexical schema constrains their ability to select precise academic vocabulary, cohesive devices, and discipline-specific terminology. Second, linguistic schema deficiencies, such as persistent grammatical errors or L1 interference in syntax, hinder the production of accurate and complex sentences. Third, formal schema gaps manifest when learners struggle to organize writing according to academic conventions, including cause-effect reasoning, comparative structures, and argumentation. Finally, cultural schema limitations restrict their ability to appropriately frame arguments within the norms and expectations of the academic community. Together, these challenges result in writing that may lack coherence, academic rigor, and intercultural appropriateness.

What is revealing is that most participants are generally able to activate relevant prior knowledge, which aids comprehension. However, partial understanding, language expression challenges, and occasional overgeneralization or interference from incorrect prior knowledge are significant barriers. These findings suggest a need for targeted support to improve students' ability to accurately align their prior knowledge with new content and to better express their understanding in the L₂. Teachers might consider emphasizing vocabulary development, conceptual clarification, and strategies to handle misconceptions to further enhance learning outcomes.

There exists a reciprocal and interdependent relationship between L2 schema, reading comprehension, and academic writing ability. Reading comprehension relies heavily on the activation of content, formal, and cultural schema, which in turn provide the cognitive models for structuring written output. As learners engage with texts, they internalize organizational patterns, argument structures, and vocabulary that later inform their academic writing. Conversely, academic writing requires learners to reproduce and extend these schemas by applying them in productive tasks. In this way, L2 schemas act as a bridge: they support deeper comprehension of complex texts and simultaneously serve as the framework for producing coherent, academically appropriate writing. Thus, schema development is not only foundational for reading but also essential for writing proficiency.

Consistent with the principles of schema theory articulated by Carrell and Eisterhold (1983), the results confirm that comprehension and production in L2 are not passive decoding processes but active interactions between text and the reader's cognitive structures. Learners in the experimental group consistently scored between seven and eight across all schema categories in posttests, while control group learners remained in the five to seven range. These findings parallel earlier work showing that activating background knowledge through structured strategies leads to more successful comprehension outcomes (Carrell & Eisterhold, 1983; Khartite, 2021). However, this study extends that body of work by demonstrating that such activation also translates into measurable gains in academic writing proficiency, a dimension that has often been overlooked in schema-focused research (Shen, 2008; Zhang, 2018).

One of the central insights concerns the common challenges graduates face in applying L2 schema to academic English writing. In line with Shen (2008), who noted that EFL learners frequently struggle with cultural unfamiliarity, grammatical interference, and limited

vocabulary, the present study found that graduates initially displayed weaknesses in formal, inferential, and lexical schema. Many struggled to express cause–effect relationships, draw logical inferences beyond explicit texts, and employ appropriate academic vocabulary. These difficulties echo findings in Zhang’s (2018) study, which revealed that learners with insufficient schema development often fall back on repetitive vocabulary and fragmentary comprehension. These results confirm Khartite’s (2021) emphasis on the transformative potential of schema activation in comprehension and extend it to writing.

The influence of prior knowledge and experience on schema activation is strongly confirmed by the data. Learners were more confident when engaging with familiar content schema, such as references to death, life, or disease, while initially struggling with culturally alien topics like cryogenics or entombment. This pattern mirrors Carrell and Eisterhold’s (1983) assertion that unfamiliar cultural content can impede comprehension even when formal schema are intact. However, the current study demonstrates that IRT mitigates this barrier by constructing new cultural schema through repeated, contextually rich encounters. Similar to Khartite (2021), who emphasized the role of pre-reading strategies in bridging cultural gaps, this study shows that intensive, guided engagement with texts helps learners to expand their cultural frameworks, ultimately enabling them to incorporate such unfamiliar concepts into academic writing.

The relationship between schema, reading comprehension, and academic writing is perhaps the most significant theoretical contribution of this study. Previous work, including Carrell and Eisterhold (1983) and Shen (2008), primarily emphasized schema as a reading-related construct, while only indirectly acknowledging its role in writing. The current study, however, clearly demonstrates that schema activation functions as a bridge between comprehension and production. Learners with stronger formal schema produced more logically structured essays; those with well-developed lexical schema employed richer vocabulary and more accurate discourse markers; and those with stronger inferential schema were able to engage in higher-order reasoning in their writing. This supports Zhang’s (2018) observation that schema development enhances comprehension, but it goes further by documenting its direct correlation with writing proficiency.

The implications of these findings are both theoretical and pedagogical. Theoretically, the results confirm schema theory’s continued relevance for L2 research while extending its application to writing, a domain often marginalized in earlier schema studies (Shen, 2008; Zhang, 2018). The pedagogical implications are presented as under:

The findings offer several pedagogical implications for language instruction:

- a. **L1 Transfer Must Be Addressed:** Since it has the highest impact, targeted instruction focusing on contrastive analysis and awareness-raising between L1 and L2 structures may be beneficial.
- b. **Balanced Grammar and Pragmatics Instruction:** Moderate impact scores for grammatical and pragmatic schema suggest a need for integrated instruction that addresses both structural accuracy and functional appropriateness.
- c. **Schema Activation Strategies:** Teachers might consider pre-lesson activities that activate relevant cultural and logical schemas, enhancing comprehension and performance.
- d. **Less Emphasis on Surface-Level Features:** While still important, lexical and orthographic errors had relatively less impact on pretest outcomes, which could guide teachers to prioritize deeper language issues during initial assessments.

In summary, the test responses provide valuable insights into the relative influence of various L2 schema effects on learners' test outcomes. The prominence of L1 transfer as the most impactful factor, along with the moderate significance of grammar, logic, pragmatics, and culture, highlights the multifaceted nature of language acquisition. A nuanced understanding of these factors can help educators tailor instruction and assessment to better meet learners' needs, ultimately facilitating more effective language learning outcomes.

5.1. Participants' Lacks

The analysis of the test results highlights significant areas of deficiency in students' linguistic, content, and formal schemata, which collectively constrained their ability to comprehend and produce academic texts effectively. These lacks illustrate the critical challenges that graduate-level learners encounter when transitioning to advanced English academic literacy. By diagnosing these gaps, the study establishes a clear rationale for the intervention and offers insight into the specific pedagogical needs of learners at this level.

i. Deficiencies in Linguistic Schema

One of the most pronounced lacks identified among participants was their limited control over linguistic resources necessary for academic writing. The test results revealed substantial weaknesses in grammar, vocabulary, and sentence structure. Many participants struggled to use precise and context-appropriate vocabulary, with frequent reliance on vague or overly general terms. Similarly, errors in grammar, particularly in the correct recognition of main versus supporting clauses and the use of cohesive devices, hindered textual clarity. This suggests that although participants were aware of the existence of cohesive tools, they lacked both the confidence and proficiency to apply them consistently in their writing. Such limitations directly affected their ability to construct logically connected arguments and present information in a coherent manner.

Moreover, the data indicated inadequate lexical awareness. Participants frequently faced challenges in recognizing nuanced word connotations, avoiding ambiguous references, and selecting words with precision. This underdeveloped lexical competence significantly reduced their ability to convey complex academic meanings and undermined their argumentative writing.

ii. Weaknesses in Content Schema

Another critical area of deficiency lay in the participants' content schema, their ability to activate and integrate prior knowledge to comprehend and construct academic texts. The test scores have demonstrated considerable struggle in tasks requiring inferencing, drawing conclusions, and distinguishing fact from opinion. Participants frequently remained at the level of surface comprehension, unable to extend meaning through reasoning or to link textual information with broader conceptual frameworks.

Many participants exhibited difficulty in using schema effectively to guide organization or to extend arguments. They seem to have poor reading habits with lower engagement with complex academic genres such as journal articles or book chapters. This narrow exposure has restricted their access to the disciplinary knowledge and argumentative styles necessary for graduate-level writing.

iii. Gaps in Formal Schema

Equally significant were deficits in formal schema, particularly in participants' awareness of academic writing conventions and text structures. Test data indicated difficulty in handling organizational patterns such as compare-and-contrast, cause-and-effect, and sequence. Many participants performed at only "poor" or "satisfactory" levels when asked to demonstrate these skills. Their writing lacked introductions, structured development through body paragraphs, and coherent conclusions with less understanding of text organization. They seem to have moderate confidence in structuring essays according to genre-specific conventions. Their responses displayed inconsistent use of headings, subheadings, and logical sequencing of ideas. Moreover, when tasked with distinguishing main from supporting details, several learners displayed hesitation, reflecting a lack of confidence in applying hierarchical structures within their writing.

This underdeveloped formal schema not only affected coherence but also limited their ability to adapt writing to specific academic purposes. For example, many struggled to vary structure across genres such as narrative, informative, and persuasive writing. Instead, their writing displayed uniformity and rigidity, lacking the flexibility and sophistication expected at the graduate level.

iv. Limited Strategic Competence

Underlying these schema-related gaps was a broader lack of strategic competence in reading and writing. The questionnaire results indicated that while some learners engaged in during-reading practices such as note-taking or annotation, fewer demonstrated consistent use of post-reading strategies such as

Many participants faced considerable challenge in doing reflection, synthesis, or critical evaluation. This suggests that participants approached texts more as repositories of information than as opportunities for interactive meaning-making. Thus, participants failed to consider audience expectations, a deficiency highlighted by the relatively high percentage of neutral or negative responses in this area. This lack of audience awareness restricted their ability to frame arguments persuasively and to adapt discourse according to academic conventions.

To sum up, the findings from the test reveal profile of participants whose academic writing proficiency was constrained by multiple, interrelated lacks. Linguistically, they demonstrated insufficient control over grammar, vocabulary, and cohesive devices. In terms of content schema, they lacked the ability to activate background knowledge, engage in inference, and apply critical reasoning. With respect to formal schema, they struggled to structure texts coherently and adapt to academic genres. Strategically, they exhibited limited use of pre-, during-, and post-reading strategies, as well as insufficient audience awareness in writing.

These lacks collectively illustrate the need for targeted schema-based instruction to strengthen linguistic precision, activate background knowledge, reinforce text organization, and develop metacognitive strategies. Addressing these deficiencies is therefore central to the design of the intervention, as only through systematic schema development can learners achieve the level of academic literacy required for graduate-level performance in English as a second language.

v. CONCLUSION

The test findings clearly demonstrate that L2 learners face multiple, interrelated challenges rooted in various schema gaps, each significantly impacting their language comprehension and academic writing. These schema effects, ranging from cultural and grammatical to lexical, logical, pragmatic, and academic discourse, highlight the complexity of second language development and the necessity for a multifaceted instructional approach.

The Cultural Schema Gap limits students' ability to interpret texts in culturally meaningful ways, while underdeveloped Grammatical and Lexical Schemas contribute to structural inaccuracies and reduced clarity. Errors in Logical Connectors usage further weaken the coherence of students' explanations, making it difficult for them to express cause-effect relationships and logical reasoning clearly. Additionally, L1 Transfer issues result in awkward or incorrect sentence constructions, suggesting a strong influence of native language patterns that can impede fluency in English. Gaps in Pragmatic Schema reveal a lack of understanding of the social purposes and nuances of language use, which affects the appropriateness of responses. Lastly, a Limited Academic Discourse Schema reflects students' struggle to engage with formal academic conventions, resulting in responses that lack depth and precision.

To support these participants effectively, there is a need to design targeted intervention that shall address each of these schema areas. It can be done by integrating explicit instruction on cultural norms, grammar structures, vocabulary usage, pragmatic functions, and academic writing conventions to significantly improve students' comprehension and written output. By building stronger schema across these domains, L2 learners will be better equipped to understand, interpret, and respond to academic texts with greater confidence and competence.

Note: The paper is for PhD thesis submission.

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Appendices

Sample Test Responses

6.5 Exploring explanations

A. Read the following passage. Then complete the tasks that follow.

In an underground storage site near Los Angeles, a dozen men and women lie in capsules that look like giant vacuum flasks. Their bodies are wrapped in aluminium foil. Remove the foil and a thin layer of frost covers their faces. An icy mist of liquid nitrogen clings around each body. These people have been dead for some years. But centuries from now, attempts may be made to bring them back to life again. They chose this odd method of entombment in the hope that, at some time in the future when medical science has improved far beyond today's standards, they will be thawed from their deep-frozen state and cured of the disease that killed them.

In their lifetimes, these men and women were pioneers of cryogenics – the science that paved the way for the study and application of very low temperatures. Though cryogenics began as more of a craze than a science, it may one day enable us to travel to the distant stars, and help us to discover a cheap, almost limitless, supply of energy.

Some of the corpses have been there since 1967. They could be there for hundreds of years because, if the person died from a particular form of cancer, it could take that long before an effective cure is found. Apart from a cure for cancer (and the hope of such a discovery accounts for several of those bodies awaiting a new life), adherents of cryogenics are also believers in the possibility of rejuvenation. It is little more than a dream now, but future scientists may make it come true. In that hope, some of the bodies will be left in limbo until their inhabitants can be not only cured, but also be made young again.

1. What does the passage above explain?

Near Los Angeles people have been dead for some years due to disease cryogenics. They makes attempts to bring them back to life again. Science introduce cryogenics and scientists die in hope that their inhabitant can not only cured but also be made young again.

2. Explain what the following terms mean in the passage:

a. cryogenics (paragraph 2)

cryogenics is science that paved the way for study + and application of very low Temperature. cryogenics helps to discover a cheap, almost limitless supply of energy.

b. adherents (paragraph 3)

Adherents are the believers in the possibility of rejuvenation.

c. rejuvenation (paragraph 3)

People who become died and they want to relive life and want to become young again.

3. Using information from the passage, fill the following table with reasons for the interest in cryogenics.

Why people are interested in cryogenics

- People are interested in cryogenics because there is a hope of such a discovery accounts for several of those bodies awaiting a new life.

6.5 Exploring explanations

A. Read the following passage. Then complete the tasks that follow.

In an underground storage site near Los Angeles, a dozen men and women lie in capsules that look like giant vacuum flasks. Their bodies are wrapped in aluminium foil. Remove the foil and a thin layer of frost covers their faces. An icy mist of liquid nitrogen clings around each body. These people have been dead for some years. But centuries from now, attempts may be made to bring them back to life again. They chose this odd method of entombment in the hope that, at some time in the future when medical science has improved far beyond today's standards, they will be thawed from their deep-frozen state and cured of the disease that killed them.

In their lifetimes, these men and women were pioneers of cryogenics – the science that paved the way for the study and application of very low temperatures. Though cryogenics began as more of a craze than a science, it may one day enable us to travel to the distant stars, and help us to discover a cheap, almost limitless, supply of energy.

Some of the corpses have been there since 1967. They could be there for hundreds of years because, if the person died from a particular form of cancer, it could take that long before an effective cure is found. Apart from a cure for cancer (and the hope of such a discovery accounts for several of those bodies awaiting a new life), adherents of cryogenics are also believers in the possibility of rejuvenation. It is little more than a dream now, but future scientists may make it come true. In that hope, some of the bodies will be left in limbo until their inhabitants can be not only cured, but also be made young again.

1. What does the passage ^{above} explain?

This passage is ^{about} cryogenics. It is like the crazy science in which people are gone through the process in which they may be dead in a attempt to bring them back to life.

2. Explain what the following terms mean in the passage:

a. cryogenics (paragraph 2)

the science that paved the way for the study and application of very low temperature. people considered that cryogenics is like a crazy science which may enable them to travel to the distant stars.

b. adherents (paragraph 3)

adherents of cryogenics are the believers in the possibility of rebirth. it

c. rejuvenation (paragraph 3)

Rejuvenation is more than a dream, but future scientists may make it come true.

3. Using information from the passage, fill the following table with reasons for the interest in cryogenics.

Why people are interested in cryogenics

- cryogenic is like a crazy science, people believed that it may bring them back to life if they are dead.
- They believed that cryogenics will enable them to travel to the distant stars.
- They believed that cryogenics will help them to discover a cheap, limitless supply of energy.

6.5 Exploring explanations

A. Read the following passage. Then complete the tasks that follow.

In an underground storage site near Los Angeles, a dozen men and women lie in capsules that look like giant vacuum flasks. Their bodies are wrapped in aluminium foil. Remove the foil and a thin layer of frost covers their faces. An icy mist of liquid nitrogen clings around each body. These people have been dead for some years. But centuries from now, attempts may be made to bring them back to life again. They chose this odd method of entombment in the hope that, at some time in the future when medical science has improved far beyond today's standards, they will be thawed from their deep-frozen state and cured of the disease that killed them.

In their lifetimes, these men and women were pioneers of cryogenics – the science that paved the way for the study and application of very low temperatures. Though cryogenics began as more of a craze than a science, it may one day enable us to travel to the distant stars, and help us to discover a cheap, almost limitless, supply of energy.

Some of the corpses have been there since 1967. They could be there for hundreds of years because, if the person died from a particular form of cancer, it could take that long before an effective cure is found. Apart from a cure for cancer (and the hope of such a discovery accounts for several of those bodies awaiting a new life), adherents of cryogenics are also believers in the possibility of rejuvenation. It is little more than a dream now, but future scientists may make it come true. In that hope, some of the bodies will be left in limbo until their inhabitants can be not only cured, but also be made young again.

1. What does the passage above explain?

Near Los Angeles people have been dead for some years due to disease. Science makes attempts to bring them back to life again. Science introduces cryogenics and scientists die in hope that their inhabitants can not only be cured but also be made young again.

2. Explain what the following terms mean in the passage:

a. cryogenics (paragraph 2)

Cryogenics is science that paved the way for study + and application of very low temperature. Cryogenics helps to discover a cheap, almost limitless supply of energy.

b. adherents (paragraph 3)

Adherents are the believers in the possibility of rejuvenation.

c. rejuvenation (paragraph 3)

People who become died and they want to relive life and want to become young again.

3. Using information from the passage, fill the following table with reasons for the interest in cryogenics.

Why people are interested in cryogenics

People near Los Angeles have been died from many years and they want their lives again and cryogenics is introduced by scientist and adherents believes in the possibility of rejuvenation so people are interested because they can be not only cured but also be made young again.

6.5 Exploring explanations

A. Read the following passage. Then complete the tasks that follow.

In an underground storage site near Los Angeles, a dozen men and women lie in capsules that look like giant vacuum flasks. Their bodies are wrapped in aluminium foil. Remove the foil and a thin layer of frost covers their faces. An icy mist of liquid nitrogen clings around each body. These people have been dead for some years. But centuries from now, attempts may be made to bring them back to life again. They chose this odd method of entombment in the hope that, at some time in the future when medical science has improved far beyond today's standards, they will be thawed from their deep-frozen state and cured of the disease that killed them.

In their lifetimes, these men and women were pioneers of cryogenics – the science that paved the way for the study and application of very low temperatures. Though cryogenics began as more of a craze than a science, it may one day enable us to travel to the distant stars, and help us to discover a cheap, almost limitless, supply of energy.

Some of the corpses have been there since 1967. They could be there for hundreds of years because, if the person died from a particular form of cancer, it could take that long before an effective cure is found. Apart from a cure for cancer (and the hope of such a discovery accounts for several of those bodies awaiting a new life), adherents of cryogenics are also believers in the possibility of rejuvenation. It is little more than a dream now, but future scientists may make it come true. In that hope, some of the bodies will be left in limbo until their inhabitants can be not only cured, but also be made young again.

1. What does the passage above explain?

In this passage describe the survival of men and women and also describe about the science and technology and in last passage describe about

2. Explain what the following terms mean in the passage: Some kind of disease.

a. cryogenics (paragraph 2)

The science that paved the way for the study and application of very low temperature

b. adherents (paragraph 3)

In the passage the adherents means believe of people in something.

c. rejuvenation (paragraph 3)

This is difficult to me. I don't understand the meaning of this word.

3. Using information from the passage, fill the following table with reasons for the interest in cryogenics.

Why people are interested in cryogenics

The potential benefit of the society. The prospect of immortality. benefits associated with avoiding death. It is the type of science that help the society in different ways. with the help of science we can decrease the death rate. we can discover the disease that is cause of death.

6.5 Exploring explanations

A. Read the following passage. Then complete the tasks that follow.

In an underground storage site near Los Angeles, a dozen men and women lie in capsules that look like giant vacuum flasks. Their bodies are wrapped in aluminium foil. Remove the foil and a thin layer of frost covers their faces. An icy mist of liquid nitrogen clings around each body. These people have been dead for some years. But centuries from now, attempts may be made to bring them back to life again. They chose this odd method of entombment in the hope that, at some time in the future when medical science has improved far beyond today's standards, they will be thawed from their deep-frozen state and cured of the disease that killed them.

In their lifetimes, these men and women were pioneers of cryogenics – the science that paved the way for the study and application of very low temperatures. Though cryogenics began as more of a craze than a science, it may one day enable us to travel to the distant stars, and help us to discover a cheap, almost limitless, supply of energy.

Some of the corpses have been there since 1967. They could be there for hundreds of years because, if the person died from a particular form of cancer, it could take that long before an effective cure is found. Apart from a cure for cancer (and the hope of such a discovery accounts for several of those bodies awaiting a new life), adherents of cryogenics are also believers in the possibility of rejuvenation. It is little more than a dream now, but future scientists may make it come true. In that hope, some of the bodies will be left in limbo until their inhabitants can be not only cured, but also be made young again.

1. What does the passage above explain?

A underground storage in which Angeles and dozen men and women lie in capsules look like giant vacuum flasks. Their bodies wrapped in aluminium foil. These people dead for some years.

2. Explain what the following terms mean in the passage:

and cured of this disease that killed them.

a. cryogenics (paragraph 2)

the men and women were pioneers of cryogenics, the science that paved the way for study and application of low temperature.

b. adherents (paragraph 3)

Apart from a cure for cancer and hope of such a discovery accounts for several of those bodies awaiting new life, adherents of cryogenics are also believers in possibility of rejuvenation.

In hope, rejuvenation (paragraph 3)

Some of bodies will be left in limbo until their inhabitants can be not only cured, but also be made young again.

3. Using information from the passage, fill the following table with reasons for the interest in cryogenics.

Why people are interested in cryogenics

Because It's a scientific method.

Men and women both are pioneers of cryogenics. The science also

study for this. but application of very low temperature.

Cryogenics becomes more craz of science but limitless and limit supply of energy.