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Semantic Transparency and Interpretation Challenges of English Analytical Terms for EFL Learners: A Mixed-Methods Investigation

Abstract

This pilot study adopts an exploratory mixed-methods design to examine the interpretive challenges posed by English analytical terms for learners of English as a Foreign Language (EFL), with particular emphasis on semantic transparency and opacity. Integrating descriptive quantitative assessment with qualitative inquiry, the study explores how lexical phenomena such as polysemy, synonymy, and homonymy affect learners' comprehension of domain-specific terminology in the field of migration and asylum. A sample of fifteen B2-level EFL learners completed a contextualized test of analytical terms and participated in semi-structured interviews designed to elicit their interpretive strategies. Given the exploratory nature of the study and its limited sample size, the findings are not intended for broad generalization but rather to inform future large-scale research. The results indicate that semantic opacity significantly impedes accurate interpretation, with participants demonstrating a marked reliance on literal, compositional processing rather than context-driven inferencing. Furthermore, learners reported a need for enhanced contextual support when engaging with specialized terminology.

The findings suggest important pedagogical implications, particularly regarding the integration of AI-assisted tools, such as corpus-based resources and terminology management systems, to support vocabulary acquisition in specialized domains. Although the effectiveness of such tools was not empirically evaluated in this study, the research offers an initial contribution to understanding the multidimensional nature of terminological competence in EFL contexts and outlines potential directions for future investigation, including the role of AI-driven technologies in specialized vocabulary instruction.

Keywords: EFL learners, terminology, semantic transparency, analytical terms, contextual inferencing, specialized vocabulary

Terminological Challenges in EFL Contexts

Learners of English as a Foreign Language (EFL) face considerable cognitive and linguistic challenges when processing analytical terminology—specialized lexical units that encode precise conceptual meanings within distinct disciplinary domains such as medicine, law, environmental science, and public policy. Unlike general vocabulary, terminological expressions demand advanced processing that integrates morphological decomposition, syntactic parsing, and domain-specific conceptual frameworks (Cabr , 1999; Sager, 1990; Temmerman, 2000; Faber, 2012; Faber & Cabezas-Garc a, 2019; L’Homme, 2020). These interpretive demands are particularly acute for non-native speakers, who must simultaneously negotiate linguistic complexity and conceptual specificity while operating within the constraints of developing second-language competence. Semantic transparency—defined as the extent to which a term’s meaning can be inferred from its constituent morphological and lexical components—emerges as a critical factor mediating successful terminological interpretation (Cowie, 1999; Zhang & Schmitt, 2009). Importantly, transparency functions along a continuum rather than as a binary distinction, with terminological expressions exhibiting varying degrees of compositional interpretability. This variability can be illustrated through contrastive analysis of two migration-related terms: *brain drain* and *cultural mediator*. The former, denoting “the loss suffered by a country as a result of the emigration of (highly) qualified persons” (Asylum and Migration Glossary, European Commission, 2023), exemplifies semantic opacity. Despite comprising lexically familiar elements, its figurative construction resists compositional analysis, as neither “brain” nor “drain” retains its prototypical meaning in this institutional context. By contrast, the term *cultural mediator* demonstrates higher semantic transparency, with morphological cues that facilitate inferential comprehension by signalling functional relationships between cultural knowledge domains and mediation processes. This systematic variation in transparency levels creates predictable challenges for EFL learners, who frequently deploy literal, compositional interpretation strategies that prove insufficient for semantically opaque or figuratively constructed expressions. Such incongruence between surface-level formal structure and underlying specialized meaning frequently results in comprehension failure, conceptual distortion, or inappropriate semantic transfer from general to technical registers. Addressing these interpretation difficulties requires recognition that terminological competence extends beyond lexical knowledge to encompass metacognitive awareness of when specialized processing strategies are warranted.

Semantic Complexity and Cognitive Processing

The interpretative challenge intensifies when learners encounter polysemy, synonymy, and homonymy within terminological systems—lexical-semantic phenomena that introduce additional layers of processing complexity. Polysemous terms encode multiple semantically related meanings that undergo contextual modulation according to discourse requirements and pragmatic constraints. For instance, the term *advance passenger information*, illustrates polysemic variation in which the modifier “advance” may denote either temporal precedence or procedural prerequisites, with accurate interpretation contingent upon recognition of the governing regulatory framework. Homonymous forms compound this cognitive burden by presenting semantically unrelated concepts within identical phonological and orthographic representations, thereby requiring learners to engage in systematic disambiguation processes. Conversely, synonymous variation within terminological systems can obscure underlying conceptual equivalence. The functionally interchangeable deployment of *durable solutions* and *long-term solutions* within asylum discourse exemplifies this challenge, as learners struggle to establish stable form–meaning correspondences when multiple lexical realizations encode the same institutional concept.

Psycholinguistic research demonstrates that these lexical-semantic complexities impose substantial cognitive processing demands, particularly when EFL learners rely on default strategies of direct translation equivalence from dominant L1 representations (Schmitt, 1998; Morimoto & Loewen, 2007). While prototypical or core meanings are often acquired successfully through frequency effects and pedagogical emphasis, peripheral or contextually contingent meanings remain vulnerable to systematic misinterpretation. This processing pattern reflects what has been termed “semantic rigidity”—learners’ tendency to preserve established form–meaning associations even when contextual evidence signals alternative interpretations (Laufer, 1997; Jiang, 2000). Such rigidity constitutes a significant impediment to the flexible semantic processing required for accurate terminological comprehension across diverse discourse contexts.

The European Migration Network (EMN) Asylum and Migration Glossary constitutes a representative instantiation of the terminological complexity confronting EFL learners within specialized domains (European Commission, 2023). Terms including *admissibility interview*, *hotspot approach*, and *family tracing* demonstrate substantial variation in semantic transparency while simultaneously requiring domain-specific conceptual frameworks for accurate interpretation. The term *admissibility interview*, for example, synthesizes procedural and juridical concepts through a nominalization structure that resists

straightforward compositional analysis; comprehension necessitates familiarity with legal frameworks governing asylum claim evaluation rather than mere lexical decomposition. Similarly, hotspot approach employs metaphorical extension that systematically obscures its technical denotation within EU migration management architectures, requiring learners to access specialized knowledge that extends well beyond the literal meanings of its constituent elements. These terminological challenges transcend conventional vocabulary acquisition, encompassing conceptual understanding and pragmatically appropriate deployment within specialized discourse communities. Therefore, EFL learners must cultivate not only decontextualized form–meaning correspondences but also sophisticated pragmatic competence regarding how terms function within authentic communicative contexts. This includes awareness of register constraints, collocational patterns, and genre-specific usage conventions. Such an expanded conception of terminological competence underscores the necessity for pedagogical approaches that integrate linguistic analysis with domain knowledge construction and discourse-level awareness.

Research Aims and Contributions

This study addresses the multifaceted challenges of analytical term interpretation through a mixed-methods investigation combining quantitative assessment with qualitative exploration of learner strategies and perceptions. Drawing upon terminology from the EMN Asylum and Migration Glossary, the research examines semantic transparency effects and identifies systematic patterns in learner misinterpretation.

The investigation offers preliminary contributions to two interconnected research domains: first, advancing understanding of semantic transparency and cognitive processing in EFL terminological acquisition; and second, identifying domain-specific challenges within specialised vocabulary learning that warrant further systematic inquiry. The empirical focus of the study remains on learner comprehension processes and the difficulties that impede accurate terminological interpretation. The findings also provide a basis for considering broader pedagogical implications, particularly the need for instructional approaches that offer richer contextual and usage-based support for terminology learning. These implications are discussed in the concluding sections of the study.

Methodology

Research Design and Theoretical Framework

The pilot study employed a concurrent mixed-methods design with an explanatory sequential approach (Creswell & Plano Clark, 2017), combining quantitative assessment of terminological comprehension with qualitative exploration of learners' cognitive strategies and perceptions. The research design was anchored in cognitive processing theories of second language vocabulary acquisition (Schmitt, 2008) and semantic transparency frameworks. This methodological approach enabled the investigation of both observable performance outcomes and underlying cognitive processes involved in analytical term interpretation, addressing the multidimensional nature of terminological competence in EFL contexts.

The study specifically sought to answer the following research questions:

1. To what extent do EFL learners demonstrate accurate interpretation of semantically opaque analytical terms from specialized domains?
2. What cognitive strategies do learners employ when encountering unfamiliar analytical terminology?
3. How do learners perceive the role of semantic transparency in facilitating terminological comprehension?

Participants

The study involved 15 third-year undergraduate students enrolled in the English Philology program at Batumi Shota Rustaveli State University, Georgia. All participants had achieved B2-level proficiency according to the Common European Framework of Reference for Languages (Council of Europe, 2001), as verified through their academic transcripts and standardized assessment scores. Participants were selected through purposive sampling based on demonstrated B2-level proficiency with consistent academic performance (minimum GPA of 3.0/4.0), minimum two years of exposure to academic English across multiple disciplines, no prior specialized training in migration or asylum terminology, and voluntary informed consent.

The sample of 15 participants, while consistent with established norms for qualitative and exploratory mixed-methods inquiry in applied linguistics (Dörnyei, 2007), precludes statistical generalization and means the findings remain introductory in nature. The study's contribution lies in the analytical depth it affords—enabling close examination of individual cognitive processes and

interpretive strategies—rather than in the representativeness or scalability of its conclusions. The results should therefore be understood as a preliminary evidence base, offering directional insights that future research with substantially larger and more diverse samples would need to verify, extend, and refine before any broader pedagogical or theoretical claims can be responsibly advanced.

Instruments

Two primary instruments were employed: The Contextualized Analytical Terms Test (CATT) and the Terminological Learning Experience Questionnaire (TLEQ).

Contextualized Analytical Terms Test (CATT)

The CATT was a researcher-designed multiple-choice comprehension test assessing participants' ability to interpret analytical terminology in context. It consisted of ten terms drawn from the European Migration Network (EMN) Asylum and Migration Glossary (European Commission, 2023): admissibility interview, advance passenger information, arranged marriage, brain circulation, brain drain, cultural mediator, talent partnership, durable solutions, family tracing, and hotspot approach. Each term was embedded within an authentic context sentence derived from official EU documents, policy reports, and academic publications to ensure ecological validity. Four response options were provided for each item: one correct definition reflecting the term's specialized meaning, and three systematically constructed distractors representing literal compositional interpretations, alternative meanings arising from polysemy or homonymy, and plausible but contextually inappropriate definitions.

Terminological Learning Experience Questionnaire (TLEQ)

The Terminological Learning Experience Questionnaire (TLEQ), a structured questionnaire, captured participants' subjective experiences, cognitive strategies, and pedagogical preferences regarding analytical terminology learning. Importantly, the TLEQ included:

- 5-point Likert-type items (1 = *strongly disagree*, 5 = *strongly agree*) measuring perceived difficulty, interpretive confidence, and perceived usefulness of instructional support;
- Multiple-choice items eliciting strategy use and instructional preferences in specific learning situations;
- One open-ended prompt capturing reflective qualitative responses regarding learning challenges.

Data Collection and Analysis

Data collection occurred during regular class time in April 2025, following a standardized protocol. Participants first completed the CATT individually via Google Forms under controlled classroom conditions without external resources (20 minutes). The TLEQ was administered immediately afterward to capture fresh reflections on the terminological interpretation experience (15 minutes). Quantitative data from the CATT were analysed using descriptive statistics to determine accuracy rates and error patterns. Qualitative data from the questionnaire were analysed thematically to identify recurring cognitive strategies and perceived challenges. Quantitative and qualitative findings were subsequently integrated through joint displays and narrative synthesis to provide initial, illustrative insights into participants' terminological comprehension processes—insights that are offered as a foundation for future inquiry rather than as definitive empirical claims.

Limitations

Several methodological limitations must be foregrounded. Most critically, this is a small-scale pilot study involving only 15 participants, and this constraint must be kept prominently in view when interpreting the findings. The results are exploratory and introductory in nature and should not be generalized beyond the immediate context of the study. The single institutional setting, homogeneous participant profile, and cross-sectional design further restrict the transferability of conclusions. Additionally, the exclusive focus on migration and asylum terminology may not adequately capture the range of challenges learners encounter across other specialized domains. These limitations are not incidental but structural, and they define the scope of what this study can and cannot claim. Future research should seek to replicate and extend these findings with substantially larger, multi-institutional samples and a broader terminological range before wider pedagogical recommendations are drawn.

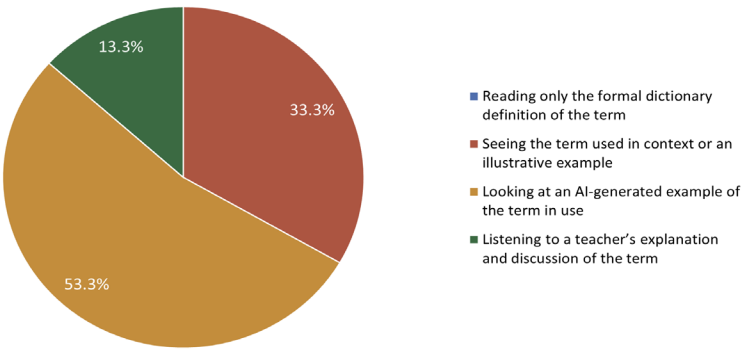
Discussion

Analysis of Learner Preferences for Specialized Terminology

The analysis of participant responses regarding preferred comprehension support for the term *admissibility interview* reveals significant patterns in contemporary EFL learners' approaches to specialized terminology acquisition. EMN glossary

defines the term as “a personal interview in an admissibility procedure or in specific cases allowing applicants for international protection to present their views with regard to their particular circumstances and on the inadmissibility grounds before the determining authority decides on the admissibility of the application. Source(s) EMN based on Art. 33 and Art. 34 of Directive 2013/32/EU (Recast Asylum Procedures Directive)” rendered in Georgian as: “გასაუბრება საერთაშორისო დაცვის მოთხოვნის შესახებ განცხადების დასაშვებობის თაობაზე” [gasaubreba saertashoriso datsvis motkhovnis shesaxeb gantskhadebis dasahvebobis taobaze]. This legal-procedural term exemplifies the challenges inherent in asylum and migration discourse, where institutional specificity intersects with semantic opacity to create substantial interpretive demands. Figure 1 shows that a substantial majority of participants (53.3%, $N = 8$) indicated preference for “AI-generated examples of the term in use,” demonstrating notable receptivity to algorithmically curated content as a primary interpretive resource.

Figure 1
Learner Preferences for Ways of Understanding the Term “Admissibility Interview”



Note. $N = 15$. Survey item: “Which of the following would best help you understand the term: Admissibility Interview?” No respondents selected the dictionary-definition option.

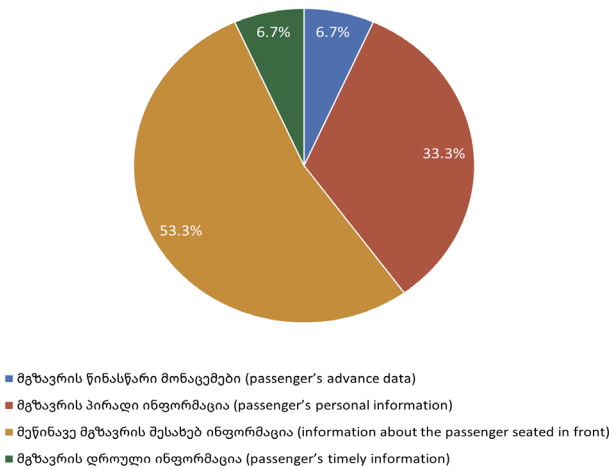
This preference pattern aligns with broader trends in digital-native language learning behaviours, where learners increasingly seek immediate, contextually relevant examples rather than abstract definitional information (Godwin-Jones, 2018). The prominence of AI-generated content preference may reflect several interconnected factors. First, participants appear to value the perceived immediacy and accessibility of digital tools in resolving lexical ambiguity. Second, the preference suggests learner confidence in technological mediation of complex terminological relationships. However,

this trend also raises critical pedagogical considerations regarding the adequacy of AI-generated content for domain-specific terminology that requires procedural accuracy and genre-sensitive interpretation. A substantial minority of participants (33.3%, $N = 5$) favored “seeing the term used in authentic context or illustrative examples,” indicating that traditional contextual scaffolding remains highly valued for semantic acquisition. This preference demonstrates learners’ recognition that specialized terminology requires situated understanding rather than isolated definitional knowledge. The preference for authentic contextual examples reflects established principles in terminological pedagogy, where meaning construction emerges through repeated exposure to varied usage patterns within relevant discourse communities (Bowker & Hawkins, 2006). For legal-procedural terms such as admissibility interview, contextual examples provide essential information about institutional roles, procedural sequences, and pragmatic constraints that cannot be captured through definitional approaches alone. Surprisingly, only 13.3% ($N = 2$) of participants selected “listening to teacher explanation and discussion” as their preferred comprehension support method. This relatively low preference for direct instructional mediation contrasts with traditional expectations of teacher-centered learning in Georgian academic contexts, suggesting a potential pedagogical shift toward learner-directed, resource-mediated approaches. The limited preference for teacher-led explanation may indicate several possibilities: (1) learners perceive direct explanation as insufficient for complex terminological understanding, (2) participants value interactive, example-rich approaches over abstract exposition, or (3) the immediacy of digital resources provides more appealing alternatives to traditional instructional formats. Notably, no participants (0%, $N = 0$) chose “reading formal dictionary definitions” as their preferred comprehension support method. This unanimous rejection underscores the recognized inadequacy of decontextualized lexical entries for conveying institutional and procedural nuances essential to specialized terminology comprehension. The complete absence of definitional preference validates theoretical positions arguing that specialized terminology requires contextual anchoring and discourse-specific understanding rather than abstract meaning specification (Temmerman, 2000). For terms such as admissibility interview, which embed complex legal procedures within seemingly transparent linguistic forms, dictionary definitions fail to provide sufficient interpretive guidance for accurate usage and comprehension.

Cross-Linguistic Polysemy and Terminological Misinterpretation

The analysis of participant responses to the term advance passenger information (Figure 2) reveals systematic interpretation difficulties arising from polysemic complexity and cross-linguistic transfer effects.

Figure 2
Cross-Linguistic Polysemy and Terminological Misinterpretation: Learner Choices Among Georgian Equivalents of “Advance Passenger Information”



Note. *N* = 15. Survey item: “Which of the following Georgian translations best corresponds to Advance Passenger Information?” Response options are given in Georgian with English glosses in parentheses. The modal response (53.3%) reflects misinterpretation arising from the polysemy of the Georgian root წინ- (“front”/“before”), by which advance was read spatially rather than temporally.

The pie chart illustrates survey responses to the question: “Which of the following Georgian translations best corresponds to advance passenger information?” Out of 15 participants, 53.3% selected მეწინავე მგზავრის შესახებ ინფორმაცია (information about the front passenger); 33.3% chose მგზავრის პირადი ინფორმაცია (passenger’s personal information); smaller proportions opted for მგზავრის წინასწარი ინფორმაცია (advance passenger information/preliminary information about the passenger) and მგზავრის დროული ინფორმაცია (due information about the passenger). The term advance passenger information (API) is defined as “information concerning the passengers whom carriers will transport to an authorised border crossing point through which these persons will enter the territory of an Schengen Member State, which carriers are obliged to transmit, by end of check-in, at the request of the authorities responsible for carrying out checks on persons at external borders” (European

Commission, 2023). The distribution shown in the chart indicates that most respondents misinterpreted the term, favouring everyday or spatially oriented meanings over the technical regulatory sense.

This three-word terminological unit exemplifies how seemingly transparent compound expressions can generate substantial comprehension challenges when constituent elements carry multiple semantic loads across different contextual domains. Participant misinterpretations of advance passenger information demonstrate the interpretive challenges posed by polysemic modifiers in specialized terminology. The lexical item “advance” encompasses multiple related meanings in English, including temporal precedence (occurring before an event), spatial positioning (located in front), financial transactions (prepayment), and strategic movement (forward progression). This semantic multiplicity creates systematic ambiguity that proves particularly problematic for EFL learners navigating specialized discourse contexts. Qualitative analysis of participant responses revealed consistent patterns of spatial rather than temporal interpretation. Students frequently interpreted the term as referring to “information about the passenger in front” rather than recognizing its procedural meaning as “passenger data submitted prior to travel.” This misreading suggests that learners accessed the more prototypical or concrete spatial sense of “advance,” demonstrating reliance on familiar semantic associations rather than context-appropriate technical meanings. The interpretation difficulties observed among Georgian EFL learners reflect systematic cross-linguistic transfer effects that complicate polysemic resolution. In Georgian, the semantic space corresponding to English “advance” is distributed across multiple lexical items, including წინასწარი [tsinastsari] (prior, preliminary) and წინა [tsina] (front, anterior). This cross-linguistic variation creates interpretive uncertainty, as learners must navigate between competing translation equivalents without clear contextual guidance. Participant responses demonstrated systematic activation of spatial interpretations corresponding to წინა [tsina], resulting in conceptualizations of advance passenger information as spatially oriented data rather than temporally structured procedural requirements. This pattern suggests that L1 semantic categories influence L2 polysemic resolution, particularly when learners lack sufficient contextual knowledge to guide appropriate sense selection. The cross-linguistic complexity is further compounded by register differences between everyday and technical usage. While წინასწარი [tsinastsari] (prior, preliminary) represents the appropriate Georgian equivalent for the temporal-procedural sense of advance in regulatory contexts, learners appear to default to the more concrete spatial interpretation associated with წინა [tsina]. Beyond the modifier challenges, participant responses revealed additional comprehension difficulties related to the polysemic nature of information within technical discourse. In everyday usage, information typically denotes general knowledge or communicative content. However, within legal-regulatory contexts, the term carries specialized meanings related to structured data fields,

standardized formats, and administrative processes. Qualitative analysis indicated that participants frequently conflated advance passenger information with general personal information პირადი ინფორმაცია [piradi informatsia], activating conceptual associations related to privacy protection and data security rather than border control procedures. This semantic drift reflects learners' tendency to access familiar interpretive frameworks rather than developing context-appropriate technical understanding. The misinterpretation pattern suggests that information in specialized terminological contexts requires explicit definitional anchoring to prevent activation of inappropriate semantic associations. Without such scaffolding, learners may invoke misleading conceptual frameworks that obscure the term's operational specificity within regulatory discourse.

The interpretation difficulties observed with advance passenger information highlight broader challenges in compound terminological comprehension. While individual lexical elements may appear semantically transparent, their integration within specialized compound expressions often generates meanings that cannot be predicted from compositional analysis alone. Participant responses demonstrated systematic failure to achieve appropriate conceptual integration across the three-word expression. Rather than recognizing advance passenger information as a unified terminological unit, learners attempted compositional interpretation based on individual word meanings. This approach proved inadequate for capturing the term's regulatory specificity and procedural function.

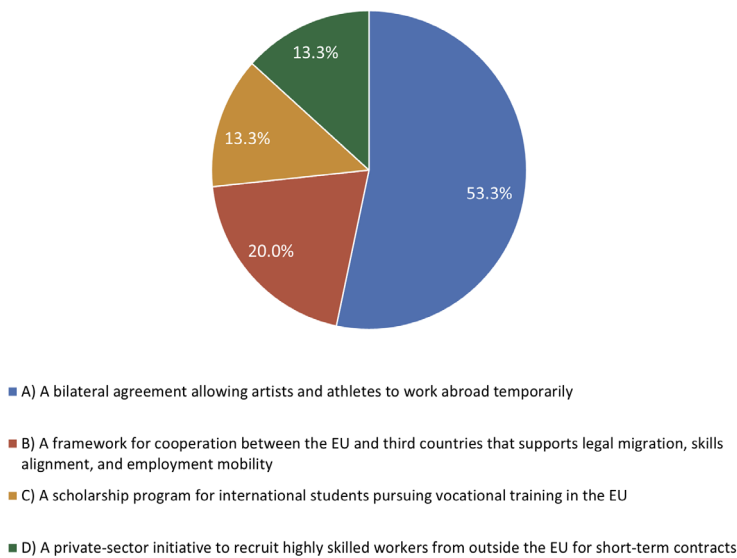
The compound integration challenge reflects broader issues in terminological pedagogy, where instruction must address not only individual lexical meanings but also the semantic relationships and conceptual integration patterns that characterize specialized discourse communities. The systematic misinterpretation patterns observed with advance passenger information provide insights into cognitive processing mechanisms underlying terminological comprehension in EFL contexts. Participants appeared to employ default processing strategies that prioritize familiar semantic associations over contextually appropriate technical meanings. This processing pattern aligns with established research on semantic access in L2 vocabulary comprehension, where learners often activate dominant meaning senses before exploring contextually relevant alternatives (Schmitt, 2010). For polysemic terms in specialized contexts, familiar meanings can become misleading when applied inappropriately, resulting in systematic misinterpretation. The findings indicate that in the absence of definitional anchoring learners tend to rely to familiar interpretive frameworks, resulting in semantic drift away from the intended technical meaning. This highlights the importance of targeted scaffolding in translation pedagogy to clarify register differences and prevent misalignment between everyday and specialized usage. Effective terminological instruction must therefore address cognitive processing tendencies that hinder accurate comprehension of specialized vocabulary. Such instruction should provide

explicit guidance on semantic disambiguation strategies and contextual cueing mechanisms to support appropriate meaning selection.

Institutional Terminology and Conceptual Misalignment

The analysis of participant responses to *talent partnership* (Figure 3) reveals the most substantial interpretation difficulties observed in this study, with only 20% of participants ($N = 3/15$) selecting the correct definition (Option B: “A framework for cooperation between the EU and third countries that supports legal migration, skills alignment, and employment mobility”).

Figure 3
Institutional Terminology and Conceptual Misalignment: Learner Interpretations of “Talent Partnership”



Note. $N = 15$. Stimulus: “Through the Talent Partnership, the EU collaborates with selected third countries to align labor market needs and qualifications, promoting legal migration and mobility.” Survey item: “What does the term Talent Partnership most accurately refer to in this context?” Only 20% of respondents selected the accurate institutional definition (Option B), whereas the majority (53.3%) selected Option A, indicating conceptual misalignment in interpreting institutional terminology.

This low accuracy rate illuminates critical challenges in EFL learners’ comprehension of institutionally constructed terminology that lacks semantic transparency. The term *talent partnership* exemplifies compound expressions whose meanings are institutionally rather than lexically determined. According

to the EMN Asylum and Migration Glossary, talent partnerships constitute “comprehensive EU policy frameworks as well as funding support for cooperation with third countries to better match labour and skills needs in the EU aimed at enhancing legal migration and mobility with key partners” (European Commission, 2023). This definition encompasses complex multilateral arrangements involving migration governance, labour market integration, and educational alignment—meanings that cannot be inferred from the constituent lexical elements “talent” and “partnership.” Qualitative analysis of participant responses revealed systematic misinterpretation patterns reflecting reliance on general-language rather than technical meanings. The modifier “talent” activated associations with individual giftedness or artistic ability, while “partnership” suggested generic collaborative arrangements. These surface-level interpretations prevented accurate comprehension of the term’s specialized meaning within EU migration policy discourse. The Georgian equivalent პარტნიორობა სწავლისა და დასაქმებისთვის [partnioroba stsavlisა da dasakmebistvis] (partnership for study and employment) provides more transparent semantic guidance than the English original, explicitly indicating the educational and employment dimensions absent from talent partnership. This cross-linguistic comparison highlights how terminological opacity may vary across languages, with some expressions offering clearer morphological cues for conceptual understanding. The divergence between English and Georgian transparency levels suggests that cross-linguistic analysis can inform pedagogical approaches to terminological instruction. Analysis of incorrect responses revealed three primary misinterpretation categories:

- Option A (Bilateral agreement for artists/athletes): This response pattern reflects activation of prototypical “talent” meanings associated with artistic or athletic ability, combined with narrow interpretation of international cooperation.
- Option C (Scholarship program for vocational training): These responses demonstrate partial recognition of educational dimensions while missing the broader policy framework and migration components.
- Option D (Private-sector recruitment initiative): This pattern suggests recognition of employment aspects while misunderstanding the institutional scope and multilateral structure of talent partnerships.

These response patterns indicate that learners accessed familiar semantic categories rather than developing context-appropriate technical understanding, demonstrating the interpretive challenges posed by institutionally constructed meanings. The systematic misinterpretation of talent partnership underscores the inadequacy of compositional analysis for institutionally defined terminology. Unlike terms with partial semantic transparency that allow inferential comprehension, policy-constructed expressions require explicit conceptual anchoring within relevant institutional frameworks. This finding aligns with theoretical

perspectives emphasizing the role of domain knowledge in specialized vocabulary comprehension (Temmerman, 2000). For terms such as talent partnership, accurate interpretation depends not merely on lexical recognition but on understanding the institutional contexts, policy objectives, and operational mechanisms that define their technical meanings.

Homonymic Interference and Conceptual Differentiation

The comparative analysis of brain drain and brain circulation reveals distinct but interrelated interpretive challenges arising from homonymic interference and conceptual differentiation. Although both terms operate within the same semantic domain of skilled migration, they exemplify different forms of semantic opacity that place divergent cognitive demands on EFL learners. Examining these contrasts provides further insight into the multidimensional nature of terminological comprehension in specialized discourse. Participant responses to brain drain exhibited systematic patterns of misinterpretation attributable to the homonymic complexity of the lexical item “drain.” In English, the word “drain” functions as both noun and verb and encompasses a range of meanings, including (i) a conduit for liquid removal, (ii) the process of extraction, (iii) gradual depletion of resources, and (iv) physical or emotional exhaustion. This semantic multiplicity creates substantial ambiguity for learners, who must suppress more salient literal meanings in order to access the metaphorical sense relevant to migration discourse.

The cross-linguistic dimension further compounds this difficulty. The Georgian equivalent ინტელექტის გადინება [intelektis gadineba] employs the verbal noun გადინება [gadineba], denoting “flowing away” or “outflow,” which arguably provides a more transparent representation of resource loss. However, qualitative data indicate that learners frequently activated concrete, physically grounded interpretations associated with liquid movement, rather than the intended abstract conceptualization of human capital depletion. This suggests that even when the L1 equivalent offers relatively transparent semantic cues, learners may still default to literal interpretations, thereby impeding accurate comprehension. In this sense, homonymic interference operates not only intralinguistically but also interacts with cross-linguistic transfer, reinforcing non-target interpretations.

In contrast, *brain circulation* presents a different type of interpretive challenge, rooted less in lexical ambiguity than in conceptual and metaphorical complexity. As defined by the European Migration Network (European Commission, 2023), the term refers to “the possibility for developing countries to draw on the skills, know-how and other forms of experience gained by their migrants—whether they have returned to their country of origin or

not—and members of their diaspora.” This conceptualization extends beyond linear models of migration, foregrounding cyclical mobility, transnational networks, and knowledge exchange. The metaphor of “circulation” encodes a dynamic and non-linear understanding of migration, implying continuity, reciprocity, and multidirectional flows. Accurate interpretation, therefore, requires not only lexical comprehension but also familiarity with broader socio-economic and policy frameworks. The Georgian equivalent ინტელექტის ცირკულაცია [intelektis tsirkulatsia] retains the Latinate form “circulation,” ensuring formal equivalence but offering limited additional semantic transparency. As a result, learners must rely heavily on contextual and conceptual knowledge to construct meaning, which may not be readily available in EFL settings. The relationship between brain drain and brain circulation further illustrates the challenges associated with near-synonymous terminology in specialized domains. While both terms refer to the movement of skilled individuals, they encode distinct evaluative and analytical perspectives. Brain drain emphasizes loss and asymmetry, typically from the standpoint of the country of origin, whereas brain circulation foregrounds potential gains through ongoing transnational engagement and knowledge transfer. These terms are therefore not interchangeable; rather, they represent complementary but conceptually differentiated frameworks within migration policy discourse. Empirical findings suggest that learners often fail to maintain this distinction. Several participants treated the terms as fully synonymous, demonstrating awareness of their shared semantic field but not of their divergent conceptual implications. This tendency reflects a broader difficulty in distinguishing between closely related technical terms that require fine-grained semantic and pragmatic differentiation. Such challenges are particularly pronounced in EFL contexts, where limited exposure to domain-specific discourse may constrain the development of nuanced conceptual representations.

Cross-linguistic analysis provides additional insight into this issue. The Georgian rendering of brain drain offers relatively transparent morphological cues indicating loss or outward movement, whereas brain circulation relies on a borrowed, less semantically transparent form. This asymmetry may influence learners’ processing strategies, making one term more intuitively accessible than the other and potentially obscuring the conceptual relationship between them. Consequently, differences in cross-linguistic transparency can shape not only individual term comprehension but also the ability to interpret terminological contrasts within a shared domain. From a cognitive perspective, these findings highlight two distinct processing challenges. Brain drain requires effective disambiguation among competing literal meanings in order to access an appropriate metaphorical interpretation. Brain circulation, by contrast, demands higher-level conceptual integration, including the ability to map abstract metaphors onto complex socio-political processes. These divergent demands

underscore the inadequacy of uniform instructional approaches to terminology and point to the need for differentiated pedagogical strategies that address specific types of semantic difficulty.

Overall, the analysis demonstrates that terminological comprehension in EFL contexts is shaped by the interaction of lexical ambiguity, metaphorical extension, and conceptual structure. Homonymic interference and conceptual differentiation represent distinct but complementary sources of difficulty, each requiring targeted instructional intervention. Addressing these challenges necessitates pedagogical approaches that explicitly integrate lexical disambiguation, metaphor awareness, and domain-specific knowledge, thereby enabling learners to navigate the conceptual precision required in specialized discourse.

Apparent Transparency and Hidden Complexity

The analysis of participant responses to the term *durable solutions* provides a particularly instructive example of deceptive semantic transparency in specialized terminology. In contrast to overtly opaque expressions, this term appears linguistically accessible due to its familiar constituent elements. However, such apparent transparency conceals a level of technical complexity that resists straightforward compositional interpretation. This phenomenon illustrates how surface-level semantic accessibility may obscure domain-specific meanings embedded within policy discourse. Both constituent elements, “durable” (suggesting persistence or longevity) and “solutions” (implying resolutions) belong to general academic vocabulary typically accessible to B2-level EFL learners. This familiarity appears to encourage compositional processing, leading learners to construct meaning based on general-language associations. However, such interpretations tend to remain overly broad and fail to capture the term’s precise technical function within refugee and migration frameworks.

According to the European Migration Network (European Commission, 2023), the term *durable solutions* refers to “any means by which the situation of forced migrants (displaced persons, refugees, applicants for international protection, internally displaced persons, vulnerable irregular migrants) can be satisfactorily and permanently resolved to enable them to lead an independent life in their country of origin, host country or the country of return.” This definition encompasses complex legal categories, procedural requirements, and policy mechanisms that cannot be inferred from the apparent transparency of the surface form. Analysis of participant responses revealed a systematic underestimation of the term’s technical complexity. While learners readily accessed the general meaning of the term as referring to lasting approaches to problem-solving, many failed to recognize the specific legal and procedural dimensions that characterize durable solutions within refugee protection frameworks.

More specifically, durable solutions functions as an umbrella concept encompassing three institutionalized pathways: (1) voluntary repatriation to country of origin, (2) local integration in country of first asylum, and (3) resettlement to third countries. Each pathway involves distinct eligibility criteria, legal procedures, and governance structures. However, participant responses rarely reflected an awareness of this structured framework; instead, they interpreted the term in generic problem-solving terms. This pattern suggests that semantic transparency may paradoxically hinder comprehension by encouraging reliance on inappropriate interpretive strategies. The cross-linguistic dimension further reinforces this argument. The Georgian equivalent გრძელვადიანი გადაწყვეტა [grdzelvadiani gadatsqveta] (long-term resolution/solution) exhibits clear morphological transparency, with explicit reference to duration and resolution. Nevertheless, it lacks overt encoding of the humanitarian and legal dimensions central to the English term. The occasional addition of (პრობლემის) (the problem) in Georgian translations indicates an implicit recognition of the need for greater contextual specification. This variation suggests that different languages adopt distinct strategies to compensate for the limitations of surface transparency, with Georgian favouring explicit lexical elaboration, while English relies more heavily on contextual embedding within institutional discourse.

From a cognitive perspective, the findings highlight a critical distinction between opaque and semi-transparent terminology. Fully opaque terms may signal their technicality through unfamiliar forms, thereby prompting learners to adopt more cautious, context-sensitive strategies. In contrast, semi-transparent terms such as durable solutions appear familiar and therefore fail to trigger such strategies. Participants in this study consistently relied on pre-existing lexical knowledge, without recognizing the need for domain-specific reinterpretation. This supports the argument that semantic familiarity can interfere with accurate technical comprehension by activating inappropriate processing pathways (Schmitt, 2010).

The importance of contextualization emerges as a central factor in overcoming these challenges. Accurate interpretations were typically produced by participants who explicitly referenced contextual cues related to migration policy, international protection, or legal frameworks. This suggests that successful comprehension depends not only on linguistic knowledge but also on access to relevant domain-specific schemata. In this sense, understanding durable solutions requires engagement with a broader epistemic context, including institutional practices and policy objectives, rather than reliance on immediate lexical cues alone.

The open-ended responses to the question: “Are there any additional challenges or observations related to learning and interpreting analytical terms that you would like to share, which were not addressed in the previous

sections? (Please feel free to describe any personal experiences, difficulties, or suggestions regarding terminology learning)” further illuminate the multidimensional nature of these interpretive difficulties. Participants consistently identified the abstract and specialized nature of analytical terminology as a key barrier, distinguishing it from general vocabulary learning. Notably, learners emphasized that such terminology “must be taught with a different approach,” highlighting the inadequacy of traditional vocabulary instruction. Contextualized exposure—particularly through authentic usage—was repeatedly identified as essential for comprehension. At the same time, learners reported challenges arising from context-dependent polysemy, where terms acquire different meanings across disciplinary domains, increasing the risk of semantic interference.

In terms of cognitive strategies, participants reported reliance on L1 translation, morphological decomposition, analogical reasoning, and repeated exposure. While these strategies reflect a degree of metacognitive awareness, they also reveal limitations when applied to specialized terminology. Learners expressed a clear preference for multimodal and usage-based instructional approaches, including visualization, exemplification, and practice-oriented tasks. These findings underscore the need for pedagogical models that move beyond definitional knowledge toward deeper engagement with usage patterns and discourse conventions. Taken together, the results indicate that effective engagement with specialized discourse requires heightened awareness of the distinction between general and technical meanings. In particular, learners must be trained to recognize when apparently transparent lexical items function as domain-specific terms. The identification of semi-transparency as a distinct category of difficulty is especially significant, as such terms systematically invite misinterpretation through inappropriate compositional processing.

These findings carry important pedagogical implications. First, they support the need for differentiated instructional approaches tailored to varying degrees of semantic transparency. Opaque terms require intensive contextual support and background knowledge; polysemous terms demand explicit disambiguation; and semi-transparent terms necessitate targeted intervention aimed at counteracting misleading surface cues. More broadly, terminology instruction should adopt a context-embedded approach that integrates linguistic, cognitive, and domain-specific knowledge. Furthermore, the limitations of traditional resources such as dictionaries and glossaries become evident in this context. While useful for definitional reference, such tools provide limited insight into contextual variation, collocational behavior, and discourse-specific usage. The difficulties reported by participants suggest that static resources are insufficient for developing the multidimensional competencies required for effective terminological understanding. In light of these challenges, emerging technologies—particularly those based on artificial intelligence (AI) and

natural language processing (NLP)—may offer promising avenues for future pedagogical development. Advances in NLP enable the extraction of contextualized examples from large-scale corpora, the identification of semantic and collocational patterns, and the generation of adaptive learning materials tailored to learners' proficiency levels (Flowerdew, 2015). AI-driven systems may also support adaptive learning by generating context-sensitive examples tailored to learners' proficiency levels. For instance, AI-driven corpus tools could be used to demonstrate how terms such as brain drain function across different registers, including policy discourse, academic writing, and media texts, thereby making semantic nuances and pragmatic constraints more visible to learners. However, it is important to emphasize that the present study does not empirically evaluate such tools. Rather, it identifies areas in which future research may investigate their potential through systematic and controlled studies.

Thus, this study demonstrates that the acquisition of analytical terminology is a complex and multidimensional process, shaped by the interaction of linguistic form, cognitive processing, and contextual knowledge. The findings reinforce the importance of treating terminological competence as a distinct component of language proficiency, particularly in contexts involving specialized academic and professional discourse. By foregrounding the continuum of semantic transparency and the risks associated with semi-transparent terms, this study contributes to a more nuanced understanding of vocabulary learning and highlights key directions for future research and pedagogical innovation.

Conclusion

This small-scale pilot mixed-methods investigation has provided preliminary insights into the multidimensional nature of terminological comprehension difficulties encountered by EFL learners engaging with specialized discourse. Through the systematic analysis of five representative terms from the EMN Asylum and Migration Glossary (admissibility interview, advance passenger information, talent partnership, brain drain/brain circulation, and durable solutions) the study has identified several forms of semantic opacity that appear to hinder accurate interpretation and appropriate usage.

The findings indicate that terminological comprehension challenges extend beyond simple vocabulary deficits to encompass complex interactions between semantic transparency, cross-linguistic transfer effects, cognitive processing strategies, and domain-specific knowledge requirements. Each analysed term revealed distinct interpretive difficulties, pointing to different dimensions of terminological competence required for effective engagement with specialized

English discourse. Rather than supporting a binary distinction between transparent and opaque terms, the analysis suggests a continuum of semantic transparency. Fully opaque institutional expressions, for example, admissibility interview, require explicit contextual anchoring, whereas semi-transparent terms like, for example, durable solutions may be deceptively accessible while encoding complex technical meanings. Polysemous expressions, such as advance passenger information, and institutionally constructed terms like talent partnership further illustrate how familiar lexical elements can lead to misinterpretation when contextual constraints are not adequately recognised. This transparency spectrum has important implications for terminological pedagogy, suggesting that different types of semantic complexity require differentiated instructional approaches rather than uniform vocabulary teaching strategies. These preliminary observations have implications for terminological pedagogy, tentatively suggesting that different types of semantic complexity may require differentiated instructional approaches rather than uniform vocabulary teaching strategies. The findings further call into question traditional assumptions about the relationship between formal similarity and comprehension difficulty, indicating that apparently accessible terms can pose substantial interpretation challenges—a pattern that warrants verification through larger-scale replication.

The cross-linguistic comparison between English analytical terms and their Georgian equivalents revealed notable variation in semantic transparency. While Georgian renderings often provided clearer morphological (გრძელვადიანი გადაწყვეტა [grdzelvadiani gadatsqveta] for durable solutions) or more explicit functional cues (პარტნიორობა სწავლისა და დასაქმებისთვის [partnioroba stsavlisა da dasakmebistvis] for talent partnership), these advantages did not consistently result in improved comprehension. This finding suggests that cross-linguistic transfer in terminological processing involves more complex cognitive mechanisms than straightforward lexical mapping. Learner responses indicated systematic reliance on strategies such as compositional analysis of institutionally defined terms, activation of prototypical meanings in polysemous contexts, and dependence on surface-level familiarity in interpreting semi-transparent expressions. These patterns highlight the importance of metacognitive awareness in recognising when specialised interpretive strategies are required.

From a theoretical perspective, the study offers three tentative contributions to the understanding of terminological processing in second language acquisition. First, the identification of semi-transparency as a potentially distinct category raises the possibility that apparent formal accessibility may mask underlying technical complexity, thereby leading to systematic difficulties in interpretation. The findings are broadly consistent with multidimensional theoretical models that recognise morphological accessibility, conceptual complexity, institutional embedding, and cross-linguistic variation as interacting

factors in terminological processing. Second, the exploratory cross-linguistic analysis provides preliminary evidence that L1 semantic categories may influence L2 terminological comprehension, suggesting that cross-linguistic transparency variation creates both opportunities and obstacles for accurate interpretation—a direction that aligns with theoretical models emphasising the dynamic, bidirectional nature of cross-linguistic influence in the processing of specialised vocabulary. Third, the investigation provides preliminary empirical support for cognitive processing theories that foreground the role of domain-specific knowledge in specialised vocabulary comprehension, suggesting that terminological competence extends beyond lexical knowledge to encompass understanding of institutional frameworks, procedural systems, and disciplinary conventions. These contributions are necessarily provisional given the scale of the study, and they are best understood as hypotheses to be tested rather than as established findings.

The pedagogical implications of these findings point toward the need for differentiated instructional approaches that address the specific challenges associated with different types of semantic transparency. Fully opaque terms may require intensive contextual embedding and institutional background knowledge; polysemous expressions may demand systematic disambiguation strategies; and semi-transparent terms may necessitate explicit instruction aimed at overriding surface accessibility in order to access underlying technical complexity. More broadly, the results underscore the importance of context-embedded teaching practices that integrate linguistic analysis with domain-specific knowledge development. The observed processing difficulties also highlight the value of metacognitive strategy instruction, enabling learners to identify semantic ambiguity, recognise domain-specific meanings, and apply appropriate interpretive frameworks. These pedagogical implications, however, remain tentative and require validation through controlled instructional research.

The challenges identified in this study also point to broader directions for future pedagogical development. Although AI-based instructional tools did not form part of the empirical design of this study, the terminological challenges identified here provide a principled basis for considering such technologies as a direction for future pedagogical development. This positioning reflects the actual role of AI within the present investigation: participants expressed preferences for richer contextual support and worked examples, and these learner-reported needs point towards the potential relevance of AI-enhanced tools as a complement to formal instruction—a possibility that merits systematic empirical investigation rather than constituting a finding of the present study. Specifically, AI-powered corpus analysis tools could generate multiple authentic examples demonstrating how analytical terms function within relevant discourse communities, directly addressing the contextual

embedding requirements identified across all analysed terms. The cross-linguistic processing effects observed similarly indicate potential applications for tools that systematically compare terminological expressions across languages, helping learners identify cases where L1 equivalents provide misleading or insufficient semantic guidance. AI-powered semantic mapping could offer explicit visualisation of conceptual relationships within terminological systems, and AI-assisted disambiguation tools may hold prospective value for addressing the polysemic and homonymic challenges documented throughout. Realising these possibilities, however, would require careful attention to domain specificity, genre sensitivity, and demonstrated pedagogical effectiveness, and their evaluation remains an important agenda for future research.

Several further directions for future inquiry emerge from this investigation. Longitudinal studies that examine how learners develop sensitivity to different types of semantic transparency could illuminate developmental trajectories in terminological competence. Cross-cultural comparative investigations could explore how different L1 backgrounds shape specialised vocabulary processing in English, extending the Georgian-English comparison undertaken here to other language pairs with varying typological relationships. Experimental studies comparing the effectiveness of different pedagogical approaches—traditional definitional instruction, context-embedded corpus-based methods, and AI-enhanced interactive tools—could provide particularly valuable guidance for curriculum development, with the present study's findings offering a theoretically grounded basis for designing such comparisons. Investigation of individual differences in terminological processing could additionally identify the cognitive and linguistic factors that predict successful specialised vocabulary acquisition. Research into the effectiveness of AI-supported terminological instruction across diverse specialised domains could, in turn, work towards establishing evidence-based guidelines for technological integration in ESP programmes.

This pilot study has demonstrated that analytical terminology acquisition constitutes a complex, multidimensional challenge requiring sophisticated pedagogical approaches that address linguistic, cognitive, and contextual dimensions simultaneously. The diversity of semantic transparency challenges identified across the analysed terms argues against uniform instructional strategies, supporting instead differentiated approaches tailored to specific terminological types and their characteristic processing requirements. By illuminating the complex interplay between semantic transparency, cross-linguistic transfer, cognitive processing strategies, and domain knowledge in terminological comprehension, this study contributes both to the theoretical understanding of specialised vocabulary acquisition and to the development of more effective pedagogical practices for supporting EFL learners' engagement with analytical discourse.

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