

## SPECIALIZED VS. GENERAL VOCABULARY: CHALLENGES FOR ESP LEARNERS IN THE OIL AND GAS INDUSTRY

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### **Abstract.**

This study explores the challenges faced by ESP learners in distinguishing specialized vocabulary from general terms within the oil and gas industry. Through a mixed-methods approach, the research investigates the difficulties learners encounter when navigating polysemous words that have different meanings depending on context. A specialized corpus, consisting of over 2 million words from industry-specific resources such as technical manuals, journal articles, and textbooks, was developed to examine vocabulary usage in various subfields. The study involved 48 ESP learners with varying levels of English proficiency, ranging from pre-intermediate to intermediate. The research includes a word categorization task, semi-structured interviews, error analysis of written and spoken tasks, and corpus-based text analysis. The results highlighted significant challenges in misclassifying words with dual meanings, such as 'field' and 'deposit,' which are often understood as general vocabulary despite their specialized significance. Findings also revealed that learners struggle with recognizing contextual cues and applying technical terms correctly in communication. Statistical analyses confirmed correlations between proficiency levels and learners' ability to classify vocabulary accurately. The study underscores the need for targeted instructional strategies, including corpus-based tools, contextualized learning, and explicit teaching of polysemous words, to support ESP learners in mastering specialized vocabulary. These strategies are essential for equipping learners to navigate the complex linguistic demands of their professional fields.

### **Keywords**

ESP learners, specialized vocabulary, oil and gas industry, polysemous words, corpus-based tools, contextualized learning, technical communication.

Introduction. The distinction between specialized and general vocabulary is a critical consideration in English for Specific Purposes (ESP), particularly in technical fields like the oil and gas industry. For ESP learners, mastering the vocabulary necessary for professional communication often extends beyond acquiring technical terms; it involves identifying and interpreting words that carry multiple meanings depending on the context. This semantic ambiguity poses significant challenges, as learners must navigate between general and specialized usages while ensuring accurate understanding and application. These semantic overlaps create a unique learning hurdle, as students must develop skills to distinguish context-specific meanings from their general counterparts. Additionally, the technical nature of oil and gas vocabulary demands a deep understanding of industry-specific concepts, which are often intertwined with broader terminologies. This complexity is further compounded by the interdisciplinary nature of the field, where terminology from geology, engineering, and business converge. [3, 6.]

This study investigates the challenges faced by ESP learners in distinguishing specialized vocabulary from general vocabulary within the oil and gas industry. The research employed a mixed-methods approach, combining qualitative and quantitative data collection methods to ensure a comprehensive understanding of the issue. [1]

Material and Methods. A specialized corpus of oil and gas industry texts was developed to support this study, drawing from diverse resources such as technical manuals, journal articles, textbooks, webpages, and dictionaries. The corpus, consisting of approximately 2,008,561 words, was designed to provide comprehensive coverage of various contexts and subfields within the industry, ensuring the inclusion of both technical and operational aspects. General vocabulary was identified using widely recognized high-frequency word lists, such as the General Service List, while specialized vocabulary was meticulously extracted with the aid of Sketch Engine. This process emphasized keywords with significant domain-specific relevance, highlighting terms critical to understanding industry practices. The study was conducted with the participation of 48 ESP learners specializing in the operation and maintenance of transport and storage facilities for oil, gas, and refined products. The participants, whose English proficiency ranged from pre-intermediate to intermediate, represented a diverse group, enabling an exploration of vocabulary acquisition across varying skill levels. This approach ensured that the study captured insights into the challenges faced by

learners in distinguishing specialized vocabulary from general terms in a complex technical domain. [2]

The study employed a comprehensive methodological framework to investigate the vocabulary challenges faced by ESP learners in the oil and gas field, combining qualitative and quantitative approaches. Participants engaged in a word categorization task, classifying ambiguous terms such as 'deposit, reservoir, field, and well' into specialized or general vocabulary based on provided contexts. Their responses were systematically analyzed to identify patterns of misunderstanding, misclassification, and the underlying causes of such errors. Semi-structured interviews provided an in-depth exploration of learners' perspectives, shedding light on individual experiences, cognitive processes, and difficulties encountered when navigating specialized vocabulary. Error analysis of both written and spoken tasks revealed recurring issues in the interpretation and usage of technical terms, pinpointing the specific areas where learners struggled most, such as distinguishing nuanced meanings or adapting terms to different contexts.[4]

To further enrich the analysis, comparative text analyses of general and specialized vocabulary in the corpus were conducted using concordance tools, identifying words with overlapping meanings and scrutinizing their contextual usage. This approach highlighted the complexity of certain terms and their dual roles in general and specialized contexts. Quantitative data from the categorization task and accompanying questionnaires were subjected to descriptive and inferential statistical analyses, uncovering significant trends, correlations, and potential predictors of vocabulary-related challenges. This rigorous and multi-layered approach provided a robust foundation for identifying key vocabulary difficulties and evaluating targeted strategies to support ESP learners in acquiring and effectively utilizing specialized vocabulary within the technical domain of the oil and gas industry. [5, 9, 10.]

Results. The results of the study revealed significant challenges for ESP learners in distinguishing specialized vocabulary from general terms, particularly for words with multiple meanings across different contexts. The word categorization task highlighted frequent misclassification of terms such as 'field' and 'deposit,' which were often perceived as general vocabulary despite their specialized significance in the oil and gas industry. Analysis of participant responses showed a tendency to rely on surface-level meanings, leading to misunderstandings when context-specific interpretations were required. Insights from the semi-structured interviews indicated that learners often struggled with recognizing the contextual cues that differentiate general and specialized usage.

Participants reported difficulties in applying technical terms correctly in spoken and written communication, especially when faced with unfamiliar or ambiguous scenarios. Error analysis further reinforced these findings, revealing common issues such as the misuse of terms in technical descriptions and confusion over overlapping meanings.

(Fig.1)

CONCORDANCE Corpus of English for Oil and Gas

simple field • 2,247  
828.84 per million tokens • 0.083%

	Left context	KWIC	Right context
1	theatlantic.com	gan a transformation driven by the discovery and drilling of some of the most productive oil	fields in history.</s><s>By 1930, California was producing nearly one quarter of the world's oil ou
2	theatlantic.com	as residents learned to live side-by-side with oil production facilities.</s><s>To this day, oil	fields in the Los Angeles Basin remain very productive, and modern techniques have centralized
3	theatlantic.com	oes near Signal Hill in Long Beach, California, on May 29, 2003.</s><s>The Signal Hill Oil	Field , now known as the Long Beach Oil Field, had the world's highest oil production per acre by
4	theatlantic.com	ornia, on May 29, 2003.</s><s>The Signal Hill Oil Field, now known as the Long Beach Oil	Field , had the world's highest oil production per acre by the mid-twentieth century.</s><s>Hundr
5	theatlantic.com	t among operating oil wells. #</s><s>A forest of oil derricks sprouts up on the Signal Hill oil	field , Long Beach, California, in 1937. #</s><s>An oil well pumps in a newly constructed neigt
6	theatlantic.com	establish California as one of the world's major oil-producing states. #</s><s>Inglewood Oil	Field , near Culver City.</s><s>Hundreds of wells dot this nearly 1,000 acre field, the largest con
7	theatlantic.com	>Inglewood Oil Field, near Culver City.</s><s>Hundreds of wells dot this nearly 1,000 acre	field , the largest contiguous oil-producing site in the Los Angeles area.</s><s>View on Google
8	theatlantic.com	onald's restaurant in Signal Hill, California. #</s><s>A rig pumps oil from the Inglewood oil	field , as visitors enjoy the nearby Kenneth Hahn State Recreation Area, in the unincorporated V
9	theatlantic.com	ed Windsor Hills area of Los Angeles, on Friday, February 12, 2010.</s><s>The Inglewood	field , one of the richest oil basins in the world where crude was discovered in 1924, sits adjaacer
10	theatlantic.com	May 30, 2003. #</s><s>A camouflaged oil derrick (center) in operation beside the athletic	fields and buildings of Beverly Hills High School. #</s><s>A decorated oil derrick looms over Bev
11	theatlantic.com	ouflaged oil drilling site on West Pico Boulevard with 40 active wells in the Beverly Hills Oil	Field . #</s><s>Oil rig pumpjacks extract crude from the Wilmington Field oil deposits area when
12	theatlantic.com	in the Beverly Hills Oil Field. #</s><s>Oil rig pumpjacks extract crude from the Wilmington	Field oil deposits area where Tidelands Oil Production Company, which is owned by Occidental F
13	rferl.org	enistan is in the news this week after confirming that its South Yolotan-Osman natural-gas	field is among the five biggest in the world.</s><s>That assertion is based on a survey done by
14	rferl.org	und."</s><s>Proven Reserves</s><s>The classic way to estimate the size of an oil or gas	field is to create a circle of drills around the first well, and move these drills ever outwards into la
15	rferl.org	l the first well, and move these drills ever outwards into larger circles, until the extent of the	field is gauged.</s><s>But accurately estimating the volume of the reservoir remains difficult.</s
16	rferl.org	s with a 90 percent probability of being correct.</s><s>And this category only applies to oil	fields that are already producing.</s><s>The next category below that are estimates with an 80 p
17	rferl.org	elow that are estimates with an 80 percent probability of being correct, in cases where the	field is known but not yet developed.</s><s>And so on, downward, to the high-risk estimates th
18	rferl.org	ing appears to have gone badly wrong for some reason is at Ghawar, the world's largest oil	field in Saudi Arabia.</s><s>In 1975, international oil majors Exxon, Mobile, Chevron, and Texac
19	rferl.org	international oil majors Exxon, Mobile, Chevron, and Texaco estimated that the 60-year-old	field at most still had some 60 billion barrels to recover </s><s>But almost 30 years later, after n

(Fig. 2)

CONCORDANCE Corpus of English for Oil and Gas

simple deposit • 746  
275.17 per million tokens • 0.028%

	Left context	KWIC	Right context
1	theatlantic.com	very Hills Oil Field. #</s><s>Oil rig pumpjacks extract crude from the Wilmington Field oil	deposits area where Tidelands Oil Production Company, which is owned by Occidental Petro
2	rferl.org	start to get complicated.</s><s>"It is important to know what is the size of the oil and gas	deposit you have discovered, because when you drill a well into the subsurface and find oil,
3	russianpatents....	stored.</s><s>FIELD: oil and gas production, particularly to eliminate asphalt-tar-paraffin	deposits in oil production equipment.</s><s>SUBSTANCE: device comprises heating cable t
4	russianpatents....	olves lowering heating cable with heating members in area of possible asphalt-tar-paraffin	deposit accumulation; connecting heating cable members with controllable power source; su
5	russianpatents....	on of wells, oilfield equipment and pipeline communications are asphalt, resin and paraffin	deposits (ARPD).</s><s>Accumulation of sediment in the flow part of oilfield equipment and
6	russianpatents....	mance and efficiency of pumping systems.</s><s>Particularly acute problem of sediment	deposits in the columns of tubing as the prevention and elimination of paraffin-resinous tubes
7	russianpatents....	extracted oil chemical compounds, which reduces or completely prevents the formation of	deposits (patent No. 2129651 from 27.04.1999).</s><s>Normal well treatment chemical mett
8	russianpatents....	agent, since the processing is carried out through the annulus, the lack of control over the	deposits on the walls of the well pipe, and therefore the possibility of their complete closure.<
9	russianpatents....	(, Kemerovo), reducing the pour point of petroleum oil, which prevents the formation of oil	deposits and with detergents and anti-corrosion properties.</s><s>Also known modifiers and
10	russianpatents....	proposed device and method for dewaxing oil and gas SC is Agin prevent the formation of	deposits on the tube wells in different ways: only the supply of electric power to the heating ei
11	russianpatents....	end of thermal radiator is arranged in flow string below lower level of hydrate and paraffin	deposit .</s><s>At least two mechanical scrapers are installed on thermal radiator.</s><s>1
12	russianpatents....	EFFECT: extended range of device application to prevent and eliminate paraffin and hydrate	deposits and plugs.</s><s>FIELD: oil production industry, particularly for bottomhole formati
13	russianpatents....	hydraulically connected drill bore system to stimulate gas-hydrate field.</s><s>FIELD: oil	deposit development, particularly enhanced recovery methods for obtaining hydrocarbons w
14	russianpatents....	rmance check injection and production mine tunnels are filled with grouting mortar and oil	deposit is developed from surface.</s><s>EFFECT: increased oil output from oil bed due to
15	russianpatents....	production, particularly to obtain hydrocarbons from kerogen-bearing underground shales	deposits and to use formations exhibiting reservoir properties as heat sources to convert kerc
16	russianpatents....	sure; 0.1 is coefficient.</s><s>FIELD: oil production, particularly to prevent salt and resin	deposits accumulation on pipe walls.</s><s>SUBSTANCE: composition comprises powder ir
17	russianpatents....	EFFECT: increased efficiency of pipelines protection against salt and asphaltene-tarry-paraffin	deposits .</s><s>FIELD: oil production, particularly chemical means for preventing or limiting
18	russianpatents....	cid amide - 4-15, remainder is solvent.</s><s>EFFECT: prevention of asphalt-tar-paraffin	deposit crystal growth by disintegration thereof and by hydrophilization of bottomhole equipr
19	russianpatents....	isportation systems, particularly for cleaning inner surfaces of oil-field pipelines of paraffin	deposits .</s><s>SUBSTANCE: method involves forming two gel compositions spaced by br



The text analysis of the corpus demonstrated that many words used in the oil and gas industry serve dual roles, appearing frequently in both general and technical contexts. Concordance tool outputs identified key patterns, with specialized meanings often tied to specific collocations and syntactic structures. Statistical analysis of the categorization task and questionnaire responses revealed significant correlations between learners' English proficiency levels and their ability to accurately classify vocabulary, with intermediate learners outperforming their pre-intermediate counterparts.

Overall, the findings underscored the complexity of acquiring specialized vocabulary and the need for targeted instructional strategies. These include enhanced focus on contextualized learning, explicit teaching of polysemous words, and greater use of corpus-based tools to provide authentic examples of specialized vocabulary in use. [7]

Discussion. The findings of this study underscore the significant challenges ESP learners face in distinguishing specialized vocabulary from general terms, particularly for words with multiple meanings across different contexts. These struggles indicate a gap in traditional teaching methods, which often prioritize general vocabulary acquisition over the nuanced understanding required for technical fields. Error analysis further illuminated these challenges, particularly with polysemous words whose meanings shift based on context. The corpus analysis confirmed that many high-frequency terms in the oil and gas domain serve dual roles, appearing in both general and specialized contexts. These findings highlight the need for targeted instructional strategies to enhance learners' understanding and application of specialized vocabulary. Incorporating corpus-based tools, such as concordance analyses, into ESP instruction can provide learners with authentic examples of technical terms in varied contexts, helping them recognize usage patterns and develop deeper lexical awareness. Moreover, teaching strategies that emphasize the functional roles of vocabulary in technical communication—through approaches like task-based learning or case studies—can bridge the gap between theoretical knowledge and practical application. [6, 8]

Conclusion. This study has highlighted the significant challenges ESP learners face in distinguishing specialized vocabulary from general terms in the oil and gas industry, particularly when dealing with polysemous words that shift meanings across contexts. The findings from word categorization tasks, semi-structured interviews, error analysis, corpus-based text analysis, and statistical evaluations collectively demonstrate that learners often rely on surface-level interpretations,

struggle with recognizing contextual cues, and experience difficulty applying technical terms in professional communication.

The study emphasizes the importance of incorporating targeted instructional strategies to address these challenges. By integrating corpus-based tools and contextualized learning approaches, educators can provide learners with authentic exposure to specialized vocabulary and its functional use. Task-based learning, case studies, and explicit teaching of polysemous words can further support learners in developing a deeper understanding of technical terms and their application in real-world scenarios.

Ultimately, this research underscores the need for a more context-sensitive approach to ESP vocabulary instruction, particularly in technical domains. Addressing the complexities of ambiguous terms and fostering nuanced lexical competence will not only enhance learners' language skills but also equip them to meet the linguistic demands of their professional environments effectively. By bridging the gap between general and specialized vocabulary learning, educators can better prepare ESP learners for success in their technical fields.

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