THE IMPORTANCE AND METHODS OF DEVELOPING CRITICAL THINKING SKILLS IN ESP STUDENTS WITH LIMITED ENGLISH PROFICIENCY IN THE OIL AND GAS SECTOR

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NEFT VA GAZ SOHASIDA INGLIZ TILINI CHEKLANGAN DARAJADA BILADIGAN ESP TALABALARDA TANQIDIY FIKRLASH KO'NIKMALARINI RIVOJLANTIRISHNING AHAMIYATI VA USULLARI

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ВАЖНОСТЬ И МЕТОДЫ РАЗВИТИЯ КРИТИЧЕСКОГО МЫШЛЕНИЯ У СТУДЕНТОВ ESP С ОГРАНИЧЕННЫМИ ЗНАНИЯМИ АНГЛИЙСКОГО В НЕФТЕГАЗОВОЙ СФЕРЕ

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ABSTRACT: *The oil and gas industry demands precision, risk management, and informed decision-making, skills that are critically supported by the development of critical thinking (CT). However, at the Branch of the Russian State University of Oil and Gas (NRU) named after I.M. Gubkin in Tashkent, Uzbekistan, ESP learners, particularly those with lower English proficiency, often struggle to develop CT skills. This issue arises due to a predominant focus on grammar and vocabulary, neglecting higher-order thinking skills that are essential for industry professionals. This paper explores the significance of fostering CT in ESP courses for the oil and gas sector and suggests effective methodologies to bridge this gap. Task-Based Learning (TBL), the Flipped Classroom approach, collaborative learning projects, and reflective journaling are highlighted as strategies to promote CT, even among learners with limited language proficiency. Educational frameworks like Bloom's Taxonomy and Communicative Language Teaching (CLT) are examined to support a structured approach to CT development. Additionally, challenges such as technical jargon, resource limitations, and CT assessment are discussed, along with practical solutions for educators. Implementing these methods will better prepare students for the complex and high-risk environments of the oil and gas industry.*

Keywords: *Critical thinking, English for Specific Purposes, oil and gas industry, Task-Based Learning, Flipped Classroom, low-level English learners, Bloom's Taxonomy, collaborative learning.*

Аннотация: *Нефтегазовая отрасль требует точности, управления рисками и принятия обоснованных решений — навыков, которые напрямую зависят от развития критического мышления (КМ). Однако в филиале Российского государственного университета нефти и газа (НИУ) имени И.М. Губкина в Ташкенте, Узбекистан, студенты, изучающие английский для специальных целей (ESP), особенно те, чей уровень владения английским*

языком невысок, часто сталкиваются с трудностями в развитии КМ. Эта проблема возникает из-за акцента на грамматике и лексике, при этом навыки более высокого порядка, столь необходимые для профессионалов отрасли, остаются без должного внимания. В данной статье рассматривается важность развития КМ на занятиях ESP для нефтегазового сектора, а также предлагаются эффективные методики для устранения этого разрыва. В статье выделяются такие стратегии, как обучение на основе задач (Task-Based Learning, TBL), модель перевернутого класса (Flipped Classroom), совместные учебные проекты и ведение рефлексивных журналов, которые способствуют развитию КМ даже у студентов с ограниченным знанием языка. Рассматриваются образовательные рамки, такие как таксономия Блума и коммуникативное обучение языку (CLT), как поддержка структурированного подхода к развитию КМ. Также обсуждаются проблемы, такие как техническая терминология, нехватка ресурсов и оценка КМ, и предлагаются практические решения для преподавателей. Внедрение этих методов лучше подготовит студентов к работе в сложных и высокорисковых условиях нефтегазовой отрасли.

Ключевые слова: *критическое мышление, английский для специальных целей, нефтегазовая отрасль, обучение на основе задач, перевернутый класс, студенты с низким уровнем владения английским, таксономия Блума, совместное обучение.*

ANNOTATSIYA*: Neft va gaz sanoati aniqlik, xavf-xatarlarni boshqarish va o‘rinli qarorlar qabul qilishni talab qiladi, bularning barchasi tanqidiy fikrlash (TF) ko‘nikmalariga bog‘liq. Ammo I.M. Gubkin nomidagi Rossiya davlat neft va gaz universiteti (MTU) Toshkent shahar filialida ESP (Maxsus maqsadlar uchun ingliz tili) o‘rganuvchilari, ayniqsa ingliz tilini bilish darajasi past bo‘lgan talabalar, TF ko‘nikmalarini rivojlantirishda qiyinchiliklarga duch keladilar. Ushbu muammo asosan grammatik va leksikaga e'tibor qaratilganligi sababli yuzaga keladi, holbuki, tarmoq mutaxassislari uchun zarur bo‘lgan*

yuqori darajadagi fikrlash koʻnikmalariga yetarlicha ahamiyat berilmaydi. Ushbu maqolada neft va gaz sektori uchun ESP kurslarida TF rivojlantirish ahamiyati koʻrib chiqilib, ushbu tafovutni bartaraf etish uchun samarali metodikalar taklif etiladi. Maqolada vazifaga asoslangan oʻqitish (Task-Based Learning, TBL), "flipped classroom" usuli, hamkorlikda oʻrganish loyihalari va refleksiv jurnal yuritish kabi strategiyalar past darajadagi til bilimiga ega oʻrganuvchilar orasida ham TFni rivojlantirish uchun tavsiya etiladi. Ta'limiy ramkalar, masalan, Bloom taksonomiyasi va Kommunikativ Tilni Oʻrgatish (CLT), TF rivojlantirish uchun tuzilgan yondashuvni qoʻllab-quvvatlash vositasi sifatida koʻrib chiqiladi. Texnik jargon, resurslarning cheklanganligi va TF baholash kabi qiyinchiliklar muhokama qilinadi va oʻqituvchilar uchun amaliy echimlar taklif etiladi. Ushbu metodlarni joriy etish talabalarning murakkab va xavfli boʻlgan neft va gaz sanoati muhitiga tayyorgarligini oshiradi.

Kalit soʻzlar: *tanqidiy fikrlash, maxsus maqsadlar uchun ingliz tili, neft va gaz sanoati, vazifaga asoslangan oʻqitish, flipped classroom, past darajadagi til bilimiga ega oʻrganuvchilar, Bloom taksonomiyasi, hamkorlikda oʻrganish.*

INTRODUCTION

The oil and gas industry is characterized by high-risk operations, complex decision-making processes, and the need for precision in communication and technical tasks. In such a dynamic and hazardous field, professionals must be adept at assessing risks, making informed decisions, and planning operations with safety in mind. Critical thinking (CT) is, therefore, indispensable for professionals in this sector, as it equips them with the cognitive tools to navigate uncertain and rapidly changing situations. Whether it is deciding the best approach for oil extraction, assessing the environmental impact of drilling operations, or evaluating the safety of equipment, critical thinking allows individuals to approach problems methodically, analyze multiple perspectives, and arrive at the most effective solution (Facione, 1990).

In English for Specific Purposes (ESP) courses, particularly for the oil and gas industry, teaching CT is equally essential. However, at the Branch of the Russian State University of Oil and Gas (NRU) named after I.M. Gubkin in Tashkent, Uzbekistan, there is a prevalent issue where students primarily focus on lexical and grammatical skills, often neglecting the development of higher-order thinking. This is especially problematic for students with lower levels of English proficiency, as their language skills are often insufficient to engage meaningfully with technical content. Without an English proficiency exam during enrollment, many students enter the program with elementary-level English, making it difficult for them to grasp complex technical language or engage in critical analysis (Vanicheva et al., 2015).

Yet, for petroleum engineers, critical thinking directly impacts their ability to communicate effectively in technical reports, risk assessments, and safety regulations. Language precision and clarity are critical when communicating complex technical information, and CT enhances a student's ability to evaluate, synthesize, and express such information clearly and accurately (Shivaraj et al., 2022). Given the industry's reliance on effective decision-making, the question arises: *How can critical thinking skills be effectively taught in ESP courses for students in the oil and gas industry, especially those with lower levels of English proficiency?*

This paper seeks to address this question by exploring effective methodologies for integrating CT into ESP curricula, while considering the language challenges these students face. Understanding how to foster CT in ESP learners at institutions like Gubkin University can contribute significantly to their professional development and ensure they are better prepared for the complex and risky environments they will encounter in the oil and gas industry.

LITERATURE REVIEW

Practical Significance of Critical Thinking in Oil and Gas ESP Education

The significance of CT in the oil and gas industry is multifaceted, impacting areas such as risk management, safety, and decision-making.

According to Bahous (2001), critical thinking is essential for professionals in high-risk industries, where every decision must be informed by a careful analysis of available data and potential risks. In petroleum engineering, decisions about drilling methods, resource management, and environmental impact often carry significant consequences. CT enables professionals to evaluate technical data, anticipate possible failures, and implement solutions that prioritize safety and efficiency.

ESP courses tailored for technical industries, including the oil and gas sector, must therefore integrate CT into their curricula. This is particularly important because ESP focuses on developing not only language skills but also the ability to use this language within specific professional contexts (Vanicheva et al., 2015). The development of CT allows students to critically engage with industry-specific materials, such as technical reports, safety protocols, and operational manuals. As Shivaraj et al. (2022) point out, students in ESP courses who are trained to think critically can better analyze industry challenges, propose solutions, and communicate these solutions effectively in both written and spoken English.

Teaching Methodologies: Task-Based Learning (TBL) and the Flipped Classroom

One of the most effective methodologies for teaching CT in ESP courses is Task-Based Learning (TBL). TBL involves designing tasks that replicate real-world scenarios, encouraging students to apply language skills in practical, meaningful contexts. As Nunan (2004) explains, TBL fosters critical thinking by requiring students to analyze situations, solve problems, and communicate their solutions in the target language. In the oil and gas context, TBL can be used to simulate tasks such as analyzing safety protocols, evaluating environmental risks, or planning a drilling operation. These tasks require students to think critically about industry-specific problems while using the technical language they are learning in class (Bahous, 2001).

The Flipped Classroom approach is another pedagogical strategy that has proven effective in fostering CT. In the Flipped Classroom model, students

engage with instructional materials (such as lectures, readings, or videos) before class, freeing up in-class time for collaborative problem-solving and discussion. This method allows students to approach complex technical content at their own pace and then apply their understanding in a practical setting (Bergmann & Sams, 2012). In the oil and gas sector, students might watch a video about the environmental risks of offshore drilling before class, and then, during class, they could work in groups to propose mitigation strategies based on the information they have learned. This promotes both language development and critical thinking by requiring students to apply theoretical knowledge in real-world contexts (Xu & Liu, 2015).

Educational Frameworks: Bloom's Taxonomy and Communicative Language Teaching (CLT)

Bloom's Taxonomy provides a useful framework for understanding how CT can be developed in ESP courses. This taxonomy categorizes cognitive skills into six levels: knowledge, comprehension, application, analysis, synthesis, and evaluation (Bloom et al., 1956). By designing tasks that move beyond basic recall and comprehension to higher-order thinking skills such as analysis and evaluation, educators can encourage students to engage critically with technical content. For example, in an ESP course for petroleum engineers, students might first learn key technical terms (knowledge), then summarize a safety report (comprehension), apply this information to a case study (application), and finally analyze the potential risks involved (analysis and evaluation).

Communicative Language Teaching (CLT), which focuses on the practical use of language in real-world situations, aligns well with the goals of ESP (Richards & Rodgers, 2001). CLT emphasizes interaction and the functional use of language, which is particularly important in technical industries like oil and gas, where professionals must be able to communicate clearly and accurately. When combined with CT-focused tasks, CLT helps students not only learn the language of their profession but also use it to critically analyze and solve industry-specific problems (Vanicheva et al., 2015).

Psychological Frameworks and Active Learning Strategies

CT is deeply rooted in psychological theories of learning, particularly constructivist theories that view knowledge as being actively constructed by learners through experience and reflection (Vygotsky, 1978). Active learning strategies, such as task-based and inquiry-based learning, align with constructivist principles by requiring students to engage with content in a hands-on, problem-solving context. According to Schön (1983), reflection is a key component of CT, as it allows learners to critically evaluate their own thought processes and improve their problem-solving skills.

Reflective activities in the classroom, such as keeping learning journals or participating in post-task discussions, help students become more aware of their thinking processes and how they approach problem-solving. This metacognitive awareness is essential for developing CT, as it enables students to assess their own learning, identify areas for improvement, and apply critical thinking more effectively in future tasks (Halpern, 1998). In the context of ESP for the oil and gas sector, reflective activities might include asking students to reflect on how they approached a technical task, what challenges they faced, and how they overcame these challenges. This fosters not only language development but also the critical thinking skills that are essential for success in the industry.

DISCUSSION

Integrating Strategies for Critical Thinking into ESP Lessons for Low-Level Students: A Detailed Approach

Integrating critical thinking (CT) into ESP lessons, especially for students with lower levels of English proficiency, requires a well-structured and gradual approach. As learners in the oil and gas sector need to develop both cognitive and linguistic skills, the following strategies aim to scaffold critical thinking development in line with language acquisition. For low-level students, these strategies ensure that CT is accessible and relevant to their professional field, while also aligning with their language capabilities.

1. Start with Simple Analytical Tasks

To introduce critical thinking to low-level learners, begin with tasks that involve basic comparison and evaluation, which are cognitively demanding but

linguistically manageable. For instance, comparing two simple safety protocols allows students to engage with familiar technical content while practicing new vocabulary. By focusing on clear and straightforward documents, learners can identify and evaluate differences in safety procedures or risk management strategies.

Example Activity:

Students are provided with two safety documents related to oil extraction methods. The task is to read both documents and identify which one provides better risk management procedures. In this activity, students will practice simple evaluation without needing extensive vocabulary. Such a task integrates Bloom's lower-order cognitive skills (knowledge and comprehension) while gradually encouraging higher-order skills like analysis (Bloom et al., 1956).

2. Task-Based Learning (TBL)

Task-Based Learning is highly suitable for ESP learners in technical fields like oil and gas. TBL allows students to practice language within the context of real-world tasks, which fosters both language development and CT. As Nunan (2004) notes, TBL focuses on the use of language to complete tasks that mirror professional situations, encouraging learners to think critically about how to approach and solve practical problems.

Example Activity:

Students work in pairs or small groups to analyze a basic geological dataset related to oil exploration. Their task is to propose a simple drilling strategy based on the data, taking into account safety and environmental concerns. This task requires them to use industry-specific vocabulary and to critically assess the potential risks and benefits of their decisions, enhancing both their CT and language skills.

The significance of TBL lies in its ability to immerse students in meaningful tasks that require them to use language purposefully while engaging in problem-solving. Research by Ansarian et al. (2016) and Xu & Liu (2015) shows that TBL is effective in improving both language proficiency and critical thinking in ESP learners.

3. The Flipped Classroom Approach

The Flipped Classroom model is an innovative strategy that allows learners to engage with technical content at their own pace before class, which can help reduce language anxiety and enhance comprehension. In class, learners can focus on applying the knowledge they gained through discussions, problem-solving tasks, and collaborative activities.

Example Activity:

Before the lesson, students watch a short video explaining a common oil drilling technique. During the class, they work together to analyze a scenario where the technique might be applied. The discussion focuses on identifying potential risks and evaluating the effectiveness of the technique in various geological conditions. This method allows learners to practice critical thinking in a structured way, with ample opportunities to clarify and reinforce their understanding of technical language.

Bergmann and Sams (2012) highlight the value of the Flipped Classroom in promoting independent learning and deeper cognitive engagement, which is crucial for developing CT in low-level ESP students.

4. Collaborative Learning Projects

Collaboration encourages students to think critically by engaging with their peers' perspectives and ideas. Collaborative projects allow learners to tackle complex industry-related problems together, fostering both CT and communication skills.

Example Activity:

In a group project, students develop an emergency response plan for a hypothetical oil spill. This task requires them to research industry standards, evaluate environmental risks, and propose a comprehensive response strategy. By working together, students critically assess each other's suggestions, refining their own ideas and developing a well-rounded response.

Collaborative learning projects, as noted by Bahous (2001), are particularly effective in ESP settings because they reflect real-world teamwork, where critical thinking and communication are essential for solving complex problems in the oil and gas sector.

5. Reflective Journaling

Reflection is a powerful tool for developing metacognitive awareness, which is critical for CT. Reflective activities help students become aware of their own thought processes, enabling them to refine their problem-solving strategies over time (Schön, 1983).

Example Activity: Students maintain a journal where they reflect on their learning experiences, focusing on challenges they faced during problem-solving tasks and how they overcame them. For example, after completing a project on safety protocol comparisons, students write about what they learned, how they approached the task, and what they would do differently next time. This practice not only enhances language skills but also helps students develop a habit of critical reflection, which is crucial for improving CT.

CHALLENGES TO TAKE INTO CONSIDERATION:

1. **Technical Jargon**:

Oil and gas industries are replete with technical jargon that can be overwhelming for low-level learners. To mitigate this, teachers should scaffold learning by providing glossaries and simplifying complex terms. Additionally, visual aids, such as diagrams or flowcharts, can help students grasp the meaning of technical terms, allowing them to engage more critically with the content.

2. **Limited Resources**: In institutions where resources are scarce, teachers can use freely available online materials, such as videos and articles related to the oil and gas industry, to create meaningful and realistic tasks. Educators can also adapt open-access industry reports or case studies to suit their students' language levels, ensuring that critical thinking tasks are still relevant and challenging.

3. **Assessment of Critical Thinking**:

Designing assessments that accurately measure CT development is a common challenge. In addition to traditional language tests, educators can incorporate project-based assessments, portfolios, or reflective journals to

evaluate students' CT skills more holistically. These methods allow teachers to assess not only language proficiency but also the students' ability to critically analyze and solve problems.

Conclusion

In conclusion, fostering critical thinking (CT) skills in ESP learners, especially those with lower levels of English proficiency, is crucial for their success in the high-risk and dynamic oil and gas industry. CT plays a central role in decision-making, risk assessment, and problem-solving, all of which are vital for professionals in this field. However, at institutions like the Branch of the Russian State University of Oil and Gas (NRU) named after I.M. Gubkin in Tashkent, Uzbekistan, ESP courses have traditionally focused on grammar and vocabulary, neglecting the development of higher-order thinking skills. This gap leaves students underprepared for the complex challenges they will face in their professional careers.

To address this issue, integrating CT into ESP curricula through methodologies such as Task-Based Learning (TBL), the Flipped Classroom approach, collaborative learning projects, and reflective journaling can effectively bridge the gap. These strategies, supported by frameworks such as Bloom's Taxonomy and Communicative Language Teaching (CLT), provide learners with opportunities to engage in meaningful, real-world problem-solving tasks that develop both their language and critical thinking skills. By scaffolding learning tasks, providing access to industry-relevant resources, and designing appropriate assessments, educators can overcome the challenges of technical jargon and resource limitations.

Ultimately, integrating CT into ESP lessons will equip learners with the necessary cognitive and linguistic skills to excel in the oil and gas industry, enabling them to make informed decisions, assess risks accurately, and communicate effectively in a professional context. This shift toward a more holistic approach to ESP education will ensure that students are better prepared for the complexities and demands of their future careers.

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