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Effective Pedagogical Approaches for Teaching Agricultural ESP Terminology: A Classroom-Based Study

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Abstract:

This study investigates pedagogical approaches for teaching agricultural English for Specific Purposes (ESP) terminologies to first-year students at the College of Agricultural Engineering Sciences. Through classroom observations and quiz paper analysis across three departments (Animal Resources, Soil and Water, and Food Technology), the research examines the effectiveness of different teaching methods in promoting vocabulary acquisition and application. The findings indicate that a multi-modal approach, incorporating visual aids, contextualized sentences, and English definitions, yields the highest student success rates. In contrast, while incorporating learners' native languages may aid initial comprehension, it appears insufficient for ensuring accurate and fluent English vocabulary use. Furthermore, a strictly English-only approach, particularly when combined with less engaging presentation methods, demonstrates limited effectiveness. These results emphasize the importance of diverse and engaging teaching strategies tailored to the specific needs of agricultural ESP learners. These results confirm to the theories of some researchers like Mayer (2009) who emphasizes that people learn more deeply from words and pictures, Krashen (1982) who explains his theories of language for second learners. By giving a deeper look, ESP educators and curriculum designer will be able to help students be better prepared and be more adapt at a world of rapidly changing agriculture.

Introduction

Globalization in agriculture necessitates that professionals possess strong English for Specific Purposes (ESP) skills, with a robust vocabulary being a critical component. Like any other field, technology has made life easier, and agriculture is no exception. Recent significant progress in the agricultural sector has created a need for people to learn English agricultural terminologies to keep pace with global developments. The students at College of Agricultural Engineering Sciences study in English language, the curriculum in all four stages is in English, this tells us having agricultural ESP terminologies is must to be a successful learner throughout all the years of the study. Hyland, K. (2002) claims that the core issues of ESP to better understand what is needed and how it can help. At the same time Dudley T., & St John, M. J. (1998) highlight the multidisciplinary nature of ESP and the need to understand the specific needs of learners in different fields. In the context of agriculture, this means considering the unique communication challenges and demands of agricultural science, business, and policy. English language proficiency has become critical asset for learners preparing for careers in agriculture. As agricultural practices develop to incorporate cutting-edge technologies and international collaborations become ever more widespread, a strong command of English is no longer merely advantageous but rather essential for navigating the complexities of the modern agricultural landscape. For students in agricultural programs, proficiency in English unlocks access to a vast repository of knowledge, enabling them to engage with the latest research findings, technical manuals, and industry publications from around the globe. Swales, J. M. (1990) emphasizes the importance of understanding the linguistic terms, conventions and rhetorical purposes of different genres of communication within specific fields.

This study explores the vocabulary acquisition in agricultural ESP through a discourse analysis lens. Moving beyond traditional vocabulary learning approaches that often focus on isolated words and definitions, this study embraces the notion that vocabulary is best understood and acquired within authentic communicative contexts. As Widdowson (2007) stated that "Language is not simply a system of rules, but a resource for making meaning in interaction." Thus, this study adopts a discourse analysis approach to examine how vocabulary is used and acquired in real-world agricultural texts and interactions.

Traditional vocabulary instruction often focuses on isolated words, therefore this study investigates how agricultural vocabulary is used and acquired within authentic communication. Gee (2014) states that discourse analysis explores "how language shapes and is shaped by social practices and power relations". Biber, Conrad, and Reppen (1998) reveal that corpus analysis can show important insights into the frequency, distribution, and use of vocabulary in different genres and registers. By combining discourse analysis with corpus-based methods, this study aims to provide a comprehensive and data-driven understanding of vocabulary acquisition in agricultural ESP."

Flowerdew (2013) states that "English is the dominant language of scientific communication. For academics and professionals in non-English speaking countries, proficiency in English is no longer optional but a prerequisite for participation in the global scientific community". Flowerdew emphasizes that without the ability to comprehend articles, installation guides, and research findings, agricultural professionals risk operating in isolation, unable to benefit from or contribute to global advancements.

Hutchinson & Waters (1987) claim that “in vocational and professional contexts, language is a tool for achieving specific goals. ESP focuses on the language, skills, and genres appropriate to the specific activities of a particular discipline or profession". This stance is particularly relevant to agriculture students in Kurdistan, where the need for specialized English skills is growing rapidly given that English is not merely a subject to be studied but rather a practical instrument for accessing knowledge, engaging with international partners, and advancing their careers in the agricultural sector. ESP instruction should focus on equipping them with the specific language, skills, and varieties which they will encounter in their

professional lives. This includes developing their ability to read and comprehend scientific research articles, write technical reports, participate in international conferences, and communicate effectively with farmers and other stakeholders.

Review of Literature

In the era of the growing interconnected world, proficiency in English particularly within specialized domains has become a critical competency. ESP as a pedagogical approach tailored to specific professional or academic needs, has gained prominence in response to this demand. Hutchinson and Waters (1987) claim that ESP is "an approach to language teaching in which all decisions as to content and method are based on the learner's reason for learning". The critical role of ESP in agriculture is well-established, providing practitioners & learners access to global research, trade, and technology. Flowerdew (2013) notes the need in ESP. he claims that the agricultural sector, characterized by rapid technological advancements and global collaborations, exemplifies this need for specialized English skills. For the learners at agriculture field the primary barrier to effective communication and comprehension is no longer general English proficiency, but the mastery of a highly specialized lexicon. It allows those that have ESP in their range to have a great advantage. For agricultural professionals, fluency in English is must for accessing better research access, engaging in international collaborations, and participating in the global marketplace. Without these, they may also risk not being able to improve their career. Gee (2014) emphasize that language is not merely a means of communication but also a source of power, shaping social practices and relationships. The power of English in the global scientific community means that learners, researchers and practitioners who are proficient in English are better positioned to share their findings, access new knowledge, and participate in shaping the future of agriculture. This linguistic advantage enables them to contribute to the development and dissemination of innovative solutions to pressing agricultural challenges, thereby fostering a more sustainable and food-secure world.

Traditional vocabulary acquisition methods, often reliant on decontextualized word lists and memorization, have proven insufficient for enabling learners to use this terminology accurately and appropriately in real-world contexts. Nation (2001) claims that while explicit vocabulary teaching is crucial, learning words in isolation cutting ties with them from their functional and communicative purpose.

Methodology

The research will involve observing ESP classes focused on introducing agricultural terminologies to first-year students at the College of Agricultural Engineering Sciences. The observations will provide insights into how vocabulary is taught, how students interact with the material, and what challenges they encounter. For that purpose, the researcher has chosen top three departments out of eight Depts in the College of Agricultural Engineering Sciences , (department of animal resources, food technology and soil and water). Thee different instructors have been selected, each class has 15 to 25 learners. Cohen, Manion, and Morrison (2018) state that classroom observation offers a valuable means of gathering rich, contextualized data on teaching and learning processes. The observations will provide insights into how vocabulary is taught, how students interact with the material, and what challenges they encounter.

The lecturers were teaching agricultural terminologies, they taught two lectures per week. The curriculum was prepared by the lecturers, that means it was not a standard curriculum to be prepared by ministry of higher education, but there were agreement between all three lecturers to teach the same terminologies and materials. This approach aligns with the principles of ESP, where curriculum is tailored to meet the specific needs of learners (Hutchinson & Waters, 1987).

To ensure systematic and focused data collection, a structured observation protocol will be used. Bell (2005) recommends that a well-designed observation protocol helps to focus the observer's attention on key aspects of the classroom environment and minimize bias. The protocol will guide the researcher in

observing and recording specific aspects of the classroom interactions related to vocabulary instruction and acquisition. The following areas will be the primary focus of observation:

The following areas will be the primary focus of observation:

1. **Teacher Presentation of Vocabulary:**
   - *Methods:* How does the teacher introduce new agricultural terms (e.g., direct explanation, contextual examples, visual aids)?
   - *Definitions:* How are the terms defined (e.g., dictionary definitions, student-generated definitions, real-world examples)?
2. **Student Engagement with Vocabulary:**
   - *Participation:* How actively do students participate in vocabulary-related activities (e.g., asking questions, answering questions, completing exercises)?
   - *Interaction:* How do students interact with each other when learning new terms (e.g., peer teaching, group discussions)?
   - *Use:* How can they implement these vocabulary terms?
3. **Challenges and Difficulties:**
   - *Student Errors:* What types of errors do students make when using agricultural terms (e.g., misuse of terms, inaccurate definitions)?
   - *Areas of Confusion:* What concepts seem to present the greatest difficulty for students to understand?
4. **Data Recording:**

✓ List of the vocabulary terms related to agriculture to be taken as samples.

✓ A checklist will be used to systematically record the presence or absence of specific behaviours or events related to vocabulary instruction (e.g., Teacher provides a clear definition of the term, Students use the term correctly in a sentence). Creswell & Plano Clark (2018) claim that the use of a checklist helps to ensure consistency and objectivity in data collection.

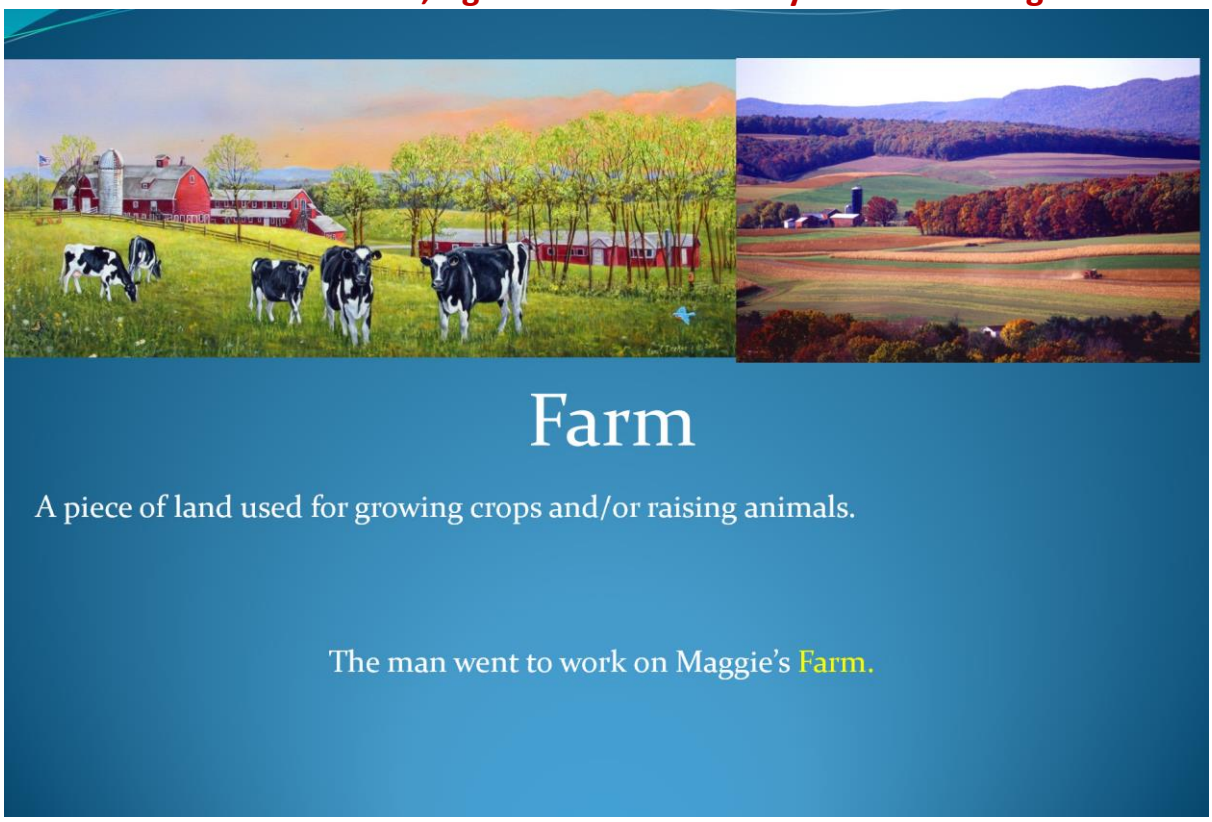
✓ *Student Work Samples:* Examples of student work (e.g., completed exercises, written assignments) to be collected to provide further evidence of vocabulary learning. Baily (2014) claims that the learners' samples will provide valuable insights for understanding and application of agricultural terminologies.

The Results

The researcher recorded and observed the lectures at three departments in the college of agricultural engendering sciences, at three different times with different lecturers. The first observation was how the lecturers teach agricultural vocabulary terms. The researcher realized the following;

For the first lecture, animal resources department is chosen where it is the top Dept in the college of agricultural engineering sciences, 18 students were in the class, the lecturer used PowerPoint to present the vocabulary terms with their definitions, at the same time the lecturer illustrated the vocabulary with the picture and the vocabulary meaning was clarified through a sentence. A sample of one of the slides is shown below.

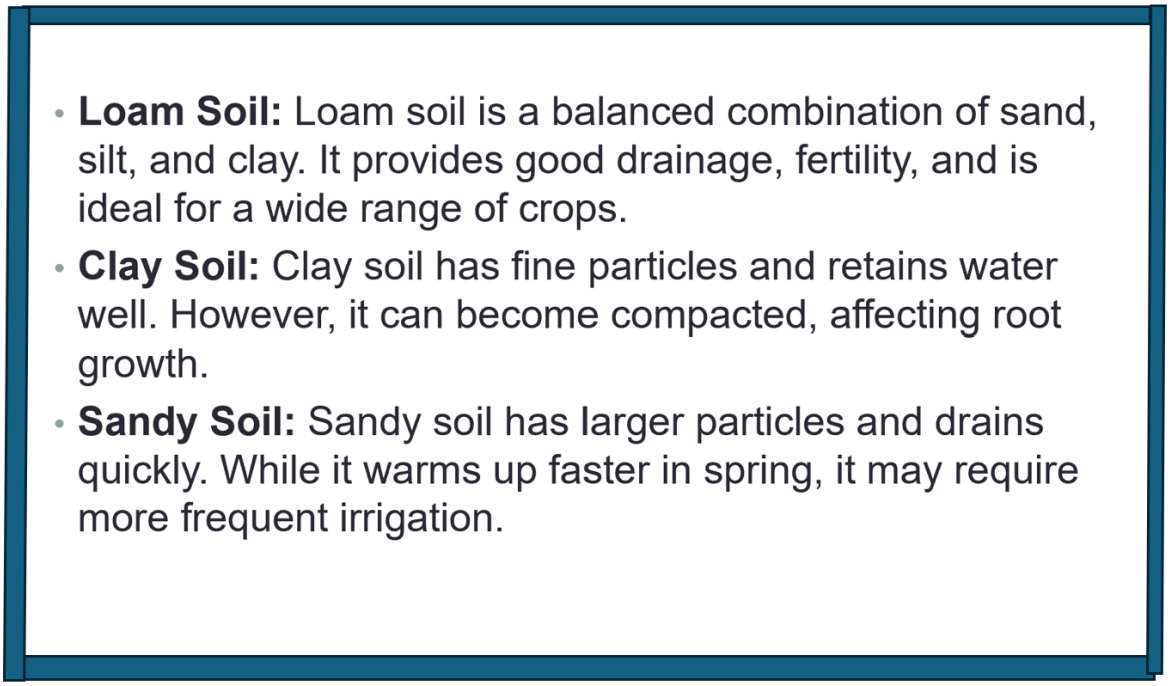
Department of Animal Resources, Agricultural Vocabulary terms teaching method



For the second lecture, department of soil and water is taken, 17 students attended the class. The researcher observed that a similar method of teaching was taken, the agricultural vocabulary terms were presented on PowerPoint, but the meaning of the word is explained in Arabic language, and the vocabulary is presented in a sentence. Meanwhile the picture of the vocabulary was presented. A sample of one of the slides is shown below.

Department of Soil and Water, Agricultural Vocabulary terms teaching method

For the third lecture, the department of food technology is taken, 18 students attended the class, the material is presented on word file, the agricultural vocabulary is presented on word file with the definitions in English language. A sample of the lecture is shown below



To observe the learners' interactions, the researcher found out below highlights;

In the first lecture, held at the Department of Animal Resources, where the focus was on introducing foundational agricultural vocabulary, a notable nine learners actively participated and interacted with the lecturer. The core of the discussion centred on clarifying the definitions of the new vocabulary terms. The lecturer effectively leveraged visual aids, primarily pictures, to facilitate understanding and comprehension. The researcher observed that the use of imagery not only clarified the meaning of the words but also sparked curiosity and suspense within the classroom, leading to greater engagement and more enthusiastic participation from the learners. This suggests that visual aids can be a valuable tool for promoting active learning and enhancing vocabulary acquisition in agricultural ESP.

In the second class, conducted at the Department of Soil and Water, a smaller group of five learners actively participated in the lecture. The researcher observed a conscious effort on the part of the lecturer to encourage broader participation from the other students by incorporating the learners' native languages into the discussion. While the formal definitions of the vocabulary terms were presented in Arabic, the lecturer also provided translations and explanations in Kurdish to ensure better comprehension and inclusivity. However, despite these efforts, three of the five active participants primarily communicated in their native languages when answering the lecturer's questions, highlighting the potential challenges of transitioning from native language understanding to English language production.

In the third class, observed at the Department of Food Technology, only one learner actively participated in the lecture, resulting in infrequent interactions between the lecturer and the students. The researcher noted that the learning materials were presented in a Word file projected on a screen, with the lecturer providing explanations and illustrations in English. However, the lecturer explicitly discouraged students from speaking or participating in Kurdish, creating a more formal and potentially less engaging learning environment. This approach may have inadvertently limited student participation and hindered their ability to fully grasp the new vocabulary terms

To facilitate a more precise analysis of the effectiveness of each lecturer's teaching methods, the researcher collected and evaluated the quiz papers administered at the conclusion of each observed lecture. To ensure comparability, the quiz format was standardized across all three classes, requiring

learners to compose a paragraph of approximately seventy five words, incorporating a minimum of fifteen agricultural vocabulary terms introduced during the session. The evaluation focused not only on the accurate use of the vocabulary terms but also on the students' ability to integrate them meaningfully into coherent and contextually appropriate sentences. The results of this assessment are detailed below:

In the Department of Animal Resources, where the learning materials were strategically presented with a combination of illustrative pictures, contextualized sentences, and English definitions, a total of 13 out of 18 students successfully passed the quiz. This translates to a pass rate of 72.2%, suggesting that the multi-modal approach employed by the lecturer was effective in facilitating both vocabulary acquisition and application.

In contrast, the second class, observed at the Department of Soil and Water, exhibited a lower pass rate. In this session, the learning materials were delivered via PowerPoint, incorporating pictures alongside definitions in both Arabic and Kurdish. Out of a cohort of seventeen students, only eight achieved a passing grade, resulting in a pass rate of 47%. Notably, the researcher observed a recurring pattern in the students' quiz papers. While the majority of learners demonstrated the ability to recall the required fifteen agricultural vocabulary terms, many struggled to construct a cohesive and grammatically correct paragraph that effectively integrated these words into meaningful sentences. This finding suggests that while the use of native languages may aid in initial vocabulary comprehension, it may not be sufficient to promote fluency and accurate usage in written English.

The third class, conducted at the Department of Food Technology, yielded the lowest pass rate among the three observed sessions. In this instance, the learning materials were presented in a simple Word file format, and the lecturer explicitly prohibited the use of the students' native languages during the session. Out of a total of eighteen students, only six successfully passed the quiz, resulting in a pass rate of just 33.3%. This outcome underscores the potential limitations of a strictly English-only approach, particularly when combined with less engaging presentation methods. The low pass rate may reflect the difficulty that students experienced in processing and retaining new vocabulary without the aid of visual cues, contextual support, or the ability to clarify their understanding in their native languages.

Table one: The Quiz Results of the Three Departments with Their Teaching Materials

Department	Number of Students	Number of Students Passed	Pass Rate (%)	Teaching Materials & Methods
Animal Resources	18	13	72.20%	Pictures, Contextualized Sentences, English Definitions
Soil and Water	17	8	47.10%	PowerPoint, Pictures, Arabic & Kurdish Definitions
Food Technology	18	6	33.30%	Word File, English Only, Limited Student Interaction

Table Two: The Agricultural Vocabulary Terms Taught in the Three Classes

Agricultural Vocabulary Terms				
lant diseases	Irrigation	Yield	Pasture	Seedling
Farm	Fertilizer	Tillage	Forage	Compost
Loam soil	Pesticide	Sowing/Planting	Silage	Herbicide
Clay soil	Crop rotation	Germination	Erosion	Horticulture
Sandy soil	Harvesting	Livestock	Fungi	Harvest

Conclusion

In conclusion, this study, through detailed classroom observations and analysis of student performance on a vocabulary-based quiz, reveals key insights into effective pedagogical approaches for teaching agricultural ESP terminologies to first-year students. The findings suggest that a multi-modal approach, incorporating visual aids, contextualized sentences, and English definitions, as exemplified in the Department of Animal Resources, is particularly effective in promoting both vocabulary acquisition and application. This aligns with research by , who emphasizes the benefits of multimedia learning. Mayer (2009) states that people learn more deeply from words and pictures than from words alone. The 72.2% pass rate observed in the Department of Animal Resources provides empirical support for this claim, suggesting that visual aids can enhance cognitive processing and retention of new vocabulary terms.

In contrast, the study indicates that while incorporating learners' native languages may aid in initial comprehension, it may not be sufficient to ensure accurate and fluent use of English vocabulary, as demonstrated by the lower pass rate (47%) in the Department of Soil and Water. This finding resonates with research by Swain on comprehensible output. Swain (1985) suggests that learners need opportunities to actively produce language in order to develop fluency and accuracy. The fact that students in the Department of Soil and Water struggled to construct grammatically correct sentences despite understanding the vocabulary terms in their native languages underscores the importance of providing ample opportunities for learners to practice using English in meaningful contexts.

Furthermore, the findings underscore the potential limitations of a strictly English as only approach, particularly when combined with less engaging presentation methods, as evidenced by the lowest pass rate (33.3%) in the Department of Food Technology. This outcome supports Krashen's Input Hypothesis. Krashen (1982) posits that language acquisition occurs when learners are exposed to comprehensible input

in a low-anxiety environment. The researcher's observation that the lecturer in the Department of Food Technology discouraged the use of the students' native language and relied on a less engaging presentation style suggests that the learning environment may have been less conducive to vocabulary acquisition.

These results emphasize the importance of employing diverse and engaging teaching strategies that cater to the specific needs and learning styles of agricultural ESP learners. As Nation (2001) argues, effective vocabulary instruction should involve a combination of explicit teaching, contextual learning, and opportunities for active use. Future research should explore the long-term effects of these different approaches on vocabulary retention and language proficiency, as well as investigate the potential benefits of incorporating discourse analysis techniques to further enhance vocabulary acquisition in agricultural ESP.

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