Teaching Content Vocabulary to Students of Diploma in Agriculture through Activity-Based Learning

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Received: June 9, 2023 Accepted: October 30, 2023 Online Published: December 4, 2023

doi:10.5430/wjel.v14n1p385 URL: https://doi.org/10.5430/wjel.v14n1p385

Abstract

The significance of teaching content vocabulary and its profound implications on students' comprehensive understanding and improved academic performance, particularly among ESL learners, is widely acknowledged. This quantitative research was conducted at an Institute of Diploma in Agriculture to impart subject-related vocabulary to students through a pedagogical approach rooted in activity-based learning. To this purpose, a list of vocabulary from their syllabus was compiled with the assistance of the professors, and the same was then taught to the students using various techniques. Of notable significance was the incorporation of phonetic instruction, a pivotal component that ensured improved pronunciation, and eventually noticeable improvement in spelling proficiencies. Pre- and post-assessments showcased significant improvements in the experimental group. Proper and systematic teaching of content vocabulary will aid the students in comprehending the courses and enhancing their academic performance. In the background of diverse linguistic contexts and educational challenges and requirements, this short study emphasizes the importance of content vocabulary instruction, which in in the long run, would ensure better academic performance and language acquisition.

Keywords: Agriculture, Phonetics, Content Vocabulary, Speaking, Spelling

1. Introduction

Vocabulary plays a central role in the process of language learning as it functions as a crucial component of communication and comprehension. Vocabulary is very significant in daily life where extensive and diverse vocabulary, in the long run, enables one to become not only an educated person but also fluent in a language (Beck, McKeown, & Kucan, 2013). Learning and widening vocabulary knowledge continue to be one of the most essential objectives in literacy and learning (Bintz, 2011). Apart from acquiring generic vocabulary, the acquisition of domain-specific / content-based vocabulary is of paramount importance for academic progress and proficiency. Content-based vocabulary teaching, an approach that integrates language learning with subject matter content, has gained much attention for its potential to enhance language acquisition by providing meaningful and context-rich learning experiences. This study focused on students from rural backgrounds who pursue their studies in the domain of Agriculture. Since the students come from rural areas, it is obvious that their level of English knowledge and fluency will be substantially lower than that of students who attend English Medium schools; hence, there is an increased requirement to facilitate the learning process. This study will investigate the significance of teaching content vocabulary and the various strategies that can be used to teach the same in the most efficient manner possible within the constraints of the available opportunities. Strong emphasis was placed on phonetics and pronunciation, and assistance was given to them in learning the correct spelling of vocabulary that was relevant to their field of study.

2. Research Motivation and Questions

2.1 Needs Analysis / Research Problem

The target audience of this experimental paper is the students who pursue their diploma in Agriculture in Tamil Nadu, India. The Diploma in Agriculture is a two-year professional degree during which students are required to master a large number of technical words and phrases, as well as domain-specific words and phrases, related to a variety of topics or courses. Most of the students are from rural backgrounds and have had the Tamil Language as the medium of instruction during their schooling. Though the medium of instruction is bilingual, the syllabus is in the English Language at the Diploma level and the students have a difficult time learning the subjects, as a result, they struggle to perform well in their academic activities, which include both theoretical exams and practical exams. As a result, assisting students in acquiring proficiency in the content-area vocabulary or domain-specific terms of their subjects would be of great use, as it would ultimately aid them in meeting their academic demands and obligations.

Hence, they need to learn the following key aspects of that content-area vocabulary or domain-specific terms namely 1) Correct Spelling 2) Correct Pronunciation 3) Meaning.

2.2 Objective

(1) To examine the influence of activity-based learning on the acquisition of content vocabulary among Diploma in Agriculture students and assess its effectiveness in enhancing their comprehension and retention.

(2) To ensure that they learn the correct spelling, pronunciation, and meaning of the selected content-area / domain-specific vocabulary.

(3) To assess and compare the performance of students from English medium background and those from Tamil medium background in the acquisition of content vocabulary through activity-based learning.

2.3 Research Questions

(1) Do students who learn content-area or domain-specific vocabulary using Activity-based learning outperform those who use conventional methods?

(2) How does the implementation of activity-based learning contribute to students' accurate learning of the spelling, pronunciation, and meaning of content vocabulary?

(3) Do the students from English medium backgrounds perform better than those students from Tamil medium backgrounds?

2.4 Hypothesis

- $H_0$1: Students will not learn the correct spelling of the content-area or domain-specific vocabulary effectively through Activity-based learning.
- $H_0$2: Students will not learn the pronunciation of the content-area or domain-specific vocabulary effectively through Activity-based learning.
- $H_0$3: There is no significant difference in the performance of the students from English medium and Tamil medium backgrounds.

3. Review of Literature

3.1 Teaching Vocabulary

The process of learning a new language requires the development of various linguistic skills, including phonetics, grammar, syntax, and vocabulary. Among these, vocabulary plays a crucial role since it forms the foundation of communication further enabling learners to convey thoughts, ideas, and emotions effectively. Hence, vocabulary education would be at the top of a language teacher's list of priorities because of the many obstacles students face when learning a new language's vocabulary. Undoubtedly, vocabulary is crucial in the process of language learning as it enables students to comprehend concepts, syntax, and semantics of a language. Nevertheless, teaching vocabulary as an isolated ability will undermine the role of language in the process of learning (Fisher & Frey, 2015). The development of vocabulary is crucial for English Language Learners (ELLs) because it has a major impact on their ability to comprehend text and succeed in their academic performance (August, Carlo, Dressler, & Snow, 2005). While vocabulary learning remains to be crucial for language acquisition, concentration in teaching content or academic vocabulary ensures improvement in reading comprehension, and better academic performance, and eventually aids language acquisition (Nagy & Townsend, 2012). Content-based instruction involves the acquisition of a second language alongside studying content matter subjects such as mathematics, science, English literature, and technology. This method of teaching language through the curriculum is also referred to as sustained-content language teaching (SCLT) (I. S. P. Nation & Webb, 2011). When students learn academic vocabulary in the field of Math, they not only absorb the technical terms in Math but eventually gain language proficiency. This demonstrates how intertwined and inseparable content knowledge and language proficiency are (Riccomini, Smith, Hughes, & Fries, 2015). For dual language learners, teaching vocabulary is even more challenging because the teacher should balance the vocabulary from both languages to ensure effective vocabulary acquisition and proficiency in both languages (Wong & Neuman, 2019). Content-based instruction focuses on subject matter information with language acquisition, while form-focused instruction directs the learners' attention toward the link between the form and function in the target language. By combining and balancing these two, the instructors can ensure an effective language-learning process for ESL learners including both content and language (Lyster, 2011).

Since vocabulary is not formally taught in language schools, students are entirely responsible for learning it. The majority of the time, vocabulary instruction would consist of nothing more than providing students with a list of words to learn by heart or conducting a few brief practice sessions, but they would receive neither additional assistance nor an evaluation to determine how effectively they were learning. The students could be taught vocabulary in a variety of ways that are quite effective, according to the recommendations made by several different researchers.

3.2 Vocabulary Teaching Techniques

According to the findings of recent research, memorization of words has been a common method utilized by many learners as a strategy to remember vocabulary items (Pan, 2017). Nation proposed that rote memorization occurs when a student memorizes something by repeatedly repeating it until it is learned and mastery is gained (I. Stephen Paul Nation, 2013). Researcher Wu stated that memory is a superficial educational approach that does not result in profound learning (Wu, 2018).

Much research has been done by many researchers to identify the most efficient techniques and methods to teach vocabulary.

3.2.1 Extensive Reading

Nation recommended extensive reading as an effective technique to enhance vocabulary learning (P. Nation, 2015). Extensive reading and re-reading make a person very familiar with the text eventually increasing reading fluency, and reading new texts enriches vocabulary that has been previously learned.

3.2.2 Techniques suggested by Oxford and Crookall

Oxford and Crookall categorized vocabulary teaching methodologies into four groups, namely Decontextualizing, Semi-contextualizing, Fully contextualizing, and Adaptable or Structured Reviewing (Oxford & Crookall, 1990).

- Decontextualizing Techniques: The three techniques that fall under this category are word lists, flashcards, and conventional dictionary use.
- Semi-Contextualizing Techniques: This comprises the following methods namely Words Grouping, Word or Concept Association, Visual Imagery, and Semantic Mapping.
- Fully Contextualizing Techniques: This involves practising the four language skills such as Reading, Listening, Speaking, and Writing which will eventually give the student a comprehensive context.
- Structured Reviewing: This approach is the process of reviewing the vocabulary repeatedly at varying intervals.

Some theorists consider that students will understand and preserve vocabulary through context-based reading. Continuous Listening and Reading may be beneficial, but for better results, creative improvisation is required. Some Trainers believe that speaking and writing are the most effective methods for teaching vocabulary to students. Continuous and systematic application of these abilities produces greater returns. Finally, students must have a real interest in exploring the different creative learning possibilities (Oxford & Crookall, 1990).

Some of the more common and effective methods for teaching vocabulary are presented below, and they include the ones that have been described above. Every one of them comes with its own unique set of advantages and disadvantages. The results that are intended could be achieved by a more imaginative and creative application of the same.

3.2.3 Planned and Unplanned Activities

As the name implies, unplanned activities refer to instances in which words are accidentally taught in the classroom when students request specific definitions for particular words or when the teacher feels the need to attract the students' attention to particular terms. While planned activities would require less time for preparation because the teacher would have generally prepared the instructional materials in advance by utilizing multiple sources (Shen, 2003).

Phillips et al suggested the following two techniques for teaching vocabulary to students (Phillips, Foote, & Harper, 2008)

3.2.4 Selecting Words

The Teacher must meticulously plan in advance to determine the vocabulary list to be given to the students. This demands teachers to be more sensitive to terminology and to have a deep understanding of the students they are dealing with.

3.2.5 Graphic Organizers

A two-dimensional, visual display known as a graphic organizer demonstrates the connections between the words and concepts. The vocabulary is typically at the centre of a graphic organizer or word map, which also includes supplementary links that are related to the main word or subject. An example of a sample graphic organizer is shown in Fig.1.

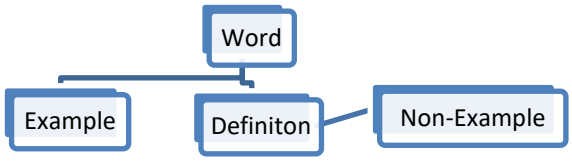

Figure 1. Sample Graphic Organizer

Teachers can acquire and easily download graphic organizers for vocabulary study from a variety of websites. When teaching vocabulary, teachers should get pupils involved in more in-depth processing of words. More engaged and active participation on the part of the students is required for conducting activities (Phillips et al., 2008).

Azil et al. (Azim, Hussain, Bhatti, & Iqbal, 2020)suggested two methods for vocabulary learning and they are as follows:

3.2.6 Glossing Method

This method involves providing a brief contextual description of the new word in the reading material and introducing its meaning and

usage to the students. This method may be good for introductions but the students will have to refer to the book and the dictionary for further progress in vocabulary acquisition.

3.2.7 Recycling of Vocabulary

This method involves reading and practising vocabulary repeatedly. Repetition and proper understanding enable proper comprehension and ensure memory retention. This method works well when practised over a longer period (Azim et al., 2020).

3.2.8 Read-Aloud

Read-aloud, though a very conventional technique, has been presented as an effective method for teaching and learning vocabulary during the initial phase of reading instruction. Studies have demonstrated that read-aloud activities can effectively contribute to students' vocabulary development and comprehension (Santoro, Chard, Howard, & Baker, 2008).

Much research has been done on exploring various strategies to teach vocabulary to students. The effectiveness of teaching vocabulary to preschool children by using screen-based pedagogical supports (SBPS) has fetched positive results (Danielson, Wong, & Neuman, 2019). Three effective strategies for content vocabulary teaching include a) pre-teaching vocabulary, b) offering sentence frames and sentence beginnings, and c) utilizing visual aids (Grapin, Llosa, Haas, & Lee, 2021). The availability of online digital tools will aid the teaching of content vocabulary. The Word and Phrase tool analyzes the digital text and identifies the most frequent academic words in the given text and furnishes information on each academic word such as synonyms, definitions, and concordance lines which the teacher can use to support their teaching activities (Townsend & Kiernan, 2015). Vocabulary strategy plays a crucial role in the process of second language acquisition. When a variety of strategies are employed, second-language vocabulary acquisition becomes efficient for language learners (Jeon, 2006).

4. Methodology

4.1 Research Context and Participants

Students pursuing their Diploma in Agriculture in Ranipet District, Tamil Nadu (India) were taken as participants. In total, 80 students were pursuing their diploma degree in Agriculture. The information regarding their medium of instruction during their school education is given below.

4.1.1 Profile of the Participants

Table 1. Profile of the Students

S.No	Control Group	Percentage %	Experimental Group	Percentage %
Tamil Medium	35	87.5%	36	90.0%
English Medium	5	12.5%	4	10.0%
Total	40	100%	40	100%

Table 1 gives the details of the participants concerning the medium of instruction that they have had during school. As shown above, the majority of students pursuing this Diploma in Agriculture have had Tamil as their primary language of instruction during their school education.

4.2 Materials

As already mentioned, this paper aims to prove that the students can simultaneously learn vocabulary related to their subject and also learn the basics of the English Language namely, correct spelling and pronunciation of the listed vocabulary. This will not only enhance their word power in their respective subject but also improve their vocabulary in general. To this end, after careful examination of the already existing methodologies, an effort has been taken to effectively use the already existing methodologies along with some new methodologies, and some practical techniques will be discussed and explored here as well.

4.2.1 Selecting Words

The selection of words is the first and most important step that the teacher needs to do. Here for the short research, the words have been selected after consulting some teachers and students from that institute of Diploma in Agriculture. Only 150 words (a sample is given in Appendix A) were chosen for the research because of the constraints imposed by the length of the paper and the amount of time available for the investigation. As a form of educational support, the following was provided in printed form to both groups:

(1) The List of selected content-area or domain-specific vocabulary.
(2) English Phonetic Symbols.

4.3 The Research Design

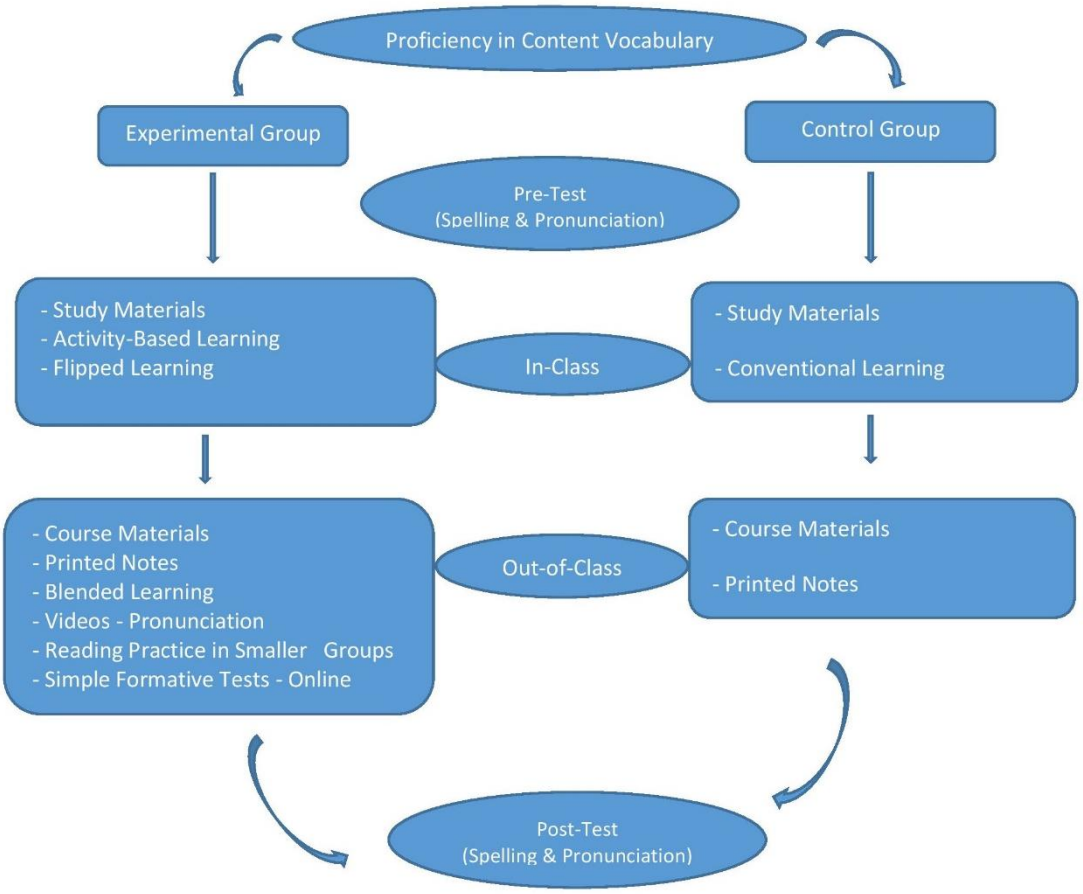

Figure 2. Research Design

Fig 2 presents the design of the entire research process. This study aimed to improve the proficiency of the students in the vocabulary that was taken from their syllabus. There was a total of 80 students and, for research purposes, they were divided into Control (N = 40) and Experimental (N = 40) groups. The Instructional procedure followed during the entire study is explained below.

4.4 Instructional Procedures

4.4.1 Participants' Pre-test and Post-test – Spelling, and Pronunciation

A spelling and pronunciation pre-test was given to both groups to evaluate their level of proficiency in those areas. In order to accomplish this goal, the listed 150 words were put to use, and the results were tabulated.

4.4.2 Modes of Instruction

The Control Group was instructed in the classroom setting through the use of the more conventional modes of instruction. During that time, the members of the Experimental Group were kept busy with a variety of activities, both in and outside the classroom, which were designed to help them improve in the following areas:

(1) Spelling.

(2) Identifying the Meaning (in English) of the Words.

(3) Pronunciation.

The learning materials were given to all the participants. The experimental group was enabled to learn better by incorporating flipped and blended learning methods where they were given the following added support system to learn effectively:

- Videos were shared with them so that they could view them before and after the classes.
- Both offline and online modes of teaching were done to make the learning process more effective.
- Simple formative tests were conducted online to help them steadily improve their learning of the vocabulary.

The learning process of the experimental group was made more engaging and fruitful by the participation of the students in a variety of activities that took place in and out of class. The following are examples of some of the exercises that were carried out so that the students

could become quite familiar with the vocabulary as well as their spelling, pronunciation, and meaning. Table 2 provides a list of the activities and games that were conducted for the experimental group.

Table 2. Activities for learning

S.No	Games	Effect
1	Jumbled Words, Word Scrabble, Zigzag Puzzle, Word Scramble, Word Fit, and Daisy	These activities helped the students to identify and learn the correct spelling of the vocabulary.
2	Crossword Puzzle and Hidden Word	These activities enabled the students to comprehend and recall the meanings of the terms.
3	Compound Word-Match	Among the words, there were some compound words. This game helped the students to identify and match the compound words correctly and enabled them to learn their spelling as well.

All the above-mentioned activities were prepared using online tools that are freely available. During the first week, each of these activities started as a group activity, and participants were divided into smaller groups of six to eight people to participate. During the second week, they participated in the same activities, but this time they were broken up into smaller groups of only two or three people. As a result, these slow learners were able to interact with their group members and improve their learning. It was required that, following the conclusion of each activity, each member of the group reflect on what they had just done and discuss their impressions of the experience with the rest of the class. Eventually, the pupils were able to learn together in a joyful environment. After the session, the activity sheets were handed back to the students with the instruction to do any necessary self-reflection during their free time.

4.4.3 Teaching Phonetics and Stress Pattern

Since students from rural areas are the target audience, it is strongly suggested that phonetics be taught to these students so that they might gradually improve their command of the English language through improved pronunciation. After having acquired an understanding of the phonetic symbols, the pupils were assisted in accurately pronouncing the words. Approximately two weeks' worth of reading drills were carried out in the evenings after the classes, with the assistance of the instructors. For more efficient instruction, the class was subdivided into smaller groups supervised by four instructors. The ‘stress' pattern is an essential part of phonetics and should not be overlooked. The words were grouped into categories according to the stress patterns (a sample is given in Appendix 2), and the pupils were assisted in pronouncing the words in the context of reading drills daily for about two weeks.

Activities were carried out to recognize and classify the words by their Stress patterns and as a result, they were able to better remember the proper way to pronounce the words. Reading the vocabulary over and over again will not only help the students learn the terms, but it will also help them improve their pronunciation and reading skills in the English language, which will ultimately benefit the students. The following is an example of a model paragraph that the students were given for their Reading Practice. The following text includes some of the words selected from their textbooks. A competition was conducted based on this where the students were asked to read that paragraph within a specified time limit and record the same and share it through WhatsApp. The students really loved this activity as it was more engaging and entertaining as well. The paragraph is given below:

Agriculture means the cultivation and harvest of organic crops like

cereals and pulses using manure, biofertilizer, pesticide and

insecticide in a fertile land with moisture ploughing, sowing,

threshing and winnowing.

(This passage may be read within 15 seconds and later reduced to 10 seconds)

This exercise not only increased their Reading Skill but also helped them to remember and recollect the vocabulary.

4.4.4 Post-test – Spelling and Pronunciation

A post-test was conducted to evaluate their progress after having undergone traditional teaching classes for three weeks (twenty hours) and conducting various activities and Reading Practice sessions for the Control Group and the Experimental Group respectively. The post-test results were tabulated to facilitate further discussion and data analysis.

5. Results and Findings

The researcher conducted the study as a form of intervention, and descriptive statistics were used in the analysis of the data. To conduct further analysis, the findings of the Pre-test and Post-test that were administered to both the Control Group (CG) and the Experimental Group (EG) for the two separate modules of Dictation (spelling) and Pronunciation were tabulated. To analyze the data, statistical tools were employed, and the process resulted in the production of the following results.

After collecting the essential data, the researcher analyzed the same to produce the final results. Before conducting any statistical analysis on the pre-and post-tests, Cronbach's alpha (Table 3) was applied to assess the reliability of the test scores. According to Gorge & Mallery's interpretation table 3, a Cronbach's value of 0.934 indicates that the interpretation level is good (George & Mallery, 2003).

Table 3. Reliability Scale Test

	Cronbach's α
Scale	0.934

5.1 Participants' Scores of the Pre-test and Post-test

Table 4. Distribution of Scores of the Groups

Marks	Experimental Group				Control Group			
	Spelling		Pronunciation		Spelling		Pronunciation	
	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
0-10	9	0	0	0	4	2	0	0
11-20	4	0	0	0	6	4	1	0
21-30	1	9	2	0	6	9	5	3
31-40	4	2	5	1	6	4	8	6
41-50	5	1	1	1	5	4	6	6
51-60	8	5	12	4	7	8	14	10
61-70	8	11	19	10	5	5	5	11
71-75	1	12	1	25	1	4	1	4
Mean Score	39.5	56.1	55.3	68.9	37.1	42.4	46.8	52.6
Highest Score	71	75	72	75	72	74	71	74
Lowest Score	5	23	26	45	2	8	19	25

The Pre-test and the Post-test scores indicated the following:

- The Experimental Group demonstrated greater improvement than the Control Group. Table 4 displays the marks scored by the students.
- Analyzing the scores of the pre-test and the post-test, the researcher identified the following pattern: the highest scores in all the pre-tests and post-tests were scored by the students from the English medium background. All the lowest scores in all the pre-tests and post-tests were scored by the students from the Tamil medium background. This finding too is statistically analyzed and the results are tabulated and discussed further.

Further, the parametric statistics, including Paired samples T-test and Independent Samples T-tests, were utilized to determine the effects of Activity-based learning in acquiring the correct pronunciation and spelling of the content vocabulary.

5.2 Increase in Vocabulary Knowledge – Spelling

Table 5. Independent Samples T-Test – Group Descriptives

Tests – Values	**Group**	**N**	**Mean**	**Median**	**SD**	**SE**
Pre-Test Spelling	Control	40	37.1	37.0	20.7	3.27
	Experimental	40	39.5	43.0	23.9	3.78
Post-Test Spelling	Control	40	42.4	42.5	20.3	3.21
	Experimental	40	56.1	65.0	18.8	2.97

As seen in Table 5, there is no significance in the pre-test results of the control group *(M = 37.1, SD = 20.7)* & and experimental group *(M = 39.5, SD = 23.9)*. The post-test results of the control and experimental groups respectively *(M = 42.4, SD = 20.3)* & and *(M = 56.1, SD = 18.8)* show improvement thus implying that there was a remarkable performance and sustained improvement by the EG participants than the CG participants in the spelling tests.

Table 6. Independent Samples T-Test – Spelling

Tests – Values	Statistic	df	P	Mean difference	SE difference
Pre-Test Spelling (CG & EG)	-0.47	78	0.640	-2.35	5
Post-Test Spelling (CG & EG)	-3.146	78	0.002	-13.75	4.37

Table 6 displays a significant difference between the Control Group and the Experimental Group. The pre-test p = > 0.640 value determines that there is no significant difference between the groups. After the intervention classes, the post-test p = < 0.002 value indicates a significant difference between both groups with impressive values. This proves that activity-based teaching has been very effective in enhancing the vocabulary learning (spelling) of the students, hence the Null Hypothesis ($H_0$1) is rejected and the intervention study has had a beneficial impact on the samples.

5.3 Increase in Vocabulary Knowledge – Pronunciation

Table 7. Independent Samples T-Test – Group Descriptives

Tests – Values	**Group**	**N**	**Mean**	**Median**	**SD**	**SE**
Pre-test	Control	40	46.8	50.0	13.8	2.18
Pronunciation	Experimental	40	55.3	60.5	11.50	1.82
Post-test	Control	40	52.6	55.5	13.3	2.11
Pronunciation	Experimental	40	68.9	71.5	7.15	1.13

As seen in Table 7, there is no significance in the pre-test results of the control group *(M = 46.8, SD = 13.8)* & experimental group *(M =*

55.3, SD = 11.5). The post results of the control and experimental groups respectively *(M = 52.6, SD = 13.3)* & *(M = 68.9, SD = 7.15)* show improvement thus implying that there was a remarkable performance and sustained improvement by the EG participants than the CG participants in the pronunciation tests.

Table 8. Independent Samples T-Test – Pronunciation

Tests - Values	Statistic		df	p	Mean difference	SE difference
Pre-test Pronunciation (CG & EG)	Student's t	-2.98	78	0.004	-8.45	2.84
Post-test Pronunciation (CG & EG)	Student's t	-6.82	78.0	.001	-16.33	2.39

Table 8 displays a statistically significant variance between the Control Group and the Experimental Group. The pre-test p = > 0.004 value determines that there is a significant difference between the groups. However, after the intervention classes, the post-test p = < 0.001 value shows that there is a significant difference between both the groups in the post-tests with impressive values. Though the p values were below .005 for the pre-test and post-test, the improvement made by the Experimental Group is vividly seen and is significant. This proves that activity-based teaching has been very effective in enhancing the vocabulary learning (pronunciation) of the students, hence the Null Hypothesis ($H_0$2) is rejected and the intervention study has had a beneficial impact on the samples.

In a nutshell, the outcomes indicated that both groups had an improvement on their post-test, but the EG outflanked the CG in the post-tests conducted for spelling and pronunciation.

5.4 Comparison of the Performance of the Students - English and Tamil Medium

Comparing the test scores of children with Tamil and English as their medium of instruction in their schools revealed the following.

As was indicated before, the students whose first language was English scored the best on all of the pre-tests and post-tests. These students also scored the highest overall. Students with a background in the Tamil medium received the lowest marks on all of the pre-tests and post-tests.

5.4.1 Spelling

Table 9. Independent t-test comparing Tamil & English Medium

Medium - Values		N	Mean	Std. Deviation	Std. Error Mean
Post-Test Spelling	Tamil	69	45.43	19.609	2.361
	English	11	73.36	2.014	0.607

The independent t-test compared the Spelling post-test results of the participants who had Tamil and English as their medium of instruction. Table 9 shows the results of the Tamil medium students (*M = 45.43, SD = 19.609*) were much lower than those of the English medium students (*M = 73.6, SD = 2.014*). The performance of the students of the English medium was consistently found to be much better than the Tamil medium students.

Table 10. T-test for Equality of Means - Spelling

Equality of Means		t	Df	Sig.	MD	Std. Error Difference	95% Confidence Interval Lower	Upper
Post-Test Spelling	Equal variances assumed	-4.695	78	0.000	-27.929	5.949	-39.772	-16.086

Table 10 shows the two-tailed t-test for independent samples (equal variances assumed) that explored the differences between the English and Tamil medium students concerning the dependent variable namely Spelling. The Post-test results were statistically significant, t (78) = -4.695, p = <.000, and the lower and upper limits lay between [-39.772, -16.086] 95% confidence interval. Hence, the null hypothesis ($H_0$3) is rejected and the alternate hypothesis is accepted. Thus, we conclude that the performance has differed among the English and Tamil medium students with the former outperforming the latter.

5.4.2 Pronunciation

Table 11. Pronunciation

Medium – Values		N	Mean	Std. Deviation	Std. Error Mean
Post-test Pronunciation	Tamil	69	59.07	13.645	1.643
	English	11	71.18	4.665	1.407

The independent t-test compared the Pronunciation post-test results of the participants who had Tamil and English as their medium of instruction. Table 11 displays that the results of the Tamil medium students (*M = 59.07, SD = 13.645*) were much lower than those of the English medium students (*M = 71.18, SD = 4.665*). The performance of the students of the English medium was consistently found to be much better than the Tamil medium students.

Table 12. T-test for Equality of Means - Pronunciation

	Equality of Means	t	df	Sig.	MD	Std. Error Difference	95% Confidence Interval	
							Lower	Upper
Post-test Pron	Equal variances assumed	-2.903	78	0.005	-12.109	4.172	-20.414	-3.804

Table 12 shows the two-tailed t-test for independent samples (equal variances assumed) that explored the differences between the English and Tamil medium students concerning the dependent variable namely Pronunciation. The Post-test results were statistically significant, t (78) = -2.903, p = <.005, and the lower and upper limits lay between [-20.414, -3.804] 95% confidence interval. Hence, the null hypothesis ($H_0$3) is rejected and the alternate hypothesis is accepted. Thus, we conclude that the performance has differed among the English and Tamil medium students where the former performed better than the latter.

Spencer (Spencer & Guillaume, 2006) observed that children who come from families with a poor socio-economic status and those who are learning a second language tend to be more at risk and may not be able to make up lost momentum unless they receive direct intervention in the process of learning words. Hence as found in the above results, students from regional medium (Tamil) backgrounds would certainly require more attention in the learning process. Certainly, the instructor should make more effort to show special care and attention to them to make the learning more effective and fruitful.

6. Conclusion

This research is an experiment in novel methods of teaching languages by making use of material that is directly relevant to the subject being studied. During the process of teaching content-area vocabulary to the students of the Diploma in Agriculture, significant emphasis has been placed throughout this discussion on the fundamental aspects of Phonetics and Stress Patterns. Simmons et al (Simmons et al., 2010) reiterated the effectiveness of utilizing a variety of instructional approaches (multiple-strategy instruction) when instructing students on content vocabulary. Therefore, teachers and instructors should come to terms with the fact that no one strategy or approach can accomplish the goal of vocabulary acquisition. As a result, instructors must employ a wide range of strategies and methods while instructing pupils. When it comes to teaching vocabulary, one of the most important things is probably not deciding which specific method or tactic would be the most effective for the students, but rather informing or instructing the students on the many different approaches and methodologies that are accessible (Shen, 2003). Careful application of the best practices of teaching, especially for struggling students, would enable deeper comprehension, greater engagement, and hands-on encounters with content-area vocabulary and notions across all subject areas (Harmon, Hedrick, & Wood, 2005). Teachers need to strike a good balance by going beyond traditional vocabulary training methods like direct instruction and extensive reading to keep their students engaged and learning (Greenwood, 2002). This would maximize the scope as well as the numerous strategies that are involved in the practice of learning and teaching content-area vocabularies.

6.1 Implications of the Study

In a nutshell, the following are the implications of the study.

- The study highlights the effectiveness of activity-based learning in enhancing spelling and pronunciation skills in content vocabulary.
- It emphasizes the need for tailored support for students with Tamil medium background, as they may require additional attention to bridge the performance gap with English medium students.
- The study supports the notion that activity-based learning can be a powerful tool for content vocabulary learning, especially for students from Tamil medium backgrounds.

7. Limitations and Future Scope

Even though it is extremely productive, this research does have a few limitations that need to be taken into account. First, the number of students in the sample is restricted to only 80, all of whom are enrolled in the same diploma program which may lead to restricted findings. A second limitation of this study is that the period of intervention classes was only meant to last for two weeks, which is a fairly brief length of time. It is possible that a larger study with more participants from a variety of educational settings, extended over a longer period, would produce more in-depth and comprehensive findings. For future research, it could be a good idea to think about conducting interviews with both teachers and students to better understand their recommendations for the development of instructional materials and methods that would be most effective.

Analyzing the development of learning materials, it has been observed that EFL learning materials seem to ignore the most important part of learning a language, which is vocabulary (Bergström, Norberg, & Nordlund, 2023). More research in this area would enable the teachers and the material developers to create teaching materials that are very specific to the content that is taught. This will ensure the availability of an abundance of teaching materials in content vocabulary across various fields of study and academic disciplines.

Another research closely connected to content vocabulary teaching is Content and Language Integrated Learning (CLIL). This

methodology was developed by David Marsh and Anne Maljers in 1994. It's a method of teaching both the subject matter and the target language simultaneously to students (Šulistová, 2013). In CLIL, therefore, the learning process encompasses both subject and language. Thus, in the teaching and learning process, attention is placed on both subject and language, even if the emphasis is placed more heavily on one element at any particular time (Schroeder, 2015, p. 28). In a bilingual or multilingual context, the process of learning can be made more effective through translanguaging where the students will be enabled to acquire academic content more effectively(Tian & Zhang-Wu, 2022). This brief research might be taken forward by not confining itself to the teaching of content-area vocabulary, but rather by using it as a starting point not only to learn their academic content but also to lead students towards communicating in English and improving their proficiency in the process. By doing so, the students will not only learn the content-area vocabulary but will eventually improve their knowledge and skills in the English Language if they follow the activities mentioned earlier and combine Phonetics and Stress Patterns. Further study and research in this field would result in new findings combining Content and Language Learning and the use of translanguaging that would make the process of teaching and learning more effective and beneficial to the students.

Acknowledgement

I place on record my sincere appreciation and gratitude to my Ph.D. guide Dr. Suganthan C, Asst. Professor, VIT for encouraging me to take up this paper and helping in every way possible not only to complete this paper but also to trigger and nurture my interest in research works. Further, we express our gratitude to the anonymous reviewers for their critical evaluation of the paper and their insightful comments, which have significantly contributed to the paper's clarity.

Authors contributions

F. Joseph Desouza Kamalesh has conceptualised, collected resources, analysed, and written the original draft.

Dr. Suganthan C is the corresponding author and supervisor. He edited, reviewed, and developed the final draft.

Funding

This research article received no funding.

Competing interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Informed consent

Proper ethical consent and consideration were approved for this research paper.

Ethics approval

The Publication Ethics Committee of the Sciedu Press.

The journal's policies adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

Provenance and peer review

Not commissioned; externally double-blind peer-reviewed.

Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are

not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.

References

August, D., Carlo, M., Dressler, C., & Snow, C. (2005). The critical role of vocabulary development for English language learners. *Learning Disabilities Research & Practice, 20*(1), 50-57. https://doi.org/10.1111/j.1540-5826.2005.00120.x

Azim, M. U., Hussain, Z., Bhatti, A. M., & Iqbal, D. M. (2020). Recycling Of Vocabulary In English Language Teaching: From Theory To Practice. *Epistemology, 7*(1), 88-102.

Beck, I. L., McKeown, M. G., & Kucan, L. (2013). *Bringing Words to Life: Robust Vocabulary Instruction*. Guilford Press.

Bergström, D., Norberg, C., & Nordlund, M. (2023). "The Text Comes First" – Principles Guiding EFL Materials Developers' Vocabulary

Content Decisions. *Scandinavian Journal of Educational Research*, *67*(1), 154-168. https://doi.org/10.1080/00313831.2021.1990122

Bintz, W. P. (2011). Teaching Vocabulary across the Curriculum. *Middle School Journal*, *42*(4), 44-53. https://doi.org/10.1080/00940771.2011.11461773

Danielson, K., Wong, K. M., & Neuman, S. B. (2019). Vocabulary in educational media for preschoolers: A content analysis of word selection and screen-based pedagogical supports. *Journal of Children and Media*, *13*(3), 345-362. https://doi.org/10.1080/17482798.2019.1585892

Fisher, D., & Frey, N. (2015). Selecting Texts and Tasks for Content Area Reading and Learning. *The Reading Teacher*, *68*(7), 524-529. https://doi.org/10.1002/trtr.1344

George, D., & Mallery, M. (2003). *Using SPSS for Windows step by step: A simple guide and reference*.

Grapin, S. E., Llosa, L., Haas, A., & Lee, O. (2021). Rethinking instructional strategies with English learners in the content areas. *TESOL Journal*, *12*(2), e557. https://doi.org/10.1002/tesj.557

Greenwood, S. C. (2002). Making Words Matter: Vocabulary Study in the Content Areas. *The Clearing House: A Journal of Educational Strategies, Issues and Ideas*, *75*(5), 258-263. https://doi.org/10.1080/00098650209603951

Harmon, J. M., Hedrick, W. B., & Wood, K. D. (2005). Research on Vocabulary Instruction in the Content Areas: Implications for Struggling Readers. *Reading & Writing Quarterly*, *21*(3), 261-280. https://doi.org/10.1080/10573560590949377

Jeon, S. (2006). Vocabulary teaching and learning in the Korean language: Strategies and activities. *The Korean Language in America*, *11*, 43-63.

Lyster, R. (2011). Content-based second language teaching. In *Handbook of Research in Second Language Teaching and Learning* (pp. 611-630). Routledge.

Nagy, W., & Townsend, D. (2012). Words as tools: Learning academic vocabulary as language acquisition. *Reading Research Quarterly*, *47*(1), 91-108. https://doi.org/10.1002/RRQ.011

Nation, I. S. P., & Webb, S. (2011). Content-based instruction and vocabulary learning. In *Handbook of Research in Second Language Teaching and Learning* (pp. 631-644). Routledge.

Nation, I. Stephen Paul. (2013). What should every EFL teacher know? *(No Title)*.

Nation, P. (2015). *Principles guiding vocabulary learning through extensive reading*.

Oxford, R., & Crookall, D. (1990). Vocabulary learning: A critical analysis of techniques. *TESL Canada Journal*, 09–30. https://doi.org/10.18806/tesl.v7i2.566

Pan, W. F. (2017). The Effects of using the Kinect motion-sensing interactive system to enhance English learning for elementary students. *Journal of Educational Technology & Society*, *20*(2), 188-200.

Phillips, D. C. K., Foote, C. J., & Harper, L. J. (2008). Strategies for effective vocabulary instruction. *Reading Improvement*, *45*(2), 62.

Riccomini, P. J., Smith, G. W., Hughes, E. M., & Fries, K. M. (2015). The language of mathematics: The importance of teaching and learning mathematical vocabulary. *Reading & Writing Quarterly*, *31*(3), 235-252. https://doi.org/10.1080/10573569.2015.1030995

Santoro, L. E., Chard, D. J., Howard, L., & Baker, S. K. (2008). Making the very most of classroom read-alouds to promote comprehension and vocabulary. *The Reading Teacher*, *61*(5), 396-408. https://doi.org/10.1598/RT.61.5.4

Schroeder, C. M. M. (2015). Content and Language Integrated Learning Inspired by Drama Pedagogy. *GERMANY Zukunftsbau GmbH (Coordinator)*.

Shen, W.-W. (2003). *Current trends of vocabulary teaching and learning strategies for EFL settings*.

Simmons, D., Hairrell, A., Edmonds, M., Vaughn, S., Larsen, R., Willson, V., … Byrns, G. (2010). A comparison of multiple-strategy methods: Effects on fourth-grade students' general and content-specific reading comprehension and vocabulary development. *Journal of Research on Educational Effectiveness*, *3*(2), 121-156. https://doi.org/10.1080/19345741003596890

Spencer, B. H., & Guillaume, A. M. (2006). Integrating curriculum through the learning cycle: Content-based reading and vocabulary instruction. *The Reading Teacher*, *60*(3), 206-219. https://doi.org/10.1598/RT.60.3.1

Šulistová, J. (2013). The content and language integrated learning approach in use. *Acta Educationis Generalis*, *3*(2), 47-54. https://doi.org/10.1515/atd-2015-0018

Tian, Z., & Zhang-Wu, Q. (2022). Preparing pre-service content area teachers through translanguaging. *Journal of Language, Identity & Education*, *21*(3), 144-159. https://doi.org/10.1080/15348458.2022.2058512

Townsend, D., & Kiernan, D. (2015). Selecting academic vocabulary words worth learning. *The Reading Teacher*, *69*(1), 113-118. https://doi.org/10.1002/trtr.1374

Wong, K. M., & Neuman, S. B. (2019). Learning vocabulary on screen: A content analysis of pedagogical supports in educational media

programs for dual-language learners. *Bilingual Research Journal*, *42*(1), 54-72. https://doi.org/10.1080/15235882.2018.1561551

Wu, T. T. (2018). Improving the effectiveness of English vocabulary review by integrating ARCS with mobile game-based learning. *Journal of Computer Assisted Learning*, *34*(3), 315-323. https://doi.org/10.1111/jcal.12244

Appendix A

A sample list of the content vocabulary chosen from the textbooks.

1. Aeration	/eəˈreɪʃn/
2. Agriculture	/ˈægrɪkʌltʃə(r)/
3. Agroforestry	/ægrəʊˈfɒrɪstri/
4. Agronomy	/əˈgrɒnəmi/
5. Algae	/ˈældʒiː/
6. Animal husbandry	/ænɪml ˈhʌzbəndri/
7. Bacteria	/bækˈtɪəriə/
8. Biocontrol agent	/baɪəʊkənˈtrəʊl ˈeɪdʒənt/
9. Biofertilizer	/baɪəʊˈfɜːtəlaɪzə(r)/
10. Canal irrigation	/kəˈnæl ɪrɪˈgeɪʃn/
11. Carbon	/ˈkaːbən/
12. Cereal	/ˈsɪəriəl/
13. Climate	/ˈklaɪmət/
14. Crop physiology	/krɒp fɪziˈɒlədʒi/
15. Crop production	/ krɒp prəˈdʌkʃn/
16. Crowbar	/ˈkrəʊbaː(r)/
17. Cultivation	/kʌltɪˈveɪʃn/
18. Dairy	/ˈdeəri/
19. Entomology	/entəˈmɒlədʒi/
20. Evaporation	/ɪvæpəˈreɪʃn/
21. Fermentation	/fɜːmenˈteɪʃn/
22. Fertile	/ˈfɜːtaɪl/
23. Fertilizer	/ˈfɜːtəlaɪzə(r)/
24. Fungi	/ˈfʌŋgaɪ/
25. Garden rake	/ˈgaːdn reɪk/
26. Germination	/dʒɜːmɪˈneɪʃn/
27. Global warming	/gləʊbl ˈwɔːmɪŋ/
28. Grafting	/graːft ɪŋ /
29. Greenhouse	/ˈgriːnhaʊs/
30. Harvest	/ˈhaːvɪst/
31. Herbicide	/ˈhɜːbɪsaɪd/
32. Horticulture	/ˈhɔːtɪkʌltʃə(r)/
33. Irrigation	/ɪrɪˈgeɪʃn/
34. Manure	/məˈnjʊə(r)/
35. Meteorology	/miːtiəˈrɒlədʒi/
36. Micro organism	/maɪkrəʊˈɔːgənɪzəm/
37. Microbiology	/maɪkrəʊbaɪˈɒlədʒi/
38. Millet	/ˈmɪlɪt/
39. Moisture	/ˈmɔɪstʃə(r)/
40. Mushroom	/ˈmʌʃruːm/
41. Nematology	/ neməˈt aːləjɪ /
42. Nitrogen	/ˈnaɪtrədʒən/
43. Nursery	/ˈnɜːsəri/
44. Oil seeds	/ɔɪl siːd/
45. Organic	/ɔːˈgænɪk/
46. Paddy	/ˈpædi/
47. Pathology	/pəˈθɒlədʒi/
48. Percolation	/pɜːkəˈleɪʃn/
49. Pesticide	/ˈpestɪsaɪd/
50. Photosynthesis	/fəʊtəʊˈsɪnθəsɪs/
51. Ploughing	/ˈplaʊɪŋ/
52. Poultry	/ˈpəʊltri/
53. Pulses	/ˈpʌlsəs/
54. Rainfall	/ˈreɪnfɔːl/
55. Rice straw	/raɪs strɔː/

56. Rotovator	/ˈrəʊtəveɪtə(r)/
57. Seed technology	/siːd tekˈnɒlədʒi/
58. Shovel	/ˈʃʌvl/
59. Soak pit	/səʊk pɪt/
60. Soil	/ˈsɔɪl/
61. Sowing	/ˈsəʊɪŋ/
62. Spade	/ˈspeɪd/
63. Temperature	/ˈtemprətʃə(r)/
64. Threshing	/ˈθreʃɪŋ/
65. Tillage	/ˈtɪlɪdʒ/
66. Transplanting	/trænsˈplaːntɪŋ/
67. Vegetable	/ˈvedʒtəbl/
68. Vermicompost	/vɜːmɪ kɒmpɒst/
69. Water	/ˈwɔːtə(r)/
70. Winnowing	/ˈwɪnəʊɪŋ/
71. Farm machinery	/faːm məˈʃiːnəri/
72. Ornamental	/ɔːnəˈmentl/
73. Insecticide	/ɪnˈsektɪsaɪd/
74. Ecology	/iˈkɒlədʒi/
75. Deficient	/dɪˈfɪʃnt/