Chapter 5
Discussion

5.0 Introduction

This chapter discusses the results of the pre-test and the post-test with reference to the hypotheses that triggered off the present research. It also discusses the relation between vocabulary development and extensive reading. On a minor scale, it also looks at the role medium of instruction plays in the process of vocabulary acquisition.

5.1 Incidental Vocabulary Acquisition

When a word is learnt from the context, it is called incidental vocabulary acquisition (OE). The previous chapter – Analysis of Results – has shown us that vocabulary acquired incidentally as a result of repeated exposure to the subject textbooks had a gain of 16.46%. 16.46% gain indicates that learners were able to acquire and retain one unfamiliar word in six in a year. Surely, it is considerable gain because vocabulary development was not one of the objectives of the subject textbooks. Nagy et al (1987, cited in Nagy, 1997) found that sixth grade first language students could retain one unfamiliar word in eight words when they were tested a week after having read the text. Though the students concerned in the present research were first year engineering students and Nagy et al’s students were sixth-grade ones, we also should not forget that Nagy’s students were first language learners and the present students are second language learners; this fact makes the 16.46% gain a justifiably considerable one. Moreover, the
test was administered at the end of one year’s course of study. Hence, there are strong reasons to believe that the words acquired by the students would be retained in the long-term memory of the students.

One more aspect worth considering is the gains each subtest received. All the item types (or sub-tests) received more or less the same percentage of gains. Word recognition item type got 16.87% gain, meanings got 17.03% gain, words in pairs got 15.66% gain, forming derivatives received a gain of 15.8% and sentence production item type received a gain of 16.67%. The gain each item type received is somewhere near the overall gain – 16.46%. Hence, it is clearly understood that not only the number of words, but the different aspects of word knowledge have also been increased by the students. So, incidental learning affects not just a single aspect of word knowledge such as recognition or meanings but also all the aspects of word knowledge assessed. The other aspects to word knowledge such as collocations might also have been increased.

Let us look at the factors that promote incidental learning and check whether they are applicable to the present study.

5.1.1 Factors Promoting Incidental Learning

In 2.2, several factors that help the learner infer from the context are discussed. They are comprehensible input, repeated exposures, availability of contextual clues, the target word’s salience etc. Let us see whether these factors are applicable in the context of the present research.
Comprehensible input

Comprehensible input suggests that the overall meaning of the text is understood by the learner. Learners in question were talented students according to the results of the EAMCET examination and were studying the most sought-after course of engineering. The target words were taken from the core text books, not a newspaper extract (Jana, 2001) or abridged novels. The words were not non-words specifically introduced in the text to measure the learners’ ability to acquire the words. Hence, we do not find any problem in the input material nor in the students’ ability to comprehend the input. According to Krashen (1989), comprehensible input is what promotes incidental learning.

Repeated exposure

The test was not conducted after a single encounter with the target words. Nation (1990) points out that five to sixteen exposures are necessary for the full acquisition of the word. Students might have more than five encounters with the target words which appeared across three textbooks and these words are often repeated throughout any single textbook. Hence, one may conclude that individual learners had a chance to get sufficient number of exposures to the target word for it to be acquired.

Availability of contextual clues

If the context is rich enough for the student to guess the meaning of an unknown word, we say that contextual clues are available. This factor poses a problem because many second language learners are not in a position to make use of the context (Nagy,
1997) because the learners generally do not have a large sight-vocabulary (words which are known well enough to be recognized quickly and accurately). That is, if the surrounding words of the target word are familiar to the learner he/she can learn from the context. For example:

It is true that each electron possesses a tiny amount of energy, but as previously pointed out; an enormous number of electrons is involved even in a small current, so that considerable power may be represented.

In this example, it becomes easy for the learner to guess the meaning of the word enormous because almost all the surrounding words are known.

For large-scale phenomena, such as electronic trajectories in a vacuum tube, the classical model yields accurate results. For small-scale systems, however, such as an electron in an atom or in a crystal, the classical model treated by Newtonian mechanics gives results which do not agree with experiment.

In the above example, two unfamiliar words occur side by side. If the learners know the meaning of the word yield, they can guess the meaning of accurate and vice-versa. But, if the two words are not known to the learners, the sentence alone does not give any clues to understand the meaning. But the whole passage taken together helps the learners arrive at a rough guess of the two difficult words.

Word’s salience

If understanding the target word is inevitable for comprehending the input, then it is said that the word is salient. If it is so crucial that without understanding the word, the
overall meaning cannot be grasped, then the word is most likely to be acquired. For example:

*This result predicts an increasing mass with an increasing velocity.*

In the above example, learners need to guess what *predicts* means to understand the meaning of the sentence.

**Existence of cognates**

Cognates are words that have the same source or origin as other words in another language. For example, *haus* in German and *house* in English are cognates. There are very few cognates between English and Indian languages. Most of the students’ L1 is Telugu and the remaining students, L1 is Urdu. There are not many cognates between Telugu/Urdu and English. The available cognates did not come under the purview of the target words. The existence of cognates reduces the learning burden on the learners. In the present context, learners had to learn each word separately due to the absence of cognates.

**Significant L2 exposure**

Even though most of the target learners studied in schools where English is used as the medium of instruction, many L2 learners do not engage in extensive reading. Many of them do not even read newspapers in English. So, there are fewer chances that learners develop a large sight vocabulary which in turn helps them in incidental learning.
After a discussion of the applicability of factors that promote incidental learning, it becomes clear that learners were at an advantage with comprehensible input, repeated exposures, availability of contextual clues and word’s salience and at a disadvantage with regard to the existence of cognates and significant L2 exposure. That means that learners had a chance to make use of only 75% of the aspects that facilitate acquisition.

5.2 Vocabulary Instruction

If vocabulary development is given attention in a formal course of study, it is called vocabulary instruction. The previous chapter – Analysis of Results – shows us that words that are part of the English and engineering textbooks (EE), which have the advantage of being encountered in different contexts, received a gain of 16.56%. 16.56% is considerable gain because the entire English course was not on vocabulary development and lexical growth was not even one of the stated objectives of the English syllabus. Students learnt vocabulary as part of other language elements and language skills. Moreover, we have observed the insufficient importance given to vocabulary assessment in the year-end exams. We also should not forget the fact that the students concerned are second language learners who do not have sufficient resources to interact with English, either receptively or productively and whose general English language interaction outside the classroom is not much. It is a known fact that any second language is learnt at a slower pace because it is not practised informally. Within such a bleak and gloomy environment for lexical development, 16.56% gain is a considerable one.

Similar to the results of incidental vocabulary acquisition, all the item types received more or less the same gains. Word recognition got 15.9% gain, meanings received a gain of 17.37%, words in pairs got 16.47% gain, forming derivatives received a gain of 17.16% and
sentence production received a gain of 15.94%. So, one can clearly infer that learners could improve their knowledge of different word-aspects assessed.

We now turn to the factors that help the learner in learning vocabulary intentionally.

5.2.1 Factors Promoting Intentional Vocabulary Learning

In the second chapter (2.3), a number of aspects that constitute explicit vocabulary instruction were discussed. They are - providing glosses, encouraging learners to maintain vocabulary notebooks, providing example sentences and asking students to come up with their own sentences, offering a synonym or an L1 translation, providing rich instruction etc.

**Providing glosses**

A glossary at the end of each lesson gives the meanings of the difficult words in the text. The prescribed English textbook has one or two tasks focusing on giving meanings to difficult words. But the target words were not in the glossary. So, learners did not have any chance to make use of the glosses.

**Vocabulary notebooks**

We have seen in the literature review how encouraging the learners to maintain vocabulary notebooks (Fowle, 2002) helped them in increasing their lexical competence. One important point in this study was the autonomy given to students in selecting the words that go into their notebooks. That means, it was recognized that vocabulary
development is highly individualistic in nature. In the context of present research, learners were not asked to maintain vocabulary notebooks.

**Providing a synonym**

This is what is commonly done in an English classroom and the present context is not an exception. While discussing the text, the meanings or synonyms of the target words were given. At times, giving an L1 translation was also not uncommon. Especially in the case of synforms such as *adapt-adopt, stationary-stationery*, L1 translation makes the task easier.

**Rich instruction**

If elaborate explanation is given for a target word going beyond the demands of the particular context, it is called rich instruction. Providing rich instruction is totally in the hands of the individual teacher. Sometimes, if the students think that a particular word is important, they might ask for more information than what is provided.

**Example sentences**

While discussing the text, generally, meaning and synonyms are offered. Sometimes, to make the word more learnable, example sentences are also provided. But, asking students to come up with their own sentences does not happen. Productive tasks were almost nil in the context of the present research.
Hence, except offering meanings, synonyms or L1 translation to the difficult words as and when they occurred, the other constituent aspects of explicit vocabulary instruction are absent. Considering these facts, 16.56% gain is really a considerable gain.

Before we move on to the discussion of incidental and intentional vocabulary learning together, let us look at the gains words received under EE and OE.

5.3 Gains Received by the Target Words

As 300 target words were used in six different test papers having 5 sub tests, the results are discussed according to the subtest for the words – taught and acquired.

Subtest 1

This subtest asked the students to tick beside the words they knew exist. They could place a tick mark, even though they did not know the meaning of the word. Recognition of the target word was the objective of this subtest.

Of the sixty target words in this subtest, 15 target words got less than 10% gains and only three words got more than 30% gains. Words which received less than 10% gains are given here. The numbers given here refer to percentages.
It is surprising that only two students knew all the ten words in this subtest in the post-test and no student knew all the ten words at the time of pre-test.

There is research evidence that in word recognition tasks, the length of the word has a strong effect. Coles (1982) finds that long words produced more errors in recognition tasks. But, the present result does not support this claim. Length of the word did not affect the learnability of the word. In fact, the shortest word in this subtest *whirl* (10%) has not got very significant gains.

The present result is not very much in support of the idea of morphological transparency either. If a long word consists of several familiar morphemes, it is considered to be morphologically transparent. It is assumed that these familiar morphemes help the learner in better word recognition and acquisition. Take, for example, the word *interchangeably*. The morphemes *inter-, change and –able* are very much familiar to the learners. Hence *interchangeably* should have got significant gains. But, it got only 15% gains. Other examples include *irreversible* and *indispensable* which...
got 18% and 19% gains respectively. The root words in these two words – *reverse* and *dispense* – are not as common as the root word *change* in *interchangeably*. But, these two words got more gains than *interchangeably*.

Another example is the similarity between the results of *vary* and *invariably*. Both these words were in the same test (Test B) and got 11% and 12% gains respectively. The concept of morphological transparency worked well here in the sense that both the words received a similar gain. These students might have known that *vary* is the root word for *invariably*. Hence, the gains were almost same. These two words are present in the English textbook also. Teachers, while discussing vocabulary, might have discussed the relation between these two words.

On the whole, one can conclude that aspects like word length, or familiar morphemes do not greatly make a word learnable. One cannot say why the words *discrepancy* and *artifice* got 31% gains in this subtest. These are not frequently occurring words. And these two challenge the established concepts of what makes a word easy to learn. One can only say that from the learner’s perspective, these words are important.

**Subtest 2**

This subtest is *Match the following* item type. It asked the students to match the target words in column A with their meanings in column B. Recognizing the meanings of the target words was the objective of the subtest. In this subtest, five words received more than 30% gains. The numbers given here refer to percentages. Those five words are:
It is surprising that words like *ingenious* and *exemplify* got more gains than words like *essential* (6%) or *probable* (11%). Following is the list of words that got less than 10% gains. The numbers given here refer to percentages.

<table>
<thead>
<tr>
<th>EE</th>
<th>OE</th>
</tr>
</thead>
<tbody>
<tr>
<td>eventually – 7</td>
<td>confirm – 8</td>
</tr>
<tr>
<td>essential – 6</td>
<td>abrupt – 8</td>
</tr>
<tr>
<td>feasible – 8</td>
<td>depart – 7</td>
</tr>
<tr>
<td>spontaneous – 8</td>
<td>consecutive – 5</td>
</tr>
<tr>
<td>inherent – 7</td>
<td>induce – 6</td>
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</table>

The fact that the word *probable* has got only 11% gains is surprising. Students in their intermediate studied the aspect probability in mathematics. Students studied probability for their exams but did not know the meaning of it. The only explanation one can think of is that the learners did not know that *probability* is a derivative of *probable*. Even though they might have thought of it as a technical term, they should have known the meaning of the word. It challenges the idea of derivational transparency and Nation’s (2001) idea that derivatives are easier to learn. Another surprising fact is that the word *stationary* (21%) did not get the expected gains. As synforms (synforms are similar lexical forms), *stationary* / *stationery* must have been dealt with in the English classes year after year with unfailing regularity.
Launch is a word which appears time and again in the text book Wings of Fire. As the book is the autobiography of the former Indian President Abdul Kalam who was behind the success of Satellite Launch Vehicles and Missiles, launch appears almost once in every three pages. Still, it did not get more than 11% gains.

Very surprising is the fact that essential got only 6% gains. Even the meaning given is not something weird. It is extremely important. Essential is also from the EE. It is possible that teachers thought that students would know the word and might not have discussed it in the classroom. Students might have their own inferences about the word in context and what they thought at that moment might have suited the context in question.

Subtest 3

This subtest presented 10 pairs of words to the students. Students were asked to determine whether the words in pairs are related to each other. If related, students had to decide whether they were synonyms or antonyms. This subtest assessed the students’ knowledge of the target words with respect to the latter’s synonyms and antonyms.

In this subtest, only two words got more than 30% gains and both are from the EE section. They are:

- successive – continuous – 31%
- resist – yield – 31%

Words that received less than 10% gains are given here. The numbers given here refer to percentages.
In the EE section, two word pairs are synonyms, two are antonyms and words in one pair are unrelated. In the OE section three pairs of words are antonyms and one pair was unrelated. It seems, though learners do not know whether the words are synonyms or antonyms, they certainly seem to know when they are not related to each other.

The word-pair query-answer (20%) has got good gains. Students knew the word answer, but query was new to them. The word-pair unbelievable-artificial (8) must have got higher gains. The words in pairs are not unfamiliar. The word unbelievable is morphologically transparent and artificial is quite a common word. This pair should have got higher responses at the time of pre-test itself. It is really surprising that even after being in touch with the words in question for an academic year, students could not understand the relation.

Take the word pair repel-like (20). There is no way one could not know the word like. Even repel was not something new. ‘Unlike poles attract and like poles repel’ is one of the fundamental principles in Physics. If the word pair was repel-attract, it would perhaps have got more responses. But, learners were unable to link the meaning sense of like to that of attract.
Subtest 4

In this subtest, students were asked to change the form of the given word according to the given sentence structure. Of the given words 15 (50%) words were to be changed in the Only Engineering section and 17 (56%) were to be changed in the English + Engineering section.

No single word in this subtest received more than 30% gains. So, words that got more than 25% gains are given here. The numbers given here refer to percentages.

<table>
<thead>
<tr>
<th>EE</th>
<th>OE</th>
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</thead>
<tbody>
<tr>
<td>response</td>
<td>deviate</td>
</tr>
<tr>
<td>accuracy</td>
<td>assert</td>
</tr>
<tr>
<td>belief</td>
<td>exceed</td>
</tr>
<tr>
<td>amaze</td>
<td></td>
</tr>
<tr>
<td>unique</td>
<td></td>
</tr>
<tr>
<td>extreme</td>
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</table>

Except unique, extreme and exceed, all the other words had to be changed to fit in the given sentence structure. Words that received less than 10% gains are given here.

<table>
<thead>
<tr>
<th>EE</th>
<th>OE</th>
</tr>
</thead>
<tbody>
<tr>
<td>acquire</td>
<td>practice</td>
</tr>
<tr>
<td>avail</td>
<td>crucial</td>
</tr>
<tr>
<td>apparent</td>
<td>violate</td>
</tr>
<tr>
<td>commercial</td>
<td></td>
</tr>
<tr>
<td>relatively</td>
<td></td>
</tr>
<tr>
<td>expensive</td>
<td></td>
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<tr>
<td>impose</td>
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In both the extremes – highest and lowest gains- EE section outperformed the OE section which makes it difficult for us to come to a conclusion whether instructional aid helps one in forming derivatives.

Bauer and Nation (1993) observe that –ify is one of the affixes which are not easy to learn and simple – simplify got only 13% gains. They also suggest that inflectional suffixes including the plural, third person singular present tense, past tense, past particle, -ing, etc. are easier to learn. That explains the reason why restrain – restrains got 22% gains. The only challenging part here is the students’ inability to get available from avail. The word has got only 7% gains. Commerce – commercial (7%) is not an easier derivative. But, avail – available should have got higher gains than they actually had. In another set, learners could get undisturbed from disturb with 25% gains.

Some students changed the form of words unnecessarily in the pre-test. Thus they wrote acquisition from acquire, effectively from effective, imposition from impose, extremity from extreme, consequent from consequence. They might have thought that the instruction change the form of the words if necessary was given only to distract their attention. Generally, in class tests, teachers do this. They use the phrase if necessary to test the real knowledge of the students about the target grammatical or vocabulary items. Learners might have thought that the same was the case.

Some students used totally unexpected word forms. For instance, some students wrote words like proceduring, regularred, cruciality, apparence, uniqeucity and so on. About 2% of the responses were interlanguage forms. In a way, this phenomenon calls
for attention because these interlanguage forms never constitute the input received by the students. In the subtest 1, a vast majority of learners could not recognize a word they have seen in their textbooks. And many of them have come up with systematic interlanguage. As a result, we may have to conclude that input alone is not sufficient for language learning. A very significant point is that these interlanguage forms did not appear in the post test scripts. If the learners did not know the correct answer, they did not fill in the blank. Schmitt and Zimmerman (2002) found similar interlanguage forms in their study.

**Subtest 5**

This subtest tests the productive knowledge of the students with respect to the given words. In this section, 36 words are verbs and the remaining are adjectives, adverbs and nouns. Though the students were free to change the form of the words if necessary, 86% of the students did not do so.

The following is the list of words that got 30% and above gains. The numbers given here refer to percentages.

<table>
<thead>
<tr>
<th>EE</th>
<th>OE</th>
</tr>
</thead>
<tbody>
<tr>
<td>alternative – 32</td>
<td>explicit – 36</td>
</tr>
<tr>
<td>imaginary – 30</td>
<td></td>
</tr>
<tr>
<td>represent - 30</td>
<td></td>
</tr>
</tbody>
</table>
The following is the list of words which got less than 10% gains

<table>
<thead>
<tr>
<th>EE</th>
<th>OE</th>
</tr>
</thead>
<tbody>
<tr>
<td>exclude – 8</td>
<td>premium – 8</td>
</tr>
<tr>
<td>contribute – 4</td>
<td>derive – 9</td>
</tr>
<tr>
<td>scatter – 4</td>
<td>mislead – 7</td>
</tr>
<tr>
<td>illustrate – 5</td>
<td>resort – 9</td>
</tr>
</tbody>
</table>

52% of the correct responses were used in the context of engineering. For example:

- The waves were scattered due to radiation.
- Illustrate the working of a spectrometer.
- Derive an equation to calculate the time period of a simple pendulum while executing simple harmonic motion.
- Kirchoff’s laws are explicitly used in A.C. circuits.
- Calculating logarithms appropriately is not an easy task.
- Analyzing the experiment is important.
- In Mathematics, we solve many problems by making assumptions.
- Ohm’s law is not a fundamental law.
- The value of Pi is 3.14 and is denoted by π which is a very important mathematical value.
- Rutherford predicted that an electron would accelerate around the nucleus.
- Illustrate the differences between CE and CB configuration.
- Computer is an electronic device.
- The components in the circuit are not working properly.
- Rockets should be accelerated to an initial velocity of 1000 km/x to go into the space.
- The variable ‘Q’ denotes charge.
- Voltmeter is a device which measures voltage.
- Derive the equation $v=u+at$.
- Illustrate the difference between CE & CB configuration.
- Newton derived laws of Gravitation.
- For this problem, the assumed value of $x$ is zero.
- We got appropriate readings in the EDC lab exam.
- When a body accelerated non-uniformly, it is difficult to predict the exact values of its components. But, such cases are unusual.
- For inserting a picture in the Power Point we should go to clip art.
- The teacher asked the students to derive the formula.
- Any electronic device will not work properly if a small component of it is missing.

The other contexts in which maximum responses were given were related to cricket (15%), personal development(6%) and love (8%). For example:
V.V.S Lakshman is a typical Hyderabadi batsman.
He tried to retain his place in the Indian Cricket Team.
Sehwag was excluded from the Indian cricket team because of his poor batting performance.
There are enormous number of fans for Sachin.
Dhoni became the captain of Indian cricket team only after crossing many obstacles.
Mistakes occur in life.
We should not take hasty decisions.
Remain a good citizen.
Contribute something to the society.
Pursue your dreams irrespective of the problems.
She permitted me into her heart.
She revealed her love to me.
We intend to get married soon.
We should analyze other person’s character before falling in love.
Love finds no obstacles.

These students are regular readers of newspapers. They might have encountered these expressions in the newspapers.

In some cases, words like insight, intense, resort, omit were understood wrongly.
These were taken as in sight, in tense, re sort (sort again), and vomit. For example:

- The snake was in sight.
- He felt in tense while answering the question.
- We should re sort our problems.
- The baby omitted the milk she had drunk.

Laufer & Bensoussan (1982, cited in Laufer, 1997) found the same kind of deceptive transparency in words like outline and falsities. Their subjects understood outline as out of line and falsities as falling cities.
5.4 Effect of Extensive Reading

The third hypothesis (3.1) states that extensive reading results in better vocabulary development and it has been proved again. Those who read extensively made good use of the target words. Let us look at two responses for the last subtest. The underlined words are the target words. Students were asked to use these words in their own sentences or construct a paragraph.

The field of mobile communications has grown enormously in the past decade. Nowadays every person has his/her mobile device which represents his/her unique personality. There is intense competition between mobile phone companies which regularly modify their strategies in order to keep up with the competition. If we verify some facts, we can notice that one in every twenty people in India owns a mobile phone. Carrying a bulky phone is no longer an obstacle, as phones are being made smaller and smaller with new technology. Phones are being modified constantly and new features being added. Whilst buying a phone, we can specify the features we want and select a model accordingly. (Student No. 65)

The question was to illustrate and derive the expression for the Schrodinger Wave Equation. I did not know the answer. The previous day, I was misled by my friend that that particular question would not be asked and I need not prepare for it. I was feeling tense. I began to have headache, but the pain was tolerable. I had two sides in my mind. One was to copy the answer from another person and the other was to quit answering the question. Suddenly, the person sitting beside me acknowledged my tension and made a proposal. He said that resorting to copy the answer was risky and wrong. He asked me to devise my own answer from the scattered thoughts I had about the concept. So I did. I had answered the question in my own way by simultaneously using my own knowledge and also the concept I had learnt from the prescribed textbook. (Student No. 396)

In all the five sub tests, extensive readers received significant scores. These students received scores between 30-42 in the post-test and 19-32 in the pre-test. These students were the ones who could write a paragraph using all the given words which indicates their creativity and spontaneous thought. These extensive readers seem to be compulsive writers as well. Because, for the question Do you think that English should be
continued in the second and third years as well?, these students wrote paragraph answers explaining the necessity of learning fluent and accurate English which will help them in their future endeavors etc. But, the expected answer was only a Yes or a No. There are, of course, eleven students who are not extensive readers, but still got good marks in the tests. For example, one student got 40 marks in the post test and 29 marks in the pre-test and these students did not claim having a habit of reading extensively. In the questionnaires given at the time of the pre-test and the post-test, these students did not say that they read anything other than the course books. One point worth mentioning is that not all the learners who took to reading during the year improved their vocabulary levels. It may take some more time for the development to occur.

5.5 Effect of Word Class

Word class has had a significant effect on the students when it comes to the difference between acquisition and instruction. In subtest 1, of the words that appeared only in the engineering textbooks, 83.33% of the verbs got higher gains followed by adjectives and adverbs. Nouns did not get higher gains. But, when it comes to EE, only 22% of verbs got higher gains and 83.33% of nouns have got higher gains. In the engineering contexts, students noticed only the action words – verbs – which were necessary for them to understand the subject. In the words that appeared in the English textbooks also, nouns might have been discussed greatly. These nouns appear in two contexts- in the engineering textbooks and in the English textbooks. Looking at these
words from two different contexts might have helped better acquisition. In subtest 2, 35.7% of verbs got higher gains followed by adjectives (22.3%). For the words encountered in the engineering textbooks and for the words that were discussed in the class, verbs have got the highest gains. In the engineering contexts, understanding verbs is crucial; so, better acquisition of verbs is understandable. In subtest 1 noun got higher gains from the words discussed. And there was a swing of the pendulum and nouns did not get significant gains. So, when it comes to meanings, in whichever context they appear, engineering students learn verbs better than others. In subtest 3, 50% of gains were for verbs in the EE (English and Engineering) words and 48% gains for the OE (Only Engineering) words. 25% were the gains for nouns for EE and OE words. Again, verbs fared well in this subtest also. In 4th subtest, forming derivatives from verbs to other forms was easier than the other ways. Especially, forming nouns and adjectives from the verbs was the easiest. Of the words that did not need any change 83% of verbs got higher gains for both OE and EE words. In subtest 5, 75% and 87.3% gains were for verbs for the OE and EE words respectively. Nouns got 25% gains and adjectives 12.5% gains.

So, on the whole, engineering students found verbs most easy to learn than the other word classes. It is, of course, natural considering the fact that the study of engineering deals with what to do in order to get some result. So, obviously, verbs followed by nouns become the priority. In the chapter, Review of literature (2.10) we have seen that the same kind of results were obtained by Schmitt & Zimmerman (2002). In their study, students found verbs to be easier to learn and this was followed by nouns.
5.6 Effect of Medium of Instruction

Of the 600 students, 482 students received their education through the medium of English and 118 students studied in the L1. Of the 118, 89 students’ L1 was Telugu and 29 students’ was Urdu.

In the pre-test 29 students whose medium of instruction was English got more than 20 marks out of 50 and 15 students who studied through their L1 got more than 20 marks. In the main test, 54 students studied in English medium schools and 25 who studied through their L1 got more than 30 marks out of 50.

Surprisingly, medium of instruction up to 10th class or Intermediate did not affect the word knowledge of the learners. There were students who studied in English medium schools but could not show a clear knowledge of the target words. And there were students who studied in Telugu medium schools, yet, fared well in the tests. Below are some examples to illustrate the point. The following sentences were written by students who studied in English medium schools.

- He misled the class.
- The mother was unable to tolerate at the child’s cry.
- Every citizen should be explored.
- I tempted a red dress in the shop.
- I was revealing with my science project.
- English is not excluding subject in engineering.
- Omitted cell phones in classrooms are necessary.
- I hate assume.
- It is an negligible computer.
- We all must be preserved.
The following sentences were written by students who studied in Telugu medium schools.

- Some things are easy to imagine but difficult to work out.
- The teacher specified that only 30 members should come with her.
- The colour white represents peace.
- Certain rules regarding the educational system need to be modified.
- The music composed by A R Rehman is unique.
- India had enormous amount of wealth in its glorious past.
- Illiteracy is an obstacle for our development.
- You must read the prescribed textbooks.
- He can do many things simultaneously.
- Don’t resort to anti-social activities.

It was found that 54% of students (English medium) got less than five marks in the last subtest whereas 59% of students (Telugu medium) got less than five marks.

But, students from Telugu medium schools found the 4th subtest particularly difficult. 86% of the students got less than 5 marks in this subtest. Manipulating a given word according to the sentence structure proved to be more difficult than writing a sentence using the target word.

Let us move to the discussion of incidental and intentional learning of vocabulary.

5.7 Incidental and Intentional Learning of Vocabulary

The paired Z-test (4.1) reveals that very significant gains (p< .01) were achieved by the students for both incidental and intentional vocabulary learning. The Pearson product-moment correlation coefficient (4.3) indicates that there is a very positive
relationship between the assessed aspects of word knowledge. The correlation between
the results of the pre-test is considerable but the correlation between the results of the
post-test is highly positive which indicates that the students were able to improve their
knowledge of different word aspects. It may be thought that the pre-test helped them,
perhaps unconsciously, to become consciously aware of the different aspects of word
knowledge. It is not that the learners did not know anything about the types of word
knowledge before the administration of the pre-test. It is that they become aware of these
types of knowledge consciously.

One can clearly observe the growth in learners’ knowledge of different aspects of
knowing a word from the pre-test to the post-test. But, there could not be any definite
conclusion that the improvement was the result of explicit teaching or incidental learning.
As the study has been measured over an year’s time, one cannot know what happened in
this period of time. Words that were discussed as part of the text might not have been
learnt by some students. Also, some students might have looked up the meanings of
words they did not understand while studying their subject textbooks. One can only say
that students underwent a course of study and it helped them in their lexical development
and it also helped them to relate one kind of word knowledge with the other.

A very surprising factor is that the gains for intentional and incidental vocabulary
learning are 16.56% and 16.46% respectively which indicates that learners were not
greatly helped by the existing English textbook. There are, of course, as discussed in the
second chapter, some factors that affect the usefulness of these learning processes.
Talking about the process of incidental learning, Nation & Coady (1988) point out that
the very redundancy or richness of information in a given context which enables a reader to guess an unknown word successfully could also predict that the same reader is less likely to learn the word because he or she was able to comprehend the text without knowing the words.

Vocabulary instruction is also not problem-free. Nation & Coady (1988) argue that meaning-based language use activities are not necessarily sufficient for internalizing all the aspects of word knowledge.

We see that learners could learn the different aspects of word knowledge by being in a course of study when special or explicit focus was not on lexical development. We see that incidental vocabulary learning presupposes the existence of certain factors like significant L2 exposure, attention etc. One more important factor is that the learners should have knowledge of at least 3,000 – 5,000 word families (Nation & Waring, 1997, cited in Schmitt, 2000) to guess the meaning of a target word successfully. Nation & Newton (1997) suggest that the first 2,000 words should receive attention because without these, it is not possible to use English in any normal way.

Incidentally, in the 300 target words, 65 words were from the first 2000 words. At the time of the pre-test itself, learners should have displayed considerable amount of knowledge about these words. But, it was found that not even fifty students had knowledge about any one of these words. After one year of study, 16 of these words did not receive more than 10% gains. 13 of these 16 words were in the EE list as well. That means, these words were present in the English and Engineering textbooks. Discussions
based on the context proved to be insufficient for the learning of these words. Hence as Nation (1997) suggests, learning these words should not be left to chance and explicit instruction should be given about these words in the initial stages of a learner’s education. Lack of knowledge about these words must have been the major detrimental factor for the learners to acquire words incidentally. Schmitt (2000) suggests that the General Service List – GSL – is a good source to start with because most of these extremely frequent words are polysemous, GSL gives information about the frequency of each meaning sense. But, Nagy (1997) is of the opinion that precisely because words are basically polysemous in nature, context is the best source to learn all the meaning senses. He proceeds to give an example from Green (1989, cited in Nagy, 1997) who found that approximately 15% of words in naturally occurring texts were used in senses not included in existing dictionaries. Even then, after asserting that second language learners have a need to use context because they have to learn at a rate faster than the L1 learners, Nagy himself states that “a variety of reasons can be found for arguing that context plays a relatively less important role, and explicit instruction (i.e. definitions) a relatively greater role in the vocabulary growth of second language learners… and there is a greater pay-off instructionally” (Nagy, 1997, pp.75-76).

This again brings us into the realm of explicit instruction. Teaching the first 2,000 words becomes very important because the most frequent 2,000 head words account for at least 85% of the words on any page of any book no matter what the subject matter is (Nation & Newton, 1997). They also suggest three different kinds of vocabulary to be taught after the first 2,000 words. They are low-frequency words, academic vocabulary
and technical vocabulary. If the learners need English for social purposes or for reading magazines or novels or for occupations that do not require the reading of an academic text, teaching low-frequency vocabulary is the option. If the learners wished to go for higher education, then teaching academic vocabulary is the option. The third one is technical vocabulary. Because of its narrow range, it is better to deal with this vocabulary in a field-specific instructional set up. In support of his Input Hypothesis, Krashen (1989) gives an example from Miller (1941, cited in Krashen, 1989). Miller informally observed vocabulary acquisition without any instruction in junior high school students who completed a month’s study on conservation of natural resources which included a good amount of reading. At the end of the programme, Miller remarks that her students learnt using words like agrarian, conservation etc. and concludes that extensive reading is the best source for vocabulary development. But, one can clearly see that the vocabulary the students acquired through one month’s study was technical vocabulary. Field-specific vocabulary is easily learnt because it is necessary for the student to make use of this vocabulary.

Learners in the present context were engineering students and we have seen that there could not be any problem with the learning of technical vocabulary. As engineering students they were in pursuit of academic material. So, teaching words from the university Word List could be one option.

Of the 300 target words, 101 words are in the university word list. Of these 101, 16 words got less than 10% gains and 15 words got more than 25% gains. That means 70 words i.e. 69.38% words are moderately learned and that students were able to
infer the different aspects of these words from the context. So far, it has been suggested that the first 2,000 words should be taught explicitly in the classroom and strategies in learning from the context should be explained. But, engineering students will not study English as part of their course work after their first year. In the last year of teaching, teaching all these things would not be a feasible idea. There are only two options available to solve this problem. As students come from diverse language backgrounds, one cannot assume anything about their lexical knowledge. So, one option is to conduct a placement test in vocabulary and give direct instruction to those who need it separately and devise a programme which deals with learning strategies. The second option is to extend the study of English for another year and plan a programme that helps the students gradually move from instruction to acquisition. Whatever the option is, a course on vocabulary learning strategies is a must because it was made clear through the data analysis that learners were not able to learn vocabulary incidentally and the English textbook in its present form was not able to do so either. So, as a solution for these two problems, a course on vocabulary learning strategies coupled with direct vocabulary instruction can be thought of.

5.8 Vocabulary Learning Strategies

Having surveyed the shortcomings of both explicit teaching and incidental learning in the present context, introducing a course on vocabulary learning strategies seems to be a feasible option. That English is not learnt as a course of study after the first
year reinforces the idea of the said option. We have seen that many factors assist the learning of vocabulary – intentional and incidental – learning. The first step should be making the students aware of these factors. For example, many students might not have known that inferring is a widely recognized learning strategy. The other aspects include providing repeated exposure, encouraging learners to maintain vocabulary notebooks, focusing on productive tasks and conducting regular tests.

Before doing any of these, it should be recognized that language learning involves a high degree of individualism (Mobarg, 1997). Respecting the learners’ choice of vocabulary to be learnt according their needs and interests is the prerequisite for any programme that focuses on vocabulary learning strategies.

Learning from context

Learning from the context is one of the best sources available for vocabulary development. Fraser (1997) points out those inferring results in higher rates of learning because learners have to do some problem solving to make inferences. She also suggests that learners seem to prefer inferring from the context. There is evidence (Paribhakt & Wesche, 1997) that inferring from the context followed by referring to a dictionary would promote high amount of vocabulary growth. Learners themselves decide according to their vocabulary levels which word is to be learnt. After the selection is made, then the point of repeated exposure comes into picture.
**Vocabulary notebooks**

Once the learner decides that a word should be learnt, then he/she should be encouraged to note down the word in his/her vocabulary notebook. Whatever information, the learner can get about the word should be noted in that book. Synonyms, antonyms, example sentences, L1 translation etc. all should be noted under the word.

**Repeated exposure**

After sufficient practice in noting down words in their books, they should be asked to go through the books regularly and add whatever they have learnt about the word or thought about it. There should be regular supervision of these notebooks.

**Conducting tests**

Unless there is a need to learn, students generally do not engage in regular learning activities. That need is best provided by conducting regular tests. This also helps the teacher in monitoring the progress of the students. These tests may vary from one person to the another based on the target words he/she has noted down in his/her book.

Following this procedure may result in better vocabulary learning and retention. But doing this is not easy. Certain pre-requisites are to be met for the implementation of such a programme. Those are the needs of the learners and the strength of the class
Learner

Learner is the most important and the most affected variable in any teaching-learning situation. Every individual learner is unique with his/her needs, requirements and aspirations. When they come into the classroom, they bring with them their needs and their problems too.

The first task of the teacher is to have an understanding of the problems. In the context of the present research, administration of a diagnostic test is a must. This can be the Vocabulary Levels test or Vocabulary Knowledge Scale or any other test which the teacher thinks will suit the purpose. The Productive Version of the Vocabulary levels test is also a good idea. Based on their performance, learners can be formed into different groups. This is not streaming. All the students will be in one class; but, in different groups. Then, the teacher can have a chance to develop different exercises for the different groups. It will also become easier for the students to work within homogeneous groups. Evaluation of the work can be done within groups or across the groups. In this way, learners will have a feeling that they are doing something. They play an active role in improving their knowledge and are not just passive recipients of the information. But for the successful completion of this activity class strength is another significant prerequisite.

Strength of the class

Every section in engineering consists of minimum 60 students. Intake is 60 students per year; but, detained students and students who have got transferred from one
college to another college are added up to this 60 and the total number comes to around 65.

A teacher-centred class is the only option for such a class. But, it should not be so if the objective of the teaching-learning programme is to develop and sharpen the LSRW skills. The syllabus of the English text book aims at promoting these skills and such a large class is not conducive for the development of the said skills. A class of 60 can listen to a lecture on Communicative Language Teaching; but, for the communicative approach to become successful, a class should not have more than 30 students.

If there are only 30 students in the class, teachers can pay individual attention to the students which promotes faster learning. Students can also participate in interactive, not noisy, discussions among themselves. And, whatever the activity is, all the 30 students can have a chance to participate, get their work evaluated and corrected, seek clarification for doubts and so on. If the classroom is provided with an LCD and a computer, various audio-video resources can be made use of and the classroom will become the best English class room.

5.9 Limitations and Suggestions for Further Research

The biggest limitation is that the spoken discourse was not considered. While writing, one, generally, thinks twice and then writes which is not the case with speaking. One has to speak on the spot. Second language learners generally use very basic
vocabulary in speech. Though the learners were able to use the target words in writing, they might not do so while speaking.

The second limitation is that the research did not rely on an embedded measure. While writing on a general topic, how many of these target words would be used by the learners was not looked into. Exploring these two areas can result in better knowledge about vocabulary acquisition.

5.10 Conclusion

The present research found that learners were able to improve their vocabulary levels by an overall gain of 16.51%. Words from EE had a gain of 16.56% and words from OE had a gain of 16.46%. It was noticed that the administration of a pre-test did not greatly affect the vocabulary learning process of students. It was also observed that there was not significant difference in learning on the basis of gender or medium of instruction. The gains for EE and OE were so close to each other and also to the overall gain – 16.51%. But, this growth in their lexical levels cannot be conclusively attributed to either incidental or intentional learning as the study was measured over a year’s time.

The present research concludes that learners developed their vocabulary levels by simply being in a course of study. So, as learners were able to improve their lexical knowledge as a result of an academic programme, their ability could be enhanced through continuing English in the second year also by focusing on the lexico-grammatical aspects.