Difficulties Faced by Engineering Students in Reading and Comprehending English Texts

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Abstract

Reading is an interactive process that goes on between the reader and the text, resulting in comprehension. The text presents letters, words, sentences, and paragraphs that encode meaning. The reader uses knowledge, skills, and strategies to determine what that meaning is. Reading comprehension is much more than decoding; it results when the reader knows which skills and strategies are appropriate for the type oftext, and understands how to apply them to accomplish the reading purpose.Reading comprehension is important because without it reading is nothing more than tracking symbols on a page with your eyes and sounding them out leaving the reader with no information. Instead of promoting traditional approaches, reading should be taught in a more interactive and communicative manner. In this light, this study investigates the difficulties faced by engineering students in reading comprehension in a university setting where the medium of instruction and communication is not English, but where students are required to read textbooks in English. The participants are selected from College of Engineering/ University of Al-Mustansiriya to take the test. However, a standardized test is used to show the students' difficulties in reading comprehension. Two passages are used in the test, the first one is concerned with their specialization in engineering while the second is concerned with general topics. Data analysis is conducted through using one sample T. test and percentages statistical methods. Results of this study reveal that engineering students have great difficulties in reading comprehension since most of them have not succeeded in the test. Reasons behind such results have been illustrated and certain suggestions have been given to be useful for both teachers and students of scientific fields especially engineering.

1.The Problem

Engineering students have difficulties in comprehending English texts when they study passages that are concerned with their specializationandthose concerned with general topics.

2.The Aim

This study aims at showing the difficulties faced by engineering students in reading comprehension when they study English textsthat are concerned with theirspecializationandthose concerned with general topics.

3.The Hypothesis

It is hypothesized that engineering students have difficulties in reading comprehension when they study English texts that are concerned with their specializationandthose concerned with general topics.

4.Introduction

Reading is a tool for survival, a medium for social interaction, and a means to access general knowledge of the world. Hence, it is understandable that a primary concern of educators today is to train students to become better readers and language users to be able to survive in the industry and in the society as well(Wallace,1992:123).

The behaviorist psychologists believe that learning takes place through stimulus, response and reinforcement (May, 1994:67). When applied to reading, it is believed that graphic representations like letters and words in a text are considered as stimuli used by the students to create response. Hence, reading in the past decades was considered as a process of recognizing letters to form words and words to form sentences. In turn, this process is considered to guide students in comprehension (Donaldson & Reid, 1985: 19). However, since the introduction of the Psycholinguistic Theory by Goodman (1988:80), the reading process has been taken into a different light.

The Psycholinguistic Theory purports that successful comprehension is not based on the number of words recognized in a text, but is based on the implementation of effective reading strategies. Reading is a selective process in which a reader only chooses to use the most important graphic cues to assist him/her in comprehending. Thus, the reader is considered as an active participant in meaning-getting process in contrary to the behaviorist view that readers are just passive identifiers of letters and words (ibid). Thus reading is considered to be a universal process and applies to all languages.

Coady(1979:36) introduces a revolutionary view of the reading process through his Basic Psycholinguistic Modes of ESL Reading where he recognizes the important role of the second language reader in the creation of meaning, and not just the meaning that resides in the text. In his model, he emphasizes the importance of three components: processing strategies (include linguistic ability), conceptual abilities (general intellectual capacity), and background knowledge. The third component is better explained by the Schema Theory.

Schema Theory emphasizes the importance of background knowledge or previously acquired knowledge of the reader in the process of comprehension. According to Coady, a text can only provide clues and directions, but the construction of meaning is done by the readers according to their own past experiences and knowledge. In second language reading, background knowledge is the factor that makes L1 readers different from L2 readers, since the prior experiences that affect readers' interpretation vary according to culture(ibid:45).

Since the recognition of schema as an integral contributor in the reading comprehension, researchers suggest that activating and using prior knowledge can help compensate for language difficulties of L2 readers (Devine, 1988: 187; Hudson, 1988:56). However, it should also be noted that L2 readers are still susceptible to comprehension breakdown due to the lack of appropriate background knowledge about the topic of the text. Carell (1988:98) suggests that while readers can freely use their schema in reading comprehension, their interpretation should not deviate from the intended meaning of the text. Moreover, researchers also believe that linguistic proficiency of L2 readers is still necessary (Eskey, 1988:150,Lee&Scharllet, 1997:375, Cummins, 2003: 34, andPulido, 2004:470)

Hence, reading is now better viewed as a combination of bottom-up and top-down processing, which starts from the reader to the text. The Interactive Approach to Reading provides that a reader has a variety of knowledge sources he can use in the reading process (Rumelhart, 1981:16). In effect, if a reader has difficulty in processing a text because of his lack of linguistic skills, it can be compensated by background knowledge about the content and vice versa (Stanovich, 1980:257).

Hudson (2007: 189) and Grabe (2009:321-2)argue that both bottom-up processing and top-down processing have important implications on the interactive approach to reading. Since second language (L2) readers are susceptible to both language and content problems of a text, there is a need for classroom instruction to include both bottom-up and top-down processes of reading to assist students in the comprehension process. A bottom-up process emphasizes a single-direction, part-to-whole processing of text. This process moves from sounds and the graphaphonic aspects to whole words, sentences, paragraphs, and ….etc. This sometimes refers to as "the meaning last model because comprehension only occurs if one can crack the code"(Hernandez,2003:126). The top-down reading process suggests that processing a text begins in the mind of a reader with meaning-driven processes of prediction and assumption. Moreover, ideas about the meaning of a text based on one's prior-knowledge. This process is based on cues readers use to make predictions of meaning. The cues are graphaphonic, semantic, syntactic, and pragmatic(see also Grabe,1998:388-9 and Hedgcock& Ferris,2009: 49).

5. Reading Comprehension

English for science and technology(EST) is a type of English for specific purposes (ESP).Engineering students are required to read textbooks in English when they study engineering. Spector& et al(2001: 367) argue that there is a problem in the first year of undergraduate study, since students are not familiar with the academic jargon and conceptual issues of their respective field.

AbdulGhani (1993:42) states that unfortunately, reading comprehension, especially in the ESP field, is too often kept at the low level of recalling information learned or of simply locating information explicitly stated in a text. This is partly due to the fact that the language teacher finds the scientific content difficult to tackle in depth. Also, in an ESP course the main emphasis is on language use, language functions, and terminology; thus, content is kept at a low level so as not to constitute an obstacle that interferes with language teaching. In addition, comprehension questions are manipulated to elicit certain grammatical structures or language functions. The question is: Is this really reading comprehension?

When designing a reading course, it is extremely important to strike a balance between content and language. Questions asked about the content must vary in their cognitive level to allow for intellectual involvement on the part of the student (ibid:45).

Celece-Murcia (1991:200-1) states that ESP academic reading courses should emphasize both reading to learn (activities that stress comprehension of subject matter content) and learning by doing (activities that call for utilization of the ideas in the text). The former deals with the text at hand, exclusively the latter takes the learner beyond the text and into some kind of reformulation of the facts, information and concepts found in it, for example in reading to learn, emphasis is given to close reading of texts, often paragraph by paragraph, in order to find the function which each paragraph fulfils in the passage. Reading to learn also involves complex thinking skills in which students must be able to make the material their own aim throughactivities which guide them into analyzing texts, such as summarizing passages and chapters, finding comparison and contrast or cause and effect examples, and following an argument in the text. Learning by doing activities helps students extract meaning from texts by using note-taking skills, following directions, solving problems set up in the text and similar methods. By manipulating the data, learners gain more experience with the language as well as with the underlying organizational systems presented in the material

English for science and technology is adopted byCollege of Engineering/ University of Al-Mustansiriya via using the traditional approach where the medium of instruction and communication is not English, but where students are required to read textbooks in English.The students take an English lesson in the first year only. This lesson includes only scientific terms which are concerned with engineering.Therefore the present study investigates the difficultiesof engineering students in reading and comprehending English texts through examining 4th year college students in this field.

6. Methodology

6.1 Description of the Test and Sample Selected

A standardized test is used to diagnose the difficulties faced by engineering students in reading and comprehending two passages, the first one is concerned with their specialization while the second is concerned with a general topic. The two passages with their questions are taken from the book entitled (TOEFL Practice Test, 2003:36-7& 42-4). Passage no.1includes twelve multiple choice items whereas passage no.2 includes eleven multiple choice items. Each multiple choice item includes four options (A,B,C,&D) and the students are asked to choose one correct choice from each item (see appendix (1)). A separate sheet of paper is also taken from the same book (ibid:13) to be used as an answer sheet in order that each student can put down his/her responses on it (see appendix (2)).

The sample in this study is eighty seven Iraqi 4thyear students in the College of Engineering/ University of Al-Mustansiriya for the academic year 2012. Twenty five students from Department of Highway & Transport and sixty two students from Department of Civil have taken the test. It is known that College of Engineering accepts students who get high marks in the Baccalaureate exam. Accordingly, this sample is considered as the representative one for the above reason and since they have knowledge in English since the first year.

6.2 Test Validity

Validity is defined as the extent to which the instrument measures what it purports to measure, i.e. it refers to the degree in which our test or other measuring device is truly measuring what we intend it to measure. There are different types of validity, the most prominent of which is face validity which is the method of measurement that actually measures what it is expected to measure. It is concerned with how a measure or procedure appears. Does it seem like a reasonable way to gain the information the researchers are attempting to obtain? Does it seem well designed? If a test has face validity then it looks like a valid test to those who use it (Brown, 1987:222). To ensure the validity of the test, the researcher has consulted six jury members*in English Language and Linguistics. The test is judged valid by all the jurors with 100% of agreement. In the light of the jurors opinions the test has gained its face validity. It is important to indicate that the jury members state that the test is a standardized one and it does not need to other statistical methods.

*The jury members are as follows:

1. Professor Dr. Abdul LatteefAljumayly(Applied Linguistics, University of Baghdad/ College of Arts).
2. Professor Dr. Sabah S. Alrawi(Linguistics, University of Baghdad/ College of Languages).
3. Professor Dr. Riyadh Khalil Altam Ibrahim (Linguistics, University of Baghdad/ College of Languages).
4. Professor Dr. Nidham Sheet Hameed (Linguistics/ University of Baghdad/ College of Arts).
5. Assistant Professor Dr. Abdul Kareem Fadhl(Applied Linguistics, University of Baghdad/ College of

Education-IbnRushd).

6.Assistant Professor Dr. Biadaa' Faisal Noori (Applied Linguistics/ University of Baghdad/ College of Arts).

6.3 Scoring Scheme

The mark is distributed as follows:

1. passage no.1 includes twelve items ; thus, the whole mark is twelve which means that one mark is given to each item.

2. Passage no.2 includes eleven items and the whole mark is eleven; thus, one mark is also given to each item.

6.4 Administration of the Test

After the cooperation with the dean bureau and the heads of both Departments of Highway&Transport and Civil /College of Engineering/ University of Al-Mustansiriya, the test is applied on eighty seven Iraqi 4th year college students. Twenty five students from Department of Highway&Transport and sixty two students from Department of Civil have taken the test. The researcher has tried to collect more than this number but she couldn't since most of the students are busy in taking their lectures and examinations. The researcher has clarified the test to the students and she has made sure that all the instructions are clear and familiar to them. The average time required for taking the test is forty minutes ,i.e., twenty minutes are specified for the students to answer each passage. Five additional minutes are given for clarifying the test for the students. The students have put down their responses on the answer sheets of papers which are given to them with the questions. Accordingly, their responses have been corrected in order to determine the difficulties faced by them in reading comprehension in the two passages. The test is scored depending on the incorrect answers of the students in each item of the two passages. One sample T. Test is used to show the level of these students in the two passages and in the whole test. Percentages are also used to show the frequency rates of correct and incorrect answers made by the students in each item of the two passages.

7. Data Analysis

Table(1) shows the level of eighty seven engineering students in passages no.1&2 and in the whole test through using one sample T. Test method.

Table (1)

The Level of Engineering Students in Passages no.1&2 and in the Whole Test through Using One sample T. Test Method

	Mean	Standard Deviation	Degree of Freedom	Theoretical Mean	Calculated T	Tabled T
Passage No. 1	4.08	2.25	86	6	7.95	2.00
Passage No. 2	3.38	1.98	5.5	10.00		
The Whole Test	7.46	3.38	11.5	11.14		

The formula of one sample T. Test method is as follows:

T= T. value

X= Mean

A=Theoretical Mean

S=Standard Deviation
N= Number of the Sample (Dowdy & et al,2004:181).

It is obvious from table (1) that the mean score of passage no.1 is (4.08) and the standard deviation is(2.25) at (86) degree of freedom. Since the calculated t. value (7.95) is more than that of the tabled one(2.00) at a level of significance (0.05) , there is a statistical difference between the mean of the sample and the theoretical mean (6) and it is in favor of the latter one. As a result, this means that the level of the sample in passage no.1 is low.

In addition, the mean score of passage no.2 is (3.38) and the standard deviation is (1.98) at (86) degree of freedom. Since the calculated t. value(10.00) is more than that of the tabled one(2.00) at a level of significance (0.05), there is a statistical difference between the mean of the sample and the theoretical mean (5.5) and it is in favor of the latter one. This shows that the level of the sample is low in passage no.2.

Moreover, the mean score of the two passages is (7.46) and the standard deviation is (3.38) at (86) degree of freedom. Since the calculated t. value(11.14) is more than that of the tabled one(2.00) at a level of significance (0.05) ,there is a statistical difference between the mean of the sample and the theoretical mean (11.5) and it is in favor of the latter one. This also indicates that the level of the sample is low in the whole test.

Table (2) shows the percentages of the correct and incorrect answers of eighty seven engineering students in each item of passage no.1.

Table(2)
Percentages of Correct and Incorrect Answers of Passage no.1
Passage no.1

No. of Items	Correct Answers	%	Incorrect Answers	%
1	35	40.2	52	59.8
2	24	27.6	63	72.4
3	39	44.8	48	55.2
4	36	41.4	51	58.6
5	24	27.6	63	72.4
6	21	24.1	66	75.9
7	4	4.6	83	95.4
8	18	20.7	69	79.3
9	40	46	47	54
10	23	26.4	64	73.6
11	42	48.3	45	51.7
12	45	51.7	42	48.3

It is obvious from table (2) that the engineering students have difficulties in reading comprehension when they answer the items of passage no.1 which is concerned with their specialization

since most of them have failed in choosing the correct choices regarding this passage except the last item. However, the students' answers can be discussed as follows:

1. The percentage of the correct answers in item no.1 is 40.2% whereas the percentage of the incorrect ones is 59.8%. This means that most of the students do not comprehend correctly the main idea discussed in this passage which is (C) 'Factors that affected industrialization in the United States.' Most of them have chosen either (A)'The history of railroads in the United States,' (B) 'The major United States industrial centers,' or (D) 'The role of Agriculture in the nineteenth century.'

2. The percentages of the correct answers in items no.2,8&11 are 27.6%, 20.7%, & 48.3% respectively whereas the percentages of the incorrect ones of these items are 72.4% ,79.3%, & 51.7%.Such rates belong to the fact that most of the students have difficulties in vocabulary and they do not comprehend the meaning of the words used in these items; thus, they have chosen incorrect choices. According to the passage the word 'ingredients' is closest in meaning to the word in (D) 'components' in item no. 2 and the word'nourished' is closest in meaning to the word in (B)'fed' in item no.8; in addition, the word'ran' is closest in meaning to the word in (A) 'operated'.

3. The percentage of the correct answers in item no.3 is 44.8% whereas that of the incorrect ones is 55.2%. This shows that most of the students do not comprehend the reason of mentioning 'a spider's web' in line 9 in the passage and the correct choice is (B) 'to describe the complex structure of the railway system.'

4. The percentage of the correct answers in item no.4 is 41.4% whereas the percentage of the incorrect ones is 58.6%. This indicates that most of the students do not recognize the reflective pronoun'themselves' which refers to 'railroads' in line 12 in the passage. They have chosen either (A) 'sources', (B) 'centers', or (D) 'places' and these choices are incorrect since the correct choice is (C) 'railroads'.

5. The percentages of the correct answers in items no.5&9 are 27.6% & 46% respectively whereas the percentages of the incorrect ones of these items are 72.4% & 54%. Regarding item no. 5 all the choices are true except (D) since 'railroads'are inanimate noun and the students do not comprehend this fact. In addition, in item no. 9 the students do not comprehend which choice is incorrect of the United States farmers in the nineteenth century and it is (B) 'they were unable to produce sufficient food for urban areas.'

6. The percentages of the correct answers in items no.6,7,&10 are 24.1%, 4.6%, & 26.4% respectively whereas the percentages of the incorrect ones are 75.9%, 95.4, & 73.6%. This reflects that most of the students do not comprehend the ideas given in the passage. They do not recognize that one effect of the improvement of machine tools is (A) which is 'lower manufacturing costs' in item no. 6. Moreover, in item no. 7 the students have great difficulties in comprehending the 'persons who were the biggest consumers of manufactured products' and the correct choice is (C) which is 'city dwellers'. Besides, they do not comprehend that United States supplied agricultural produce to European cities in item no.10; thus, the correct choice is (D) and not the other incorrect choices.

7. The percentage of the correct answers in item no.12 is 51.7% whereas the percentage of the incorrect ones is 48.3%. This shows that most of the students have no difficulties in this item and they have chosen (D) since they comprehend that the author mentions the financial aspects of industrial expansion in lines 25-28 in the passage.

Moreover, table(3) below shows the percentages of correct and incorrect answers of eighty seven engineering students in each item of passage no.2.

Table(3)

Percentages of Correct and Incorrect Answers of Passage no.2

Passage no.2				
No. of Items	Correct Answers	%	Incorrect Answers	%
1	37	42.5	50	57.5
2	22	25.3	65	74.7
3	47	54	40	46
4	36	41.4	51	58.6
5	27	31	60	69
6	15	17.2	72	82.8
7	23	26.4	64	73.6
8	35	40.2	52	59.8
9	16	18.4	71	81.6
10	3	3.4	84	96.6
11	28	33	59	67

It is noted that most of the students have also difficulties in reading comprehension in passage no.2 which is concerned with a general topic. The students' answers can be analyzed as follows:

1. The percentage of the correct answers in item no.1 is 42.5% whereas the percentage of the incorrect ones is 57.5%. Such rates indicate that the students do not comprehend the main idea discussed in the passage which is in (D) 'the different kinds of glaciers' and they have chosen incorrect choices other than (D).

2. The percentages of the correct answers in items no.2,6,&9 are 25.3%,17.2%, & 18.4% respectively whereas the percentages of the incorrect ones of these items are 74.7%,82.8%, &81.6%. These rates show that the students have limited knowledge in vocabulary since they do not comprehend the meanings of the words used in these items. For instance, the word 'massive' is closest in meaning to the word in choice (A) 'huge' in item no.2, the word 'rare' is closest in meaning to the word in choice (B) 'unusual' in item no.6; and the word 'subtle' is closest in meaning to the word in choice (A) 'slight' in item no.9. The students haven't chosen these choices in these items and they choose other incorrect ones.

3. The percentage of the correct answers in item no.3 is 54% whereas the percentage of the incorrect ones is 46%. This clarifies that most of the students have no difficulties since they infer the reasons for the question in this item, the question is 'It can be inferred that ice sheets are so named for which of the following reasons' and the correct choice is (B) 'they cover large areas of land'.

4. The percentages of the correct answers in items no.4,5,&7 are 41.4%, 31%, & 26.4% respectively whereas the percentages of the incorrect ones of these items are 58.6%, 69%, & 73.6%.

These rates belong to the fact that they do not comprehend the ideas given in the passage; therefore, they have chosen incorrect choices e.g. 'ice shelves' can be found in choice (C) 'spreading into the ocean' in item no.4 and the answer to the question 'where was the Cordilleran Ice Sheet was thickest' is in choice (C) 'Alberta' in item no.5; besides, 'ice fields resemble ice caps' in the way that is in choice (B) 'their flow' in item no.7.

5. The percentage of the correct answers in item no.8 is 40.2% whereas the percentage of the incorrect ones is 59.8%. This shows that they do not recognize that the pronoun 'it' refers to 'glacier' in line 19 in the passage. Thus, the correct choice is (A) 'glacier' and not the other choices.

6. The percentage of the correct answers in item no.10 is 3.4% whereas the percentage of the incorrect ones is 96.6%. This indicates that the students have great difficulties in this item since they do not comprehend which choice is the correct one.

7. The percentage of the correct answers in item no.11 is 33% whereas the percentage of the incorrect ones is 67%. This also illustrates that the students do not comprehend that the correct choice is (D) 'Ice sheetsand mountain glaciers' which are used by the author to illustrate the two basic types of glaciers mentioned in line no.1 in the passage.

. However, table (4) below shows the percentages of the correct and incorrect answers of the engineering students in Departments of Highway & Transport and Civil/ College of Engineering/ University of Al-Mustansiriya in each item of passage no.1.

Table(4)

Percentages of Correct and Incorrect Answers of Passage no.1

No. of Items	Department of Highway & Transport							
(25 Students)	Department of Civil							
(62 Students)								
	Correct Answers		%	Incorrect Answers		%	Correct Answers	%
	Incorrect Answers		%					
1	8	32	17	68	27	43.5	35	56.5
2	6	24	19	76	18	29.0	44	71
3	13	52	12	48	26	42	36	58.0
4	11	44	14	56	25	40.3	37	59.7
5	5	20	20	80	19	30.6	43	69.4
6	7	28	18	72	14	22.6	48	77.4
7	2	8	23	92	2	3.2	60	96.8
8	8	32	17	68	10	16.1	52	83.9
9	11	44	14	56	29	46.8	33	53.2
10	4	16	21	84	19	30.6	43	69.4
11	9	36	16	64	33	53.2	29	46.8
12	11	44	14	56	34	54.8	28	45.2

It is clear from table(4) that most of the students have difficulties in reading comprehension in passage no.1 which is concerned with their specialization. Both students of Departments of Highway & Transport and Civil have not succeeded in this passage but the students of Department of Highway & Transport have succeeded only in item no. 3 and the students of Department of Civil have succeeded only in items no. 11&12.

In addition, table(5) represents the percentages of the correct and incorrect answers of the students in both Highway& Transport and Civil Depts. in each item
of passage no.2.

Table(5)

Percentages of Correct and Incorrect Answers of Passage no.2

No. of Items	Department of Highway & Transport			Department of Civil				
(25 Students)				(62 Students)				
	Correct Answers		%	Incorrect Answers		%	Correct Answers	%
	Incorrect Answers		%					
1	8	32	17	68	29	46.8	33	53.2
2	6	24	19	76	16	25.8	46	74.2
3	14	56	11	44	33	53.2	29	46.8
4	9	36	16	64	27	43.5	35	56.5
5	7	28	18	72	20	32.3	42	67.7
6	4	16	21	84	11	17.7	51	82.3
7	11	44	14	56	12	19.2	50	80.6
8	11	44	14	56	24	38.7	38	61.3
9	5	20	20	80	11	17.7	51	82.3
10	1	4	24	96	2	3.2	60	96.8
11	10	40	15	60	18	29.0	44	71

It is obvious from this table that most of the students have difficulties in reading comprehension in passage no.2 which is concerned with a general topic except item no. 3 in which they have succeeded.

However, four students from Department of Highway and Transport have succeeded in passage no.1 and the percentage of success is 16% whereas twelve students from Department of Civil have succeeded in this passage and the percentage of success is 19.35%. Moreover, three students form Department of Highway and Transport have succeeded in passage no.2 and the percentage of success is 12% whereas ten students from Department of Civil have succeeded in this passage and the percentage of success is 16.1%. Such rates indicate that most of engineering students of both departments have great difficulties in reading comprehension in the two passages since they have failed in them. Nevertheless,the number of the students of Departments of Highway and Transport and Civil who have succeeded in passage no.1is more than that of passage no.2 since the former is concerned with their specialization. Moreover, the number of the students of Department of Civil who have succeeded in the two passages is more than that of the students of Department of Highway and Transport. Tables (6&7) below show the marks of the students of the two departments in the two passages.

Table(6)

The Marks of the Students of Department of Highway and Transport inthe Two Passages

No. of Students	Passage no.1	Passage no.2	Total	No. of Students	Passage no.1	Passage no.2	Total
1	7	6	13	14	5	4	9
2	4	4	8	15	3	3	6
3	5	1	6	16	2	4	6
4	3	2	5	17	2	4	6
5	1	3	4	18	3	1	4
6	3	2	5	19	3	3	6
7	3	3	6	20	2	2	4
8	4	5	9	21	3	4	7
9	4	3	7	22	3	0	3
10	7	4	11	23	8	5	13
11	3	3	6	24	3	4	7
12	3	2	5	25	3	6	9
13	9	8	17				

Table(7)

The Marks of the Students of Department of Civil in the two Passages

No. of Students	Passage no.1	Passage no.2	Total	No. of Students	Passage no.1	Passage no.2	Total	No. of Students	Passage no.1	Passage no.2	Total
1	5	1	6	23	2	5	7	45	4	5	9
2	0	0	0	24	4	4	8	46	3	1	4
3	3	0	3	25	5	4	9	47	4	3	7
4	4	0	4	26	5	3	8	48	4	6	10
5	7	0	7	27	5	4	9	49	4	4	8
6	2	5	7	28	6	3	9	50	3	3	6
7	1	3	4	29	8	1	9	51	1	3	4
8	5	1	6	30	4	5	9	52	6	7	13
9	5	2	7	31	4	2	6	53	8	8	16
10	5	4	9	32	2	2	4	54	6	8	14

11	13	1	2	33	8	3	11	55	3	0
12	27	0	2	34	5	1	6	56	5	2
13	212	2	4	35	3	3	6	57	5	7
14	105	4	14	36	4	4	8	58	3	2
15	06	6	6	37	5	3	8	59	3	3
16	29	5	7	38	5	3	8	60	4	5
17	1114	6	17	39	4	6	10	61	8	6
18	214	6	8	40	3	3	6	62	9	5
19	5	0	5	41	4	4	8			
20	5	3	8	42	2	4	6			
23	7	3	10	43	0	5	5			
22	3	3	6	44	1	3	4			

8.Conclusions

After discussing the data, it can be concluded that engineering students of Departments of Highway& Transport and Civil / College of Engineering/ University of Al-Mustansiriya have great difficulties in reading and comprehending English Texts that are concerned with their specialization and general topics.

It is therefore suggested that a specific course in EST (English for Science and Technology) should be adopted in the first year /College of Engineering/ University of Al-Mustansiriya to be taught to the students by a specialist lecturer in English regarding their specialization in engineering and real life situations. Reading in these courses should be taught in an interactive and communicative manner. This refers to the interaction of bottom-up and top-down processing skills and the active participation of students in critical thinking, interactive activities, and discussions. Aside from individual, silent, and independent reading activities in which more time is usually spent, more collaborative reading and discussions should be offered to provide students opportunities toevaluate meaning from a text, confirm with others predictions and assumptions, and share background knowledge with each other.

Language instructors are often frustrated by the fact that students do not transfer the strategies they use when reading in their native language to a language they are learning. Instead, they seem to think that reading means starting at the beginning and going word by word, stopping to look up every unknown vocabulary item, until they reach the end. When they do this, students are relying exclusively on their linguistic knowledge, abottom-up strategy. One of the most important functions of the language

instructor, then, is to help students move past this idea and use top-down strategies as they do in their native language. Effective language instructors show students how they can adjust their reading behaviour to deal with a variety of situations, types of input, and reading purposes. They help students develop a set of reading strategies and match appropriate strategies to each reading situation. However, here are certain strategies that can help students read more quickly and effectively:

- Previewing: reviewing titles, section headings, and photo captions to get a sense of the structure and content of reading selection.
- Predicting: using knowledge of the subject matter to make predictions about content and vocabulary and check comprehension; using knowledge of the text type and purpose to make predictions about discourse structure; using knowledge about the author to make predictions about writing style, vocabulary, and content.
- Skimming and scanning: using a quick survey of the text to get the main idea, identify text structure, confirm or predictions.
- Guessing from context: using prior knowledge of the subject and the ideas in the text as clues to the meanings of unknown words, instead of stopping to look them up.
- Paraphrasing: stopping at the end of a section to check comprehension by restating the information and ideas in the text.

The purpose and strategy relationship in reading should be further emphasized. The purpose for reading dictates the kind of strategies to be used; hence, students should be exposed to different reading purposes as well as tasks, and to identify the appropriate strategies for a specific task and purpose. Moreover, students may find a variety of difficulties when reading foreign texts. These difficulties may arise because the context is unknown or the language of the text is unfamiliar to them. For instance, the complex sentence structure and vocabulary may be a dilemma for them especially when most of the texts they use in research are international publications. Language teachers should recognize these reading difficulties. Thus, reading lessons should be taken into consideration.

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Appendix (1)

The Test

Time: 40 minutes

Answer all questions following the two passages on the basis of what is stated or implied in each passage:

Passage (1)

In the mid-nineteenth century, the United States had tremendousnatural resources
that could be exploited in order to develop heavy industry. Most of the raw materials
that are valuable in the manufacture of machinery, transportation facilities, and consumer
Linegoods lay ready to be worked into wealth. Iron, coal, and oil- the basic ingredients of
(5)industrial growth-were plentiful and needed only the application of technical expertise,
organizational skills, and labor.
One crucial development in this movement toward industrialization was the growth
of therailroads. The railway network expanded rapidly until the railroad map of the
United States looked like a spider's web, with the steel filaments connecting all important
(10)sources of raw materials, their places of manufacture, and their centers of distribution.
The railroads contributed tothe industrial growth not only by connecting these major
centers, but also by themselves consuming enormous amounts of fuel, iron, and coal.
Many factors influencedemerging modes of production. For example, machine
tools used to make goods, were steadily improved in the latter part of the
(15)nineteenth century – always with an eye to speedier production and lower unitcosts.
The products of the factories were rapidly absorbed by the growing cities that sheltered
theworkers and the distributers. Theincreased urban population was nourished by the
increasedfarm production that, in turn, was made more productive by the use of the
newmachinery. American agricultureproductionkept up withthe urban demand
(20)and still had surpluses for sale to the industrial centers of Europe.
The labor that ran the factories and built the railways was recruited in part from
American farm areas wherepeople were being displaced by farm machinery, in part
from Asia, in part from Europe.Europe now began tosend tides of immigrants
from eastern and southern Europe- most ofwhom were originallypoor farmers but
(25)whosettled in American industrial cities.The money to financethis tremendous
expansionof the Americaneconomy still came from European financiers for the most
part, but the Americans were approaching the day when their expansion could be
financed in their own "money market."

1. What is the passage mainly discuss?
(A) The history of railroads in the United States.
(B) The major United States industrial centers.
(C) Factors that affected industrialization in the United States.
(D) The role of Agriculture in the nineteenth century.

2. The word “ingredients” in line 4 is closest in meaning to
(A) minerals
(B) products
(C) methods
(D) components

3. Why does the author mention “a spider’s web” in line 9.
(A) To emphasize the railroad’s consumption of oil and coal
(B) To describe the complex structure of the railway system
(C) To explain the problems brought on by railway expansion
(D) To describe the difficulties involved in the distribution of raw materials

4. The word “themselves” in line 12 refers to
(A) sources
(B) centers
(C) railroads
(D) Places

5. According to the passage, all of the following were true of railroads in the United States in the nineteenth century EXCEPT that
(A) they connected important industrial cities
(B) they were necessary to the industrialization process
(C) they were expanded in a short time
(D) they used relatively small quantities of natural resources

6. According to the passage, what was one effect of the improvement of machine tools?
(A) Lower manufacturing costs
(B) Better distribution of goods
(C) More efficient transportation of natural resources
(D) A reduction in industrial jobs

7. According to the passage, who were the biggest consumers of manufactured products?

(A) Railway workers
(B) Farmers
(C) City dwellers
(D) Europeans

8. The word “nourished” in line 17 is closest in meaning to
(A) protected
(B) fed
(C) housed
(D) paid

9. Which of the following is NOT true of United States farmers in the nineteenth century?
(A) They lost some jobs because of mechanization century
(B) They were unable to produce sufficient food for urban areas
(C) They raised their productivity by using new machinery
(D) They sold food to European countries.

10. According to the passage, what did the United States supply to European cities?
(A) Machine tools
(B) Money
(C) Raw materials
(D) Agricultural produce

11. The word “ran” in line 21 is closest in meaning to
(A) operated
(B) hurried
(C) constructed
(D) owned

12. Where in the passage does the author mention the financial aspects of industrial expansion?
(A) Line 1-2
(B) Line 11-12
(C) Line 19-20
(D) Line 25-28

Passage (2)

There are two basic types of glaciers, those that flow outward in all directions with little regard for any underlying terrain and those that are confined by terrain to a particular path.

LineThe first category of glaciers includes those massive blankets that cover whole (5)continents, appropriately called ice sheets. There must be over 50.000 square kilometers of land covered with ice for the glacier to qualify as an ice sheet. When portions of an ice sheet spread out over the ocean , they form ice shelves.

About 20.000 years ago the Cordilleran Ice Sheet covered nearly all the mountains

in southern Alaska, Western Canada, and the western United States. It was about 3 (10)kilometers deep at its thickest point in northern Alberta. Now there are only two sheets left on earth, those covering Greenland and Antarctica.

Any domelike body of ice that also floes out in all directions but covers less than 50.000 square kilometers is called an ice cap. Although ice caps are rare nowadays, there are a number in northeastern Canada, on Baffin Island, and on the Queen Elizabeth (15) Islands.

The second category of glaciers includes those of a variety of shapes and sizes generally called mountains or alpine glaciers. Mountain glaciers are typically identified by the landform that controls their flow. One form of mountain glacier that resembles an ice cap in that it flows outward in several directions is called an ice field. The (20)difference between an ice field and an ice cap is subtle. Essentially, the flow of an ice field is somewhat controlled by surrounding terrain and thus does not have the domelike shape of a cap. There are several ice fields in the Wrangell, St. Elias, and Chugach mountains of Alaska and northern British Columbia.

Less spectacular than large ice field are the most common types of mountain (25)glaciers: the cirque and valley glaciers. Cirque glaciers are found in depressions in the surface of the land and have the characteristics circular shape. The ice of valley glaciers, bound by terrain, flows down valley, curves around their corners, and falls over cliffs.

1. What does the passage mainly discuss?
(A) Where major glaciers located
(B) How glaciers shape the land
(C) How glaciers are formed
(D) The different kinds of glaciers

2. The word “massive” in line 4 is closest in meaning to
(A) huge
(B) strange
(C) cold
(D) recent

3. It can be inferred that ice sheets are so named for which of the following reasons?
(A) They are confined to mountain valleys.
(B) They cover large area of land
(C) They are thicker in some areas than in others
(D) They have the characteristics circular shape

4. According to the passage, ice shelves can be found
(A) covering an entire continent
(B) buried within the mountains

(C) spreading into the ocean
(D) filling deep valleys

5. According to the passage, where was the Cordilleran Ice sheet thickest
(A) Alaska
(B) Greenland
(C) Alberta
(D) Antarctica

6. The word “rare” in line 13 is closest in meaning to
(A) small
(B) unusual
(C) valuable
(D) widespread

7. According to the passage (paragraph 5), ice fields resemble ice caps in which of the following ways?
(A) Their shape
(B) Their flow
(C) Their texture
(D) Their location

8. The word “it” in line 19 refers to
(A) glaciers
(B) cap
(C) difference
(D) terrain
9. The word “subtle” in line 20 is closest in meaning to
(A) slight
(B) common
(C) important
(D) measurable
10. All of the following are alpine glaciers EXCEPT
(A) cirque glaciers
(B) ice caps
(C) valley glaciers
(D) ice fields
11. Which of the following types of glaciers does the author use to illustrate the two basic types of glaciers mentioned in line 1?
(A) Ice fields and cirques
(B) Cirques and alpine glaciers
(C) Ice sheet and ice shelves

(D) Ice sheets and mountain glaciers

Appendix (2)

Answer Sheet

Passage no.1

1. (A) (B) (C) (D)
2. (A) (B) (C) (D)
3. (A) (B) (C) (D)
4. (A) (B) (C) (D)
5. (A) (B) (C) (D)
6. (A) (B) (C) (D)
7. (A) (B) (C) (D)
8. (A) (B) (C) (D)
9. (A) (B) (C) (D)
10. (A) (B) (C) (D)
11. (A) (B) (C) (D)
12. (A) (B) (C) (D)

Passage no.2

1. (A) (B) (C) (D)
2. (A) (B) (C) (D)
3. (A) (B) (C) (D)
4. (A) (B) (C) (D)
5. (A) (B) (C) (D)
6. (A) (B) (C) (D)
7. (A) (B) (C) (D)
8. (A) (B) (C) (D)
9. (A) (B) (C) (D)
10. (A) (B) (C) (D)
11. (A) (B) (C) (D)

الصعوبات التي يواجهها طلبة الهندسة في قراءة وفهم النصوص الإنجليزية

الخلاصة

القراءة هي عملية تفاعلية تدور بين القارئ والنص، فتؤدي الفهم. والنص يعرضالأحرف والكلمات والجمل والفقرات التي ترمز للمعنى. يستعمل القارئ معارف، ومهارات، وستراتيجيات؛ لتحديد ماهية ذلك المعنى. فهم القراءة هو أكثر بكثير من فك رموز، بل ينتج عندما يعرف القارئ أي المهارات والستراتيجيات مناسبة لنوع النص،ويفهم كيفية تطبيقها لتحقيق غرض القراءة. فهم القراءة مهم جدا لأنَّه من دونها ليس أكثر من تتبعالرموز على صفحة مع عينيك وسبرهاتاركا القارئ بدون معلومات. بدلا من تعزيز المنهج التقليدي، ينبغيتعليم القراءة بطريقة أكثر تفاعلية وتواصلية. في ضوء ذلك، تبحث هذه الدراسة في الصعوبات التي يواجهها طلبة الهندسة في فهم القراءة في محيط الجامعة اذ ان وسيلة التعلم والاتصال ليست اللغة الإنجليزية، في حينيطلب من الطلبة قراءة الكتب المنهجية باللغة الإنجليزية. واختير المشاركون من كلية الهندسة / الجامعة المستنصرية لإجراء الاختبار. واستعمل اختبار مقنن لإظهار الصعوبات التي يواجهها الطلبة في فهم القراءة. واختيرت قطعتان في الاختبار، الأولى: تعنى باختصاص الهندسة في حين تعنى القطعة الثانية بالموضوعات العامة.وأجري تحليل البيانات من خلال استعمال أساليب إحصائية كالاختبار التائي للعينة الواحدة والنسب المئوية . كشفت نتائج هذه الدراسة إنَّ طلبة الهندسة لديهم صعوبات كبيرة في فهم القراءة؛ لأن معظمهم لم ينجح في الاختبار. وقد تم توضيح الأسباب الكامنة وراء مثل هذه النتائج، وأعطيت بعض الاقتراحات لافادة المعلمين والطلبة في المجالات العلمية والهندسية خاصة.