

## Preface

The Specialized English for Computer Engineering, Computer Science & IT (SECE) book is an integrated guide for intermediate level of specialized English, appropriate for computer engineering, IT and computer science course. SECE focuses on basic information on computer engineering with substantial technical materials. It is flexible enough to be used for engineering students to increase their knowledge of academic reading and writing ability. The SECE is based on the notion that the more vocabulary students know the better their reading comprehension is improved, and the more students read, the more they understand. As a result, they generate more thoughtful ideas to structure their academic writing. The authors have also attempted to highlight the *process* of learning reading comprehension, vocabulary learning and writing development through providing adequate activities, such as pre-reading, reading and post-reading in different sections of each unit in SECE.

The SECE is comprised of 14 units centring on basic features of a computer and ends with managing high speed computer hardware. A quick overview of each unit is elucidated below.

Unit 1 is an introductory focus on the sense of university achievement and discusses a few views focusing on improving a university high quality education. This brief orientation of the views helps university students achieve the most in their courses, increase their learning awareness and strengthen their learning goals in the university.

Unit 2 provides a brief account of the basic features of a computer and describes the main components, such as the CPU, Motherboard, Power supply, RAM, Hard drive, etc., of a computer along with adequate examples.

Unit 3 deals with fighting against digital viruses, discussing digital viruses emerging in a computer, and introducing strategies to control them in a computer. It also provides information on different types of digital viruses and how a computer user can use stealth infection strategies to fight against digital viruses.

Unit 4 presents software designed for improving writing literacy and discusses software that can improve Persian orthographical features in a computer.

Unit 5 deals with the heart and soul of a computer and discusses the operating systems and their features as well as the kind of operating systems used in a computer. It also provides information about the history and function of operating systems.

Unit 6 deals with Ins and Outs of a computer, and discusses the input and output devices in a computer and describes each of the devices along with substantial examples.

Unit 7 puts up some tips and tricks for producing digital images and discusses the digital images in a computer. It also describes the process of digital images and video tracking along with adequate examples.

Unit 8 focuses on hunting spiders through search engines and describes the functions of web search engines focusing on improving a quality search. The definition and different types of search engines as well as search engine bias are adequately discussed.

Unit 9 considers digital crimes and criminals, and clarifies the ways through which digital crimes take place and how they can be ethically and digitally prevented in computer and IT domains.

Unit 10 considers the computer challenge-response test called CAPTCHA and adequately puts forth the applications, accessibility and technological advertisements from which CAPTHA can save them from unpredictable hackers.

Unit 11 presents how to organize and illustrate data, and describes different data structures and basic principles for choosing the best data structures.

Unit 12 has proposed signs and signatures in the virtual world and discusses the technology for dealing with signatures. It also describes the origin of digital or electronic signatures and how they can replace the traditional and hardcopy signatures.

Unit 13 deals with the yardstick for computer performance and presents several steps for microprocessors, computer systems, and benchmarks technology, in addition to the issues related to computer performance evaluation.

Unit 14 focuses on the speed management of computer hardware and describes the overclocking and underclocking used in a computer. It also provides information on how they can be used effectively in a computer.

## To the Instructor

A close relationship between reading with vocabulary and writing exists and develops student knowledge of academic reading. The

Specialized English for Computer Engineering, Computer Science & IT designing for the intermediate level of English focuses on three main sections, Pre-reading activities, Reading passage, and Post-reading activities.

## Pre-reading activities

Pre-reading activities have three sub-sections that help students familiarize with the content of the reading passage through target academic vocabulary, writing development and pre-reading questions,

### I. Target academic vocabulary

Vocabulary knowledge plays a crucial role in understanding reading passage. Vocabulary knowledge and reading comprehension are interdependent – both of them support each other to increase comprehension. In this section, a list of vocabulary is selected from the reading passage and students first listen to the correct pronunciation through downloading the audio files of this book on the websites of the authors. Then, they check out the meaning of each vocabulary and copy the meaning in the space provided in both monolingual and bilingual dictionaries. Finally, the instructor can monitor their pronunciations and relevant meaning through classroom vocabulary discussion.

### II. Writing development

This section typically targets on improving student writing literacy and helps them realize the structure of a paragraph, such as a topic sentence and supporting sentences. For instance, students learn how to

limit a main idea in a topic sentence and they are introduced in multiple ways to support a topic sentence. The instructor can facilitate student knowledge of writing literacy (paragraph writing development) through focusing adequately on clarifying the points stated in this section. Monitoring the writing development activities in the post-reading section should be emphasized.

### **III.Pre-reading questions**

Three questions are typically asked in this section to activate students past experience in the specific knowledge domain. This past experience assists students in sharing their knowledge with their classmates and supports increasingly their understanding of the reading passage. The instructor should take care of this section quite effectively or students might lose their interest in beginning to learn a big chunk of reading passage.

### **Reading passage**

This section is the core of this book including relatively a few pages reading passage concentrating on the fundamental specialized knowledge of a computer. The instructor advises students to listen to the whole passage on the downloadable audio tracks on the websites out of the class and to view the passage during the listening to copy the pronunciation of unfamiliar words in the reading passage. The expectation is that the instructor considers the *process* of reading comprehension requiring student involvement during this stage. This involvement helps students increase their knowledge of the reading

passage and enjoy their learning during the classroom time. There are multiple approaches to teach a reading passage. However, the instructor is advised to follow the *Reciprocal Teaching Approach* (Duke & Pearson, 2004)<sup>1</sup>. Using the reciprocal teaching approach in a typical session requires reviewing the main points discussed in the previous session. Students can predict the content of the reading passage through pre-reading activities. After the instructor assigns a paragraph or two, students should take the following steps:

1. Read the paragraph(s) silently themselves,
2. Share their understanding with their pair/group in first or target language,
3. Play a role of the instructor to make questions about the paragraph(s) in target language,
4. Summarize the whole idea in a few sentences in target language, and
5. Predict what the focus of the next paragraph might be in first or target language.

The reciprocal teaching approach helps good and struggling readers take the responsibility of their own comprehension, which is a gradual release of the responsibility from the instructor.

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<sup>1</sup> Duke, K. N., & Pearson, D. P. (2004). Effective practices for developing reading comprehension. International Reading Association. PBS Teacher line.

## **Post-reading activities**

The post-reading activities, which include three sub-sections, help students monitor and evaluate their knowledge of reading comprehension, vocabulary activities, and writing development.

### **I. Reading comprehension**

There are 15 comprehension questions (8 True/False/Not Given) and (7 Multiple choice questions) assessing student comprehension of reading passage. The instructor may ask students to respond to each question individually out of the class and check out their responses in pair/group before the instructor provides them with the accurate responses.

### **II. Vocabulary activities**

There are typically 8-10 statements selected from the reading passage of the same unit to reciprocate the underlined new vocabulary in the familiar context so that students would realize the meaning and practise the new vocabulary adequately. The instructor may ask students to choose the best word/phrase fit for the underlined word/phrase individually out of the class and then check out their responses in a pair/group. Finally, the instructor provides them with the accurate responses.

### **III. Writing development activities**

A close relationship exists between reading and writing literacy. The purpose of this section is to monitor student knowledge of writing. Besides providing support for student reading and vocabulary, the

authors have attempted to provide some tips and tricks for students to improve their understanding of paragraph structures. The instructor is advised to take the writing development activities into account and to provide adequate support for improving student writing ability.

1. *Introduction and Paragraph Structure* This section provides an introduction to the concept of the paragraph. It includes a brief history of the paragraph, its definition, and its importance in writing. It also discusses the different types of paragraphs and how they can be used effectively in writing.

2. *Writing Paragraphs* This section provides practical advice on how to write effective paragraphs. It includes tips on how to organize ideas, how to develop a topic sentence, and how to support it with evidence.

3. *Editing and Revision* This section provides guidance on how to edit and revise paragraphs. It includes tips on how to identify errors, how to correct them, and how to refine the overall structure of the paragraph.

4. *Final Paragraphs* This section provides advice on how to write final paragraphs. It includes tips on how to conclude a piece of writing effectively and how to leave the reader with a lasting impression.

5. *Conclusion* This section provides a summary of the key concepts covered in the book and offers final thoughts on the importance of paragraph writing in effective communication.

Overall, this book is a valuable resource for anyone looking to improve their writing skills, particularly in the area of paragraph writing. It provides clear, concise, and practical advice that can be easily applied to a variety of writing situations.

The book is well-organized and easy to follow, making it suitable for both novice and experienced writers. It is also a great resource for teachers and instructors who want to help their students improve their writing abilities.

In conclusion, this book is an excellent guide to paragraph writing. It provides clear, practical advice that can be easily applied to a variety of writing situations. It is a valuable resource for anyone looking to improve their writing skills, particularly in the area of paragraph writing.

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## Table of Contents

### Unit1

<b>A Sense of University Achievement .....</b>	<b>1</b>
1. <i>Views on Optimal Use of University Facilities .....</i>	6
2. <i>Views on Attaining Optimal Knowledge from Lectures .....</i>	8
3. <i>Views on Improving Test Performance .....</i>	9

### Unit2

<b>The Basic Features of a Computer .....</b>	<b>17</b>
1. <i>CPU .....</i>	22
2. <i>Motherboard .....</i>	22
3. <i>Power Supply .....</i>	23
4. <i>RAM .....</i>	23
5. <i>Hard Drives .....</i>	24
6. <i>Expansion Cards .....</i>	24
6.1. <i>Video card .....</i>	25
6.2. <i>Sound card .....</i>	25

### Unit3

<b>Fighting with Digital Virus .....</b>	<b>31</b>
1. <i>The vulnerability of operating systems to viruses .....</i>	36
2. <i>Types of Digital Virus .....</i>	36
2.1. <i>Nonresident viruses .....</i>	37
2.2. <i>Resident viruses .....</i>	37
3. <i>Tricks of Digital Virus .....</i>	37
3.1. <i>Stealth Strategies .....</i>	37
3.2. <i>Read request intercepts .....</i>	38
3.3. <i>Self-modification .....</i>	39
3.4. <i>Encryption with a variable key .....</i>	40
4. <i>Antivirus software .....</i>	41
4.1. <i>How Antivirus software works .....</i>	41

## **Unit4**

### **Designing Software for Improving Writing Literacy**

1. <i>Parsing and identifying the words</i> .....	49
2. <i>Implementing the lexicon</i> .....	54
3. <i>Morphological orthographical analysis and orthographical errors</i> .....	55
4. <i>Implementing the system</i> .....	58
	59

## **Unit5**

### **The Heart and Soul of a Computer**

	67
1. <i>History</i> .....	72
2. <i>Operating system powered computers</i> .....	73
3. <i>Operating system functions</i> .....	74
4. <i>Types of operating systems</i> .....	76

## **Unit6**

### **The Ins and Outs of a Computer**

	83
1. <i>Addressing I/O devices</i> .....	90
2. <i>Keyboard</i> .....	91
2.1. <i>Inside the Keyboard</i> .....	92
3. <i>Touch screen</i> .....	93
4. <i>Flash Memory</i> .....	94
5. <i>Tunneling</i> .....	95

## **Unit7**

### **Tips and Tricks for Producing Digital Images**

	103
1. <i>Digital image processing</i> .....	109
2. <i>Video tracking</i> .....	111

## **Unit8**

### **Hunting Spiders through Search Engines**

	119
1. <i>Definition and types of web search engine</i> .....	124
2. <i>Search engine bias</i> .....	128
3. <i>Customized results and filter bubbles</i> .....	128

## **Unit9**

<b>Digital Crimes and Criminals .....</b>	135
1. <i>Common computer crimes .....</i>	140
2. <i>Computer and IT ethics .....</i>	142

## **Unit10**

<b>The Computer Challenge-response Test .....</b>	149
1. <i>Applications .....</i>	155
2. <i>Accessibility .....</i>	156
3. <i>Technological advertising .....</i>	157
4. <i>Battling with CAPTCHA .....</i>	157
5. <i>Human solvers .....</i>	158
6. <i>Interaction with images as an alternative to texting .....</i>	159

## **Unit11**

<b>Organizing and Illustrating Data .....</b>	165
1. <i>Data structure .....</i>	170
2. <i>Basic principal of data structures .....</i>	172
3. <i>Choosing a data structure .....</i>	173

## **Unit12**

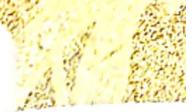
<b>Signs and Signatures in the Virtual World .....</b>	181
1. <i>The origin of digital signature .....</i>	186
2. <i>Digital Signature .....</i>	187
3. <i>Enforceability of electronic signatures .....</i>	189

## **Unit13**

<b>A yardstick for computer performance .....</b>	195
1. <i>Performance evaluation .....</i>	200
2. <i>Benchmarks Technology .....</i>	201

## **Unit14**

<b>Managing High-speed Computer Hardware .....</b>	209
1. <i>Overclocking .....</i>	214
2. <i>Cooling overclocking components .....</i>	215
3. <i>Considerations in overclocking .....</i>	216
4. <i>Underclocking .....</i>	217



5. Performance in underclocking .....	218
<b>Glossary .....</b>	<b>223</b>
<b>Bibliography .....</b>	<b>239</b>

## Table of Contents

### Introduction

#### Performance Optimized Clocking

This chapter is concerned with how to make the most of the performance potential of a processor. It is divided into two parts. The first part, "Performance Optimized Clocking," describes how to make the most of the clock signal to the processor. The second part, "Performance Optimized Cache Management," describes how to make the most of the cache memory.

The first part, "Performance Optimized Clocking," is concerned with how to make the most of the clock signal to the processor. It is divided into three sections: "Clock Generation," "Clock Distribution," and "Clock Control." The second part, "Performance Optimized Cache Management," is concerned with how to make the most of the cache memory. It is divided into three sections: "Cache Organization," "Cache Control," and "Cache Management."

#### Performance Optimized Cache Management

This chapter is concerned with how to make the most of the cache memory. It is divided into three parts. The first part, "Performance Optimized Cache Management," describes how to make the most of the cache memory. The second part, "Performance Optimized Cache Organization," describes how to make the most of the cache organization. The third part, "Performance Optimized Cache Control," describes how to make the most of the cache control.

#### Conclusion

This chapter is concerned with how to make the most of the cache memory. It is divided into three parts. The first part, "Performance Optimized Cache Management," describes how to make the most of the cache memory. The second part, "Performance Optimized Cache Organization," describes how to make the most of the cache organization. The third part, "Performance Optimized Cache Control," describes how to make the most of the cache control.

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#### Appendix A: Glossary

This chapter is concerned with how to make the most of the cache memory. It is divided into three parts. The first part, "Performance Optimized Cache Management," describes how to make the most of the cache memory. The second part, "Performance Optimized Cache Organization," describes how to make the most of the cache organization. The third part, "Performance Optimized Cache Control," describes how to make the most of the cache control.

## Index

## **Unit 1**

### *A Sense of University*

#### *Achievement*

## VIEWS FOR HIGH QUALITY UNIVERSITY EDUCATION

### *Pre-reading Activities*

In this unit, you will

- improve your understanding of the target academic words.
- learn about the definition and use of a topic sentence in writing.
- learn how to preview a reading comprehension passage through pre-reading questions to improve comprehension.
- be familiar with a few views improving your university education.

#### I. Target Academic Vocabulary

**Check out the meanings and functions of the target academic words in a monolingual and bilingual dictionary.**

Exchange (v)

Mentor (n)

Substantial (adj)

Orientation (n)

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Illustrate (v)

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Ambiguity (n)

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Retention (n)

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## II. Writing development - Topic sentence

### A paragraph

A paragraph is briefly defined as a basic unit of composition. Some features of a paragraph are described below:

1. A paragraph is a group of sentences, which develops one main idea.

2. A main idea is normally stated in a topic sentence.

3. The role of each sentence in a paragraph is to develop the topic sentence.

$$\text{Topic sentence} = \text{Topic} + \text{Limiting Statement}$$

How a topic is limited in a topic sentence? Multiple categories can be used to limit a topic sentence, but some of them are listed below. After you understand the examples provided below, you can limit and control your topic sentence. One good way to limit your topic is to place

keywords or phrases in the topic sentence. These words or phrases let the reader know how you are going to discuss the topic.

Topic	Statements Limiting the Topic
1. Universities	play a crucial role in <u>Iran</u> . (Place)
2. Education	is the main key to <u>make progress</u> . (Effect)
3. Orientation day	is helpful <u>for several reasons</u> . (Cause; reason)
4. Illustration and pictures	<u>become common tools</u> for teaching young learners. (Quality)
5. Quality education	has become <u>increasingly popular</u> in Iran in <u>the last decade</u> . (Quality) (Place) (Time)

### III. Pre-reading questions

Read and respond to the questions below, and then discuss them in pair/group.

1. Who do you think can help to improve your university education?

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2. How much can junior/senior students help newcomers get familiar with an academic situation?

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3. What are some factors that enhance high quality university education?

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### IV. Reading comprehension passage

This article discusses a few views focusing on improving a high quality university education.

## IEWS FOR HIGH QUALITY UNIVERSITY EDUCATION

During the last decade, there was a considerable amount of attention, in particular to effective education in engineering fields. Despite all the continuing progresses in communication technologies for online teaching materials, university lecturers are still considered to be the greatest asset for improving the education system. The main reason might be that the power of face-to-face exchange of ideas is still recognized as the best method for education in both schools and universities. Through face-to-face exchange of ideas, university students and lecturers mutually increase the quality of education. There are some helpful views focusing on improving the quality of university education, and these views emerged from a decade of education experience and mentoring undergraduate and postgraduate students studying in engineering fields.

The helpful views are classified into three groups: (1) views on optimal use of university facilities, (2) views on attaining optimal knowledge from lectures, and (3) views on improving test performance. These views are described substantially below.

### *1. Views on Optimal Use of University Facilities*

The first criterion in increasing use of available university facilities is to consider libraries, laboratories, study rooms, Internet services, computer rooms and printing rooms. Students are recommended to become aware of the different facilities available in a university for their use as early as possible. Otherwise, they may not benefit from the use

of these potential advantages of their university. To assist students in becoming aware of the available education facilities, many universities around the world have an orientation day for new students, and participation in this effective activity is very helpful to discover a university's amenities. During the orientation, most university staff attend to present their role and state how much they can support students in need of assistance. In addition, academic staff are the main assets of a university and play an essential role in terms of providing quality education for both undergraduate and postgraduate students. Postgraduate students are recommended to consider different academics' expertise so that they can seek effective advice to improve their research.

The second criterion to use the available university facility is to cooperate with the student union. A student union is very helpful to build up friendly relationships among students as well as to share student needs for any services with university authorities. The student union is usually autonomous in the university and is democratically controlled by students. Hence, cooperation with this union can help strengthen the union and provide sufficient academic support to the students. A student union provides support for newcomers in a university through linking them with junior/senior students to pass on their experience to new students.

## ***2. Views on Attaining Optimal Knowledge from Lectures***

First, punctuality of classroom attendance helps students stay focused on the lecture notes. To illustrate, student attendance has a close correlation with class grades and the overall performance. Students who are unpunctual or miss classes frequently are significantly more likely to gain a poor grade in a given course. This is because most faculties count student attendance positively on grade determination while others count the absentees against the student grade. Therefore, students are strongly recommended to not only attend their classes but also arrive before the lecture starts. This can increase the productivity of students' performance.

Second, preparation and reading for the lecture in advance are highly recommended. Students are recommended to read the material that will be covered in the upcoming lecture. The prior class preparation can remarkably help students to better understand the topic and facilitate their learning performance in a course. In addition, the prior class preparation assists students in completing their notes during a lecture. Students should focus on the materials instructed during the lecture. They are recommended to imagine what is being taught will not be repeated, so it is very important that students stay focused on the classroom activities, ask questions, and volunteer for demonstrations. If any materials do not make sense for them, he or she should ask the lecturer for assistance or further clarity of the point. Thus, making the prior preparation for a lecture decreases any potential ambiguities during classroom instruction.

Finally, reviewing a lecture note immediately after class helps students increase their knowledge of the course. This quick review results in better retention than reviewing after a longer period of time. Or the retention drops after 24 hours and relearning will be required rather than reviewing. In addition, while the lecture is still fresh in their mind, they can put the ideas into words for their future recall. Moreover, they can recall what parts of the lecture were unclear to them so that they can consult with the lecturer, the tutor, a classmate, or a textbook for further understanding.

### ***3. Views on Improving Test Performance***

Improving test performance requires students to strengthen their knowledge of a specific topic as well as taking a test strategically. Meeting these requirements assists students in facilitating their test performance, which is closely related to their learning performance.

In any exam, students should cast a quick look at the entire test before responding to any questions. This quick consideration helps them to get an overview of what is expected and to strategize how they take the test. One of the strategies is to respond to the easiest questions first so that they would be able to handle any exam related anxiety. Then, enough time is left for students to think thoroughly about rest of the questions. Thus, considering the whole exam questions provides examinees with an opportunity to manage their optimal test performance.

Students should always remember that the first idea that comes to the mind might not suit for responding to a question. Therefore, students

should give a second thought by realizing the meaning of a question as understanding a question mostly assists in responding to it accurately. In this regard, a student should look for the central idea of each question for responding to it appropriately.

Quality education in engineering fields in university has recently been considered globally. A few of the given views, such as optimal use of university facilities, attaining optimal knowledge from lectures, and improving test performance have adequately been discussed. Despite having multiple requirements for advancing education, engineering students can increasingly improve their learning performance through following up the views stated above for quality education.

### ***Post-reading Activities***

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#### **I. Reading comprehension**

**Directions:** Mark each statement as T (True), F (False), or NG (Not Given) to the information in the reading comprehension passage.

- 1. University lecturers are important assets in improving the level of education.
- 2. University students are not required to be familiar with the available facilities.
- 3. Orientation day is helpful for all the university students and staff.
- 4. Postgraduates in a university should support undergraduates who are in need.

- 5. Attending a class on time does not make much difference in student learning.
- 6. Student class preparation supports a lecturer to present learning materials adequately.
- 7. Performing well in a test does not need the use of any strategies.
- 8. Paying close attention to education in engineering fields worldwide has recently been considered.

Questions 9-15: Choose the appropriate letter **A-C**.

- 9. Digital communication in a university cannot replace the face-to-face interaction. This is because the face-to-face interaction might be.....
  - A. an old system of communication.
  - B. the best method to improve education.
  - C. easy and available for everyone.
- 10. Helping new students become aware of the available facilities in university, most universities.....
  - A. provide information for supporting new students through the government.
  - B. support new students through an orientation day.
  - C. ask new students to discover university amenities.
- 11. In order to make the most out of a classroom lecture, students should NOT.....
  - A. be on time for a class attendance.
  - B. miss a class or be a late comer.

- C. be active participant in a class.
12. According to the reading comprehension passage, students' optimal knowledge from class lecture is normally decreased after 24 hours. The reason is that they might NOT .....
- A. take a note of a class lecture.
  - B. immediately share the lecture with a classmate.
  - C. review the note after 24 hours.
13. Passing a test successfully requires students to follow all of the options BUT.....
- A. increase the knowledge of specific topic.
  - B. consider all the test items before responding.
  - C. testing and learning performance are not related.
14. Responding to questions in a test, students are advised to.....
- A. follow the first answer coming to the mind.
  - B. take a note of their thoughts.
  - C. rethink for an appropriate answer.
15. Which of the following statement is NOT true based on the reading comprehension passage?
- A. Engineering students are advised to consider the three helpful views to increase the quality of education.
  - B. Engineering lecturers are recommended to revise their class curriculum to improve education.
  - C. Both engineering students and lecturers mutually can develop high quality education through the helpful views.

## II. Vocabulary activities

**Directions:** Read each sentence on views for University High Quality Education stated below. Circle the one word or phrase in parentheses ( ) that has the same meaning as the underlined word in the sentence. Compare your answers with a partner.

1. The power of face-to-face exchange of ideas is still recognized (*measured/considered/prepared*) as the best method for education in both schools and universities.
2. Students are recommended to become aware of the different facilities available in a university for their use as early as possible. Otherwise, they may not benefit from the use of these potential (*impossible/deniable/achievable*) advantages of their university.
3. Postgraduate students are recommended to be aware of different academics' expertise so that they can seek (*look into/search for/care for*) effective advice to improve their research.
4. The student union is usually autonomous (*up-to-date/crucial/independent*) in the university and is democratically controlled by students. Hence, cooperation with this union can help strengthen the union and provide sufficient (*real/clear/enough*) academic support to the students.
5. Students who are unpunctual or miss class frequently are significantly more likely to gain a poor grade in a given course. This is because most faculties count student attendance positively in grade determination while others count

(ignore/disregard/value) the lack of attendance against the student grade.

6. They are recommended to imagine what is being taught will not be repeated, so it is very important that students stay involved in the classroom activities, ask questions, and volunteer for demonstrations (participations/presentations/attendances).
7. Improving test performance requires students to strengthen their knowledge of a specific topic as well as taking a test strategically. Meeting these requirements (attending to/paying no attention to/devaluing) assists students in facilitating their test performance, which is related closely to their learning performance.
8. Therefore, students should give a second thought (view/rethink/ relearn) by realizing the purpose of a question as understanding a question can mostly assist in responding to accurately.

### III. Writing development activities

#### Self-assessment

1. What is a paragraph?

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2. Write a topic sentence for the following main ideas.

A. University facility

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B. Problems between generations

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C. University achievement

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D. High quality education

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**Directions:** Notice the controlling words and phrases underlined in the example sentence. They have been identified as the categories. After you have studied the example, do the same for the remaining sentences.

1. Engineering field has received attention for effective education  
(Cause) (Effect)

during the last decade.

(Time)

2. Reviewing lecture notes immediately after class helps students

( ) ( )

increase their knowledge of a course.

( )

3. University facilities including libraries, laboratories and study

( )

rooms are the main criteria to improve educational system.

( ) ( )

4. Punctuality of classroom attendance helps students stay focused

on the lecture notes.

( )