

Teaching English Technological Textbooks in Non-Native English Speaking Nations

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Key Points

- This study is focused on the technological and vocational college and university (TVCU) level in Taiwan
- A questionnaire for 77 employees whose major is electronic engineering, Tung-Nan Institute of Technology.
- English reading (avg. = 3.4) is pretty important compared with writing (avg. = 2.7), listening (avg. = 2.47), and speaking (avg. = 2.2) in their jobs.
- They hope to enhance English listening (avg. = 4.39), speaking (avg. = 4.38), reading (avg. = 4.06), and writing (avg. = 4.1) skills at the same time.
- Another questionnaire for my class shows that it is helpful to students to understand the contents in class by the instructors' explaining common words and terminology.
- Spectrum analysis of vocabulary to reduce students' burden, so students can emphasize the "hit rate" of the vocabulary.

Motives

- A popular textbook for the course of computer organization & architecture in Taiwan---William Stallings (MIT), *Computer Organization & Architecture: Designing for Performance*, 6th Ver., New Jersey: Prentice Hall, USA, 2003. (I taught in 2003.)
- 112508 words, but the number of the vocabulary in this book is only 6695.
- It means a lot of vocabulary are repeatedly used in this textbook.
- I think it is easy to read, but my students don't think so.
- Why?

Introduction

- The correlations among the school systems in the TVCU programs of Taiwan:

Technological and Vocational Education Systems		Age
Graduate Schools of TVCU Programs		Over 23
4-Year Technological and Vocational College/University	2-Year Technological and Vocational College/University	22
		21
	2-Year Junior College of Technology	20
		19
Vocational High School		18
		17
		16

Full-time students

- The 42 full-time students are the objects of the survey.
- Most of them are middle level students of the TVCU programs in Taiwan.
- Computer organization & architecture by William Stallings, 6th version, 2003
- Appended a simple learning CD-ROM
- Explains the common words and terminology

Questionnaire (1:poor, 5:excellent)

Questions	Avg.	S.D.
I think it is easy to read the English technological textbook at the beginning of this class.	2.139	0.9656
I can understand the contents of the English CD-ROM without instructors' explanations.	1.860	0.6393
It is helpful the teacher explains the common words and terminology of the English CD-ROM.	3.256	1.0487

Questionnaire

Questions	Avg.	S.D.
It is helpful to read the English textbook after the teacher explains the CD-ROM.	2.139	0.9656
It is helpful to understand the contents of CD-ROM with a number of simple sentences.	1.860	0.6393
I am more confident in reading the English technological textbook after 2 months' training in class.	3.256	1.0487

Difficulties of Teaching English Technological Textbooks in TVCU Programs

- Although many students study English very hard, most of them forget a lot of vocabulary because they use their mother tongue in daily life.
- Most of the people talk in their mother tongue in daily life.
- About 30% of college students' English is evaluated on the beginning level (<http://tw.news.yahoo.com/2003/11/04/issue/cna/4349140.html>)

On-the-job employees

- 77 employees need to use English listening, speaking, reading, and writing skills in their routine work.
- They are basic level electronic, electrical, computer engineers in 70 companies in Taipei, working on the 2-year TVCU program in the department of electronic engineering, Tung-Nan Institute of Technology (TNIT), Taipei, Taiwan.

Questionnaire 1

1. Please mark the score that you use your English skills on the job.
2. Please mark the score that you want to improve your English abilities on the job.

	5	4	3	2	1 (1: poor, 5:excellent)
Listening	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Speaking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reading	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Writing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

#	Listening		Speaking		Reading		Writing	
	Avg.	SD.	Avg.	SD.	Avg.	SD.	Avg.	SD.
1	2.47	1.14	2.2	1.1	3.4	1.2	2.7	1.4
2	4.39	0.95	4.38	0.97	4.06	1.1	4.1	1.1

Findings

- Most of the electrical, electronic, computer engineers on the basic level hope to increase English listening, speaking, writing, and reading abilities to satisfy the needs of their jobs, but their time is limited.
- We suggest our students put emphasis on English reading in order to make effective use of their time.
- Because the full-time students will work after graduation, they should enhance their English abilities, especially in reading.

An example for the vocabulary classification according to the spectrum

OGs	Common Vocabulary	Common Professional Vocabulary
AGF	growth, vegetable, culture	"soil amelioration", fertility
MED	medicine, clinics, doctor	"action potentials", transcription
CHE	atom, silicon, action	"fused ring", "chemical affinity"
ECE	system, signal, communication	algorithm, synchronous
MEC	force, architecture, design	strain, "ball screw", rigidity
DES	view, picture, drawing	mold, "depth of the field", landscape
MBH	statistics, management, secretary	"diffusion index", "earnings yield"

We propose to compute the frequency of vocabulary for vocational use and classify the words into the 7 OGs, respectively.

As simple as possible

- Now *vs.* Currently
- Start *vs.* Commence
- Suppose *vs.* Hypothesize
- Explain *vs.* Expound
- Expect *vs.* Anticipate
- *Vs.* *vs.* Versus
- Simple words, and simple sentences, and simple display (Prof. Lowry, MIT)

Conclusion

- We propose English technological textbooks are written in simple words and short sentences. Besides CD-ROM, we should have DVD-ROM or other kinds of multi-media to help students learn more interestingly and effectively.
- We suggest an institute can help the non-NESNs build the database of the English vocabulary spectrum to accelerate the globalizing pace.

References

<http://tw.news.yahoo.com/2003/11/04/leisure/cna/4349140.html>

Gamal A. Mokhtar, Asser A Zaky, Mohamed M. El-Faham, "The needs for restructuring the education systems for technicians and technologists in developing countries," *Engineering Science and Education Journal*, August, pp. 153-159, 2002.

Bing-Yuh Lu, Shen-Tung Hwang, Tai-Ching Chiang, Mau-Yuan. Wang, Yea- Ping. Wang, Kun-Nan Chen, Shui-Ken. Wei, "Report of the curriculum design simulation projects for the school system linking of technological and vocational education in Tung-Nan Institute of Technology," Ministry of Education, Taipei, Taiwan, R.O.C., 2002.

Cheng-Fang Tai, Rong-Jian Chen, and Jui-Lin Lai, "How technological and vocational education can prosper in the 21st Century?" *IEEE Circuit and Devices Magazine*, March, pp. 15-16, 2003.

Ministry of Education, "Guidelines of the curriculum design simulation projects for the school system linking of technological and vocational education," Taipei, Taiwan, R.O.C., 2002.

<http://tw.news.yahoo.com/2003/12/11/leisure/cna/4418116.html>

D. J. Moore, and D. R. Voltmer, "Curriculum for Engineering Renaissance", *IEEE Trans. Educ.*, vol. 46, no. 4, pp. 452-455, 2003.

William Stallings, *Computer Organization & Architecture: Designing for Performance*, 6th Ver., New Jersey: Prentice Hall, USA, 2003.

Bing Yuh Lu, "Statistics of the Vocabulary in the Textbook for the Course of Computer Organization and Architecture in the Department of Electronic Engineering, Tung-Nan Institute of Technology" *Journal of Electronic Engineering of Tung-Nan Institute of Technology*, vol. 5, pp.17-26, 2004.



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