



# BASIC STUDY SKILLS



Rural Training Center-Thailand  
Community-based Education Office  
166 Moo 5, Ban Wangwa, Thawangpha District  
Thawangpha City, Nan Province 55140  
Thailand  
[http://www.neighborhoodlink.com/RTC-TH\\_Tech/pages](http://www.neighborhoodlink.com/RTC-TH_Tech/pages)

Publication RTC-TH-CbE 2010-2



This edition printed from digital media.

© 2013 by G. K. Lee

Published by the Rural Training Center-Thailand  
Community-based Education Office

166 Moo 5, Ban Wangwa, Thawangpha District  
Thawangpha City, Nan Province 55140  
Thailand

[http://www.neighborhoodlink.com/RTC-TH\\_Tech/pages](http://www.neighborhoodlink.com/RTC-TH_Tech/pages)

Publication # RTCTH-C-bE-2010-2

The 2013 Edition is a compilation of papers published at earlier dates by G.K. Lee as indicated in the Table of Contents.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the copyright holder.

Published in the Kingdom of Thailand

## PREFACE to the 2013 Edition

**[Note:** Revisions in this edition involved minor errors (e.g. formatting, spelling and grammar) and more significant changes for continuity with other papers in the Community-based Education series.]

The articles in this compilation were developed over a number of years and places. The 29 years of teaching are one part of my work experience. Some of the teaching was in non-traditional settings (e.g. onboard ships at sea, store front spare-time adult schools, and in farm fields).

Education is a life-long endeavor. In my teaching career, I encountered students of diverse backgrounds and ages. Among the more “experienced youth” in my classes were a good number ranging from 45-78+. Most students were of the traditional age for college (recent high school graduates). It was surprising to me, that though most had been students before, many seemed to lack sufficient basic study skills to do well in class.

The papers compiled for this guide contain ideas and methods I gathered over my many years as a student and teacher. I don’t claim to be the originator of these, but to be honest, over the years, I cannot accurately recall the sources. Also, there is no guarantee that methods that worked for me would work for anyone else. You have to find the optimum combination of methods that works for you. If you haven’t heard of or tried the ones included here, I encourage you to try them.

These study skills are supplementary to the Geographic Systems Model, the Guide to Self-Learning and related components that form the core of the RTC-TH Community-based Education methods. If you haven’t studied, used, or tried the Geographic Systems Model, please do so. It is a widely applicable conceptual model facilitating problem solving that readily transcends traditional academic discipline boundaries.

Best wishes and good luck in your studies.

<b>Table of Contents</b>		
Title	Original date (revisions)	Pages
Preface		iii
Table of Contents		iv
Study Skills Inventory	1991	1
An Effective Study Environment	1986 (1991, 1998, 2003, 2011)	2
Personal Skills Inventory Using Scans	1998 (2002, 2011)	4
S.C.A.N.S. Self-Assessment Checklists	(2011)	6
Effective Time Management	1984 (1992, 1998, 2000, 2002, 2011)	8
Essential Desk References	1986 (1991, 1998, 2002, 2007, 2011)	11
Understanding Paragraphs for Effective Reading and Writing	1986 (1998, 2008, 2011, 2013)	13
Use a Cluster Diagram to Plan Your English Writing	1985 (2013)	17
Using MicroSoft Word to Improve Your English Writing	2012	20
Manually Calculating Reading Level	1985 (2013)	24
Numerical Outlining: An Effective Learning Tool	1991 (1998, 2002, 2011)	27
Effective Short Cuts to Reading a Chapter	1986 (1991, 1998, 2002, 2011)	29
Effective Note Taking for Reading, Class, and Review	1989 (1992, 1998, 2002, 2011)	32
Active Listening Leads to Effective Learning	1986 (1998, 2005, 2011)	34
Effective Problem Solving	1986 (1998)	36
Basic Test Taking Skills	1986 (2002, 2005, 2011)	38
Learning Logs	1990 (2005)	40
It-Is Literacy: A Model for Technology Learning	1993 (1998, 2002, 2011)	42
Appendix 1: RTC-TH C-bE Trilogy Matrix		47

## PREFACE to the 2013 Edition

**[Note:** Revisions in this edition involved minor errors (e.g. formatting, spelling and grammar) and more significant changes for continuity with other papers in the Community-based Education series.]

The articles in this compilation were developed over a number of years and places. The 29 years of teaching are one part of my work experience. Some of the teaching was in non-traditional settings (e.g. onboard ships at sea, store front spare-time adult schools, and in farm fields).

Education is a life-long endeavor. In my teaching career, I encountered students of diverse backgrounds and ages. Among the more “experienced youth” in my classes were a good number ranging from 45-78+. Most students were of the traditional age for college (recent high school graduates). It was surprising to me, that though most had been students before, many seemed to lack sufficient basic study skills to do well in class.

The papers compiled for this guide contain ideas and methods I gathered over my many years as a student and teacher. I don’t claim to be the originator of these, but to be honest, over the years, I cannot accurately recall the sources. Also, there is no guarantee that methods that worked for me would work for anyone else. You have to find the optimum combination of methods that works for you. If you haven’t heard of or tried the ones included here, I encourage you to try them.

These study skills are supplementary to the Geographic Systems Model, the Guide to Self-Learning and related components that form the core of the RTC-TH Community-based Education methods. If you haven’t studied, used, or tried the Geographic Systems Model, please do so. It is a widely applicable conceptual model facilitating problem solving that readily transcends traditional academic discipline boundaries.

Best wishes and good luck in your studies.

## STUDY SKILLS SURVEY

This is NOT a test. There are no right or wrong answers. Please answer the questions as honestly as you can. The purpose of this informal survey is to make you more aware of various study methods. Many people have been students for many years. They feel they must know how to study. However, research shows that we have a lot to learn about how we learn. If you want to learn more about specific study skills or methods, check for references and books in your local library. You can also search the internet for more tips on how to study. This informal survey is provided in the spirit of helping you to be your own best teacher. The learning process never ends. Even after you graduate, you need to continue to learn. ☺

**READING COMPREHENSION** a = never; b = rarely; c = sometimes; d = often; e = always.

1. a b c d e I form and answer questions while reading assignments.
2. a b c d e I underline, highlight, take notes, or use a marking system when I read my assignments.
3. a b c d e I preview the assignment or text before I read it.
4. a b c d e I stop and recite what I remember after reading a section in a chapter.
5. a b c d e I read assignments before coming to class.
6. a b c d e I find it easy to know what is important in a chapter.
7. a b c d e I read the assignment more than once.
8. a b c d e I am selective when I reread the assignment.
9. a b c d e I outline assignments after I have read them or write a summary about what I have read.

**READING RETENTION** a = never; b = rarely; c = sometimes; d = often; e = always.

10. a b c d e I can accurately summarize what I read in the text.
11. a b c d e I can accurately summarize what I heard in lecture.
12. a b c d e I am familiar with the differences between essay and objective (multiple-choice) test questions.
13. a b c d e I can write a well-organized essay exam answer.
14. a b c d e I can predict and anticipate questions used on a test.
15. a b c d e I try to "over-learn", working beyond the point of immediate recall.
16. a b c d e I use a variety of memory techniques to help recall material for a test.
17. a b c d e I try to relate material learned in a course to previously learned material.

**NOTETAKING** a = never; b = rarely; c = sometimes; d = often; e = always.

18. a b c d e I find my notes are adequate when I study for exams.
19. a b c d e I use a "recall" column as part of my lecture notes.
20. a b c d e I have an organized notebook system.
21. a b c d e I review my lecture notes within 24 hours after the lecture.
22. a b c d e I write down everything the teacher says.
23. a b c d e I take good notes on lectures.
24. a b c d e I have difficulty determining the important points in lectures.
25. a b c d e I take good notes on text reading assignments.

**VOCABULARY** a = never; b -- rarely; c -- sometimes; d = often; e = always.

26. a b c d e When I read a word I do not know, I look for the meaning in the textbook glossary or dictionary.
27. a b c d e I use the context clues provided in the text to figure out the meaning of a new word.
28. a b c d e I ask a friend what a word means when I do not know it.

**PARTICIPATION** a = never; b = rarely; c = sometimes; d = often; e = always.

29. a b c d e I am willing to participate in class.
30. a b c d e I ask questions in class to clarify something I don't understand.
31. a b c d e I contribute additional information I find which relates to the current class topic.
32. a b c d e I hand in all assignments on time.
33. a b c d e Class attendance is important to me.

## AN EFFECTIVE STUDY ENVIRONMENT

©1986, 1991, 1998, 2003, Revised 2011, G.K. Lee

Each person learns and studies differently. The keys to success are: knowing how you learn best; managing your time to complete your studies; and to creating an environment conducive to your learning style. Some people learn quickly by listening to a lesson (auditory learning); others by reading the lesson or seeing it demonstrated (visual learning); and some by actually doing the lesson (kinesthetic learners). In all likelihood, everyone uses all of these methods to a greater or lesser degree. It makes sense to know your strong points AND weak points. It makes even more sense not to restrict your learning to one mode. It makes even better sense to try to develop and improve your ability to learn in as many modes as possible.

This paper summarizes discussions with many students over the course of more than 20 years of teaching. These students ranged from 6 to 76 years old. Some were in school, some were returning to school after being in the work force, and some older adults had never been in school before (for various reasons). They all shared a common goal: to become more effective life-long learners and good students. Here then is their collective wisdom on what helped them to study more effectively. Try these ideas to see if they help you. If not, then find another way that works best for you (and if you don't mind, share it with me and others).

### EFFECTIVE STUDYING

Effective studying requires focused concentration. Use the following guidelines and adapt them to create your own "ideal" study conditions. These conditions include study materials, space, light, temperature, sound, and time.

- 1) STUDY MATERIALS:** Start with getting all of your study materials together. This is so obvious it is often overlooked. In addition to your textbooks, be sure to have assignment sheets, all relevant notes (from class and your reading, as well as any needed supplies (sharpened pencils, erasers, extra pens, writing paper---everything!). (If you haven't already done so, read the paper "Essential Desk References.") Prepare all of these ahead of time. Once you sit down to study, you get to work and should not have to get up for anything.
- 2) ADEQUATE SPACE** is needed to work efficiently and effectively. The exact amount of space needed depends on your work and study habits. Common sense should be our guide. As a starting point, all necessary materials should be within easy reach. You don't want to waste time searching for things. Keep things neat and avoid clutter and other visual distractions. This includes photos of your friends and family. You should focus your eyes and your attention on your studies.
- 3) PROPER LIGHTING** helps reduce eyestrain and overall fatigue. Be sure the light is even across the page and work surface; no shadows. Adjust the lights to avoid having any shining directly into your eyes.
- 4) SLIGHTLY COOL TEMPERATURES** are more stimulating and conducive to study. Follow the "Goldie Locks" rule: Not too warm, not too cool; just right. Too warm and you may begin to feel drowsy. Too cold and you will have a hard time concentrating. Most people find cool temperatures optimal for mental activity.

- 5) QUIET** is more conducive to study for most people. If you minimize distractions, you get better concentration. No one should disturb you during your study time. Get the full cooperation of your family. Have them run interference for you, hold all phone calls, and prevent others from contacting you during study time. Think of your study time as a job. (Note: Use your discretion about silence. Some people report listening to Baroque music---strings--enhances their learning.)
- 6) SET A REGULAR TIME** for study and reserve it. This is the biggest difficulty for most people. (See the article on "Effective Time Management.") Several factors affect how long your study time should be: the size and importance of the lesson, your attention span, and the available time in your schedule. In some cases, you should consider using a number of shorter time periods rather than one very long one. Attention spans will usually range from 30-50 minutes, but this can vary greatly among individuals. Pushing beyond your limit invites fatigue and frustration, usually resulting in poor results. If you don't have enough time to study, re-examine your schedule and priorities. During your study time, it may be necessary to stop and take a short break. Stretch, move around, and get your circulation going. Rest your eyes by looking at a distant object or scene for a few minutes.

Don't overlook small amounts of unused time in your daily schedule: lunch hour, waiting in lines, and commuting can provide time for reviewing lessons. Be creative in using technology (e.g. making tape recordings of lessons and listening to them during a commute or when washing dishes.)

## **SUMMARY**

Studying is similar to any other job; 90% preparation and 10% perspiration. Prepare all your materials, equipment and supplies well. Then doing the job is easier. The proper study environment is an important aspect in your quest for successful studying. Your study skills are basic survival skills in the Information Age. We live in a world dominated by rapid change. Your ability to study effectively is the key to flexibility, adaptation, and survival. Use these guidelines to develop your own effective study environment. Then teach these techniques to your family and friends. Remember, you must become your own best teacher. If you succeed, you will be a lifelong learner. ☺

# PERSONAL SKILLS INVENTORY USING SCANS

© 1998, 2002, Revised 2011, G.K. Lee. All rights reserved.

The U.S. Department of Labor conducted a nation-wide survey of employers (both large and small) asking what they expected of workers. The resulting report SCANS (The Secretary's Commission on Achieving Necessary Skills) contained 4 checklists (included at the end of this paper) of item specific workplace skills. These were grouped as follows:

1. Foundation Skills: Reading, Writing, Arithmetic/Mathematics, Listening, Speaking.
2. Thinking Skills: Creative Thinking, Decision Making, Problem Solving, Seeing Things in the Mind's Eye, Knowing How to Learn, and Reasoning.
3. Personal Qualities: Responsibility, Self-Esteem, Sociability, Self-Management, Integrity / Honesty.
4. Workplace Competencies: Resource Allocation, Interpersonal Skills, Information Systems, and Technology.

**1.0 MISMATCH OF SCHOOLING TO WORKPLACE:** When examining the SCANS checklists and the U.S. educational system, the government found a huge mismatch. Businesses assumed schools were preparing students in a manner that would qualify them for work. Yet the employer expectations (as detailed in SCANS) are not well matched to the school curricula.

Educational reform is slow. Rather than wait for the schools to revise their programs to come into sync with employer needs, many companies began to hire teachers. Across America, more and more companies are teaching Basic English and Mathematics to workers. Companies are spending huge sums of money in training.

**2.0 TAKE CHARGE OF YOUR LIFE:** Rather than rely on a slow responding school reform effort, you should take charge of your life, education and future. Use the SCANS lists to set educational goals. Think of the items on the SCANS lists as tools in a tool box. As a worker, you will be better able to find work if you have more tools in your tool box (and the knowledge and skills to use the effectively). With a large array of tools, you will be better prepared for whatever jobs may become available.

The world is changing at an ever faster rate than before. Adaptability to the changing jobs and requirements can be met with a large tool box. Another line of defense is being a life-long learner. If you master the process of learning, you will be able to acquire new knowledge and skills to increase your tool box or adapt your existing tools to suit the job.

## 3.0 SUGGESTED USES FOR THE CHECKLISTS

**3.1 Periodic Skills Inventory:** Take a moment and do a base-line inventory of your current skills (according to the checklists). While in school, repeat this inventory after completing each semester. Monitor your progress and growth by striving to check off as many of the checklist items as possible.

**3.2 Set Educational Goals:** Use the checklists to focus on specific skills that you need to acquire (those not yet checked off on the list). Examine each class that you have taken, are taking, or will take to see what additional skills you can acquire to help complete your inventory. Ideally you would want to try to check off each item on the SCANS checklists.

**3.3 Essay, Resume, And Cover Letter Writing:** Review the checklists for key words and phrases to use when writing college application essays, resumes and job/scholarship application cover letters. Examine all past jobs you had in light of the SCANS checklists and carefully re-think how you describe those past positions in your resume.

**3.4 Job Interviews:** Take a copy of your personal SCANS inventory with you to job interviews. Think about the key words and phrases that are relevant to the position you are seeking. During the interview, integrate your education with the SCANS checklist items and any pertinent experience. Be alert to the job duties, responsibilities, and qualifications as they pertain to the SCANS lists. ☺

***Keep the SCANS form clean to use as a Master for copying additional forms when you need them.***



## The SCANS Check Lists

Foundation Skills		
<b>A. Reading</b>	Before	After
1. Locate written information.		
2. Understand information.		
3. Interpret information.		
<b>B. Writing</b>	Before	After
1. Communicate thought in writing.		
2. Communicate idea in writing.		
3. Communicate information in writing.		
4. Create a letter.		
5. Create directions.		
6. Create a manual.		
7. Create a report.		
8. Create a graph.		
9. Create a flow chart.		
<b>C. Arithmetic/Mathematics</b>	Before	After
1. Perform basic computations.		
2. Approach a practical problem.		
3. Choose the appropriate mathematical technique.		
<b>D. Listening</b>	Before	After
1. Receive a verbal message/cue.		
2. Attend to verbal message/cue.		
3. Interpret a verbal message/cue.		
4. Respond to a verbal message/cue.		
<b>E. Speaking</b>	Before	After
1. Organize ideas.		
2. Communicate orally.		
Thinking Skills		
<b>A. Creative Thinking</b>	Before	After
1. Locate written information.		
<b>B. Decision Making</b>	Before	After
1. Specify goals and constraints.		
2. Generate alternatives.		
3. Consider risks.		
4. Evaluate alternatives.		
<b>C. Problem Solving</b>	Before	After
1. Recognizing problems.		
2. Implement a plan of action.		
<b>D. Seeing Things in the Mind's Eye</b>	Before	After
1. Mentally organize symbols, pictures, graphs, objects, and other information.		
2. Mentally process symbols, pictures, graphs, objects, and other information.		
<b>E. Knowing How to Learn</b>	Before	After
1. Use rules, principles and underlying relationships between two or more objects.		
2. Apply rules, principles when solving a problem.		

<b>Personal Skills</b>		
<b>A. Responsibility</b>	Before	After
1. Exert a high level of effort.		
2. Persevere toward goal attainment.		
<b>B. Self-Esteem</b>	Before	After
1. Believe in own self-worth.		
2. Maintain positive view of self.		
<b>C. Sociability</b>	Before	After
1. Demonstrate understanding.		
2. Demonstrate friendliness.		
3. Demonstrate adaptability.		
4. Demonstrate empathy.		
5. Demonstrate politeness in group settings.		
<b>D. Self-Management</b>	Before	After
1. Assess self accurately.		
2. Set personal goals.		
3. Monitor progress.		
4. Exhibit self-control.		
<b>E. Integrity/Honesty</b>	Before	After
1. Choose ethical course of action.		
<b>Work Place Competencies</b>		
<b>A. Resources</b>	Before	After
1. Know how to allocate time.		
2. Know how to allocate money.		
3. Know how to allocate materials.		
4. Know how to allocate space.		
5. Know how to allocate staff.		
<b>B. Interpersonal Skills</b>	Before	After
1. Work on a team.		
2. Teach others.		
3. Serve customers/others.		
4. Lead		
5. Negotiate.		
6. Work with people from culturally diverse backgrounds.		
<b>C. Information</b>	Before	After
1. Acquire data.		
2. Evaluate data.		
3. Organize/maintain files.		
4. Interpret information.		
5. Communicate information.		
6. Use a computer to process data/information.		
<b>D. Systems</b>	Before	After
1. Understand social, organizational, technological systems.		
2. Monitor and correct performance.		
3. Design and improve systems.		
<b>E. Technology</b>	Before	After
1. Select equipment and tools.		
2. Apply technology to the task.		
3. Maintain and troubleshoot equipment.		

## EFFECTIVE TIME MANAGEMENT

©1984, 1992, 1998, 2000, 2002, Revised 2011, G.K. Lee

Time is money. In recent surveys, American businesses indicate a keen interest in finding workers who are effective time managers. In an era of horizontal management structures and an increasingly global economy, all companies want good workers. High on the list is effective management skills. (See the "Work Place Competency" checklist in the SCANS paper later in this section of the Guide.) The message is clear: You must learn to manage your time properly. It is an essential work place skill. Applicants possessing this skill will be deemed better qualified for the job.

It should be clear to most people there will never be enough time to study and go to school. Let's look at some basic numbers.

### WHERE DOES ALL THE TIME GO?

Full-Time Study Load		Time Use/Activity	Full-Time Job	
On Task	Time Left		On Task	Time Left
	168	Total Hours in 1 week		168
-56	112	Sleeping	-56	112
-45 or -60	57 or 52	Hours for school/job	-40	62
-6	39 or 44	Commuting Time	-10	52
-17.5	21.5 or 26.5	Meals	-17.5	34.5
-10.5	11 or 16	Washing, grooming, etc.	-10.5	24
-14	-3 or 2	Misc. chores	-14	10
-20	-23 or -18	Part-time job; Part-time school (3 units)		

#### Notes:

- There are only 24 hours in a day or 168 hours a week.
- Most people require about 8 hours of sleep per day, leaving 112 hours.
- If you are a full-time student carrying 5 classes (3 units each), you will be in class 15 hours a week. A conservative estimate of studying time would be 2 hours of outside preparation for each hour of class. Thus, a total of 45 hours a week are spent for schoolwork. That's more than a full-time job!
- If you needed 3 hours of outside preparation time for each hour of class, this total would be 60 hours per week!
- If you commute an hour each way to school, and attend classes 3 days a week, you spend a total of 6 hours a week in commuting. For work, that might be 10 hours per week.
- If you spent 30 minutes for breakfast each day of the week, and an hour each for lunch and dinner each day, meals account for another 17.5 hours a week.
- Some time is spent washing, grooming, and dressing, and that might account for about 1 1/2 hours a day, or 10 1/2 hours per week.
- Perhaps another 2 hours per day is spent on miscellaneous daily chores around the house (sorting through mail, phone messages, paying bills, minor cleaning and tidying) for a total of 14 hours per week.

Students who have other responsibilities in addition to their studies (e.g. dependents, a full-time job, other family obligations, special medical circumstances to mention a few examples) face serious time management challenges. Only you can determine what is important to you and how you will spend your time. Employers expect good workers to be dependable (showing up to work on time, ready, able, and willing to do the work) consistently.

Time moves in only one direction. Once past or lost, it cannot be regained. There will never be enough time. You must learn to set priorities and use time effectively. You can only spend time. You cannot save it. Managing time is similar to managing money. You make a budget, try to live by it, and make adjustments to it as needed.

There is a time management form with this article. Do not mark on this form; keep it clean and use it to make additional copies for planning purposes. The form is universal. You can use it for any year (just fill in the appropriate numbers), month (circle the current month), day (write in the calendar day number). All 24-hours of the day are listed (using both 24-hour and 12-hour time notations).

Start making your time budget by filling in all "fixed" time commitments. These are activities for which you have little or no control or cannot easily change. For example, once you register for classes, certain time blocks are locked in place or "fixed" for the term. If you have a job, the hours you begin and end work are usually fixed. List all your fixed time commitments. Don't forget to allow sufficient time for commuting.

Now, list all your flexible time commitments. These are activities over which you have scheduling control. Some examples are shopping, cooking, cleaning, sleeping, doing laundry, playing tennis, and STUDYING. Most school counselors advise planning for 2-3 hours of study outside of class for every hour of class. However, not all subjects are the same level of ease or difficulty. Depending on the combination of classes you take, the level of preparation you have, as well as your interest or familiarity with the subject, you may need more or less time.

After finishing the first draft of your schedule, examine it closely. Did you allow some free time for you to relax and enjoy life? If you have family and friends, be sure to allow some time for them, too. After all, they are part of your life. If you see there just isn't enough time, then re-think your priorities. Effective time management requires making a time budget. Without a financial budget, you do not clearly account for your spending. You don't know where your money went. The same applies to your time. You need to make a time budget in order to effectively manage your time.

Present your time management plan to your family and listen carefully to them. They should have some input and comment about your time budget as it affects their lives, too. If they understand what you are doing and why you are doing it, it will be easier to gain their support and cooperation if you feel their input has been considered. In the end, you will need their cooperation and support to implement your time budget. At the same time, you may be able to help teach them basic time management skills, too. This makes everyone in the family aware of the importance you place on your education.

If you need assistance in making a time budget or if you want to review and critique your schedule, please bring your time budget to office hours. Time is very precious. Once it is lost, it cannot be regained!☹

## Time / Schedule Matrix Form

Time / Schedule Matrix													
Year		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12-hr	24-hr	M	T	W	T	F	Sa	Su			12-hr	24-hr	
1 AM	0100										1 AM	0100	
1:30 AM	0130										1:30 AM	0130	
2 AM	0200										2 AM	0200	
2:30 AM	0230										2:30 AM	0230	
3 AM	0300										3 AM	0300	
3:30A	0330										3:30A	0330	
4 AM	0400										4 AM	0400	
4:30 AM	0430										4:30 AM	0430	
5 AM	0500										5 AM	0500	
5:30 AM	0530										5:30 AM	0530	
6 AM	0600										6 AM	0600	
6:30 AM	0630										6:30 AM	0630	
7 AM	0700										7 AM	0700	
7:30 AM	0730										7:30 AM	0730	
8 AM	0800										8 AM	0800	
8:30 AM	0830										8:30 AM	0830	
9 AM	0900										9 AM	0900	
9:30 AM	0930										9:30 AM	0930	
10 AM	1000										10 AM	1000	
10:30 AM	1030										10:30 AM	1030	
11 AM	1100										11 AM	1100	
11:30 AM	1130										11:30 AM	1130	
12 PM	1200										12 PM	1200	
12:30 PM	1230										12:30 PM	1230	
1 PM	1300										1 PM	1300	
1:30 PM	1330										1:30 PM	1330	
2 PM	1400										2 PM	1400	
2:30 PM	1430										2:30 PM	1430	
3 PM	1500										3 PM	1500	
3:30 PM	1530										3:30 PM	1530	
4 PM	1600										4 PM	1600	
4:30 PM	1630										4:30 PM	1630	
5 PM	1700										5 PM	1700	
5:30 PM	1730										5:30 PM	1730	
6 PM	1800										6 PM	1800	
6:30 PM	1830										6:30 PM	1830	
7 PM	1900										7 PM	1900	
7:30 PM	1930										7:30 PM	1930	
8 PM	2000										8 PM	2000	
8:30 PM	2030										8:30 PM	2030	
9 PM	2100										9 PM	2100	
9:30 PM	2130										9:30 PM	2130	
10 PM	2200										10 PM	2200	
10:30 PM	2230										10:30 PM	2230	
11 PM	2300										11 PM	2300	
11:30 PM	2330										11:30 PM	2330	
12 PM	2400										12 PM	2400	
0:30 AM	0030										0:30 AM	0030	

## ESSENTIAL DESK REFERENCES

©1986, 1991, 1998, 2002, 2007, Revised 2011, G.K. Lee.

Good students become better students when they can easily and quickly access data and information. Keep these essential desk references close by as you study. When you need to get data or information, you can keep your focus and concentration. You don't have to leave your desk. These essential desk references are right at your fingertips. You may already be familiar with most of these books: a dictionary, a thesaurus, an almanac, a desk encyclopedia, and an atlas.

There are Internet/CD equivalents for these printed desk references. I suggest learning to use both electronic/digital and print media. Learning to use both gives you the broadest foundation to function in the information age. If the electronic media are available, fine. If they are not available, you can still get the job done because you are familiar with the more traditional media.

### A "GOOD" DICTIONARY

This is your first line of defense for any "unknown" word you encounter in your studies. What is a "good" dictionary? All dictionaries give you the pronunciation guide and definition for words. A good dictionary helps you to expand your vocabulary by explaining the etymology (origin) of the words. Learn the Latin and Greek roots, prefixes, and suffixes that comprise nearly 70% of all English words. The building blocks for words give you insight to the definitions of other words containing the same root, prefix, and suffix. A "good" dictionary also provides synonyms and antonyms to words. Try to fully use the dictionary to enhance your learning.

Most people learn their language through imitation. You hear someone say a new word. Later, you repeat what you heard. When no one challenges you, you confidently continue imitating. As a result, most people don't really know the true meanings of most of the words they use every day. This may work fine for casual conversations with friends and family. But effective communication is achieved and improved with a full understanding of your vocabulary.

### A THESAURUS

A thesaurus helps to expand your vocabulary and to have variety in your writing and speaking. Use a thesaurus to discover the diversity, subtlety, and richness of the English language. Used in conjunction with the dictionary, a thesaurus helps you find the "right" word to make the difference between a dull sentence and vivid and dynamic one. It can make the difference between an average paper and an excellent paper. The thesaurus is the treasure house to a full and rich vocabulary.

### A DESK ENCYCLOPEDIA

This is a single-volume, low-cost quick reference source for just about every topic you can think of and probably a lot more than you ever imagined existed. It is not as complete as the multi-volume encyclopedia set in the library (after all, it is only one volume), but it can usually handle most of your immediate needs. The main idea is to have a quick reference source so you can stay at your desk and concentrate on your studies.

## **AN ALMANAC**

How do Librarians find all the answers to those curious questions people ask? They often reach for a book of facts: an almanac. When writing essays, many students lack facts to support their statements and views. You can find specific pertinent facts in an almanac. Supporting details and facts are critical parts of a well-written essay. Almanacs are updated each year, so they are more current than most desk encyclopedias. Like an encyclopedia, an almanac covers a wide range of topics. Be sure you have a current copy. They are usually published annually.

## **AN ATLAS**

Just as the dictionary is your defense against "unknown" words, the Atlas is your defense against "unknown" and "unfamiliar" places on Earth. In addition to containing maps of the world, look for an atlas that has a good index. Test it out by looking for names of "new" countries. For example, there are numerous new "independent" countries as a result of the collapse of the Soviet Union. Remember that the size of the maps controls the level of detail you will see. The price of atlases varies tremendously. In a pinch, there are maps in the Almanac. But they may be too small and not show enough detail for a Geography class. Take some time to get familiar with your atlas. There is a surprising wealth of information in addition to the maps.

## **SUMMARY**

Your desk references will not replace the library. They do provide you with facts at your fingertips. They are valuable resources and educational tools. Develop the habit of using these tools often. These tools help you to expand your vocabulary and knowledge rapidly through repeated use and familiarity. In the Information Age, the key to success is "knowing where to find the information", rather than in "knowing it all."🗎

**Note:** Many students have commented that the internet makes these desk references unnecessary. While that may be true for some people, consider what you will do when the internet is not available, when the computer crashes, or power is not available. Having books on hand lets you keep on studying and working.

Also, having an internet enabled computer at your study desk can be a source of distraction. This is especially true if you have enabled applications that announce when email arrives or other notifications for updates and similar notices pop up.

# UNDERSTANDING PARAGRAPHS FOR EFFECTIVE READING AND WRITING

©1986, 1998, 2008, Revised 2011, G.K. Lee

Success in school and work depends on effective reading and writing. There is an obvious link between reading and writing. They are two sides of the same coin. Someone wrote whatever you read. Someone will read whatever you write. In addition to a strong foundation in basic language skills (e.g. grammar, vocabulary, among others), reading and writing rely on the organizational structure of paragraphs.

This paper focuses on the nature of paragraphs as a key to improving reading and writing skills. Your ability to quickly find the topic sentence determines how fast you can know the main idea of a paragraph. Knowing the form and structure of paragraphs tells you how to find topic sentences fast. Finding the important supporting facts is based on knowing the purpose of a paragraph.

Effective writing is also based on reading many examples of both effective and not so effective writing. Reading and writing cannot be separated. In the same way, you cannot have a coin with only one side.

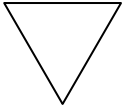
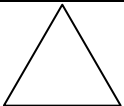
## DEFINITION OF A PARAGRAPH


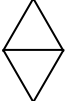

A paragraph is a group of related sentences about a specific topic. It has a clear beginning, middle, and end. The topic sentence is usually the first sentence. It clearly states the purpose or topic of the paragraph. The middle part (the body) of the paragraph gives the supporting details or specific information about the topic. The last sentence, or the end of the paragraph, can contain the "clincher." This is a sentence that re-states the topic sentence using different words. It reminds the reader about the main idea. Using a clincher gives the reader two chances to know the main idea of the paragraph.

You may encounter a paragraph with only one sentence. This is rare. It is done when the topic is of great importance. The majority of times, the basic pattern is for the topic sentence to be the first sentence. Then there are other sentences giving supporting details.

## PARAGRAPH FORM AND STRUCTURE PATTERNS

The location of the topic sentence determines the actual paragraph form or structure. The topic sentence is usually the first or the last sentence of the paragraph. This tends to be true 70% of the time. Other times it is found in the body of the paragraph. Less often, there is no topic sentence. The topic is only implied. A series of simple diagrams are presented below to help you remember these structural patterns.

	<b>1. Topic Sentence First:</b> This is the most common paragraph form. After the topic sentence, the body of the paragraph has sentences giving supporting details. You can think of the topic sentence as general and the other sentences as specific. An inverted triangle standing on its point reminds you to start wide (general) and to narrow down to the specifics.
	<b>2. Topic Sentence Last:</b> This is the reverse of the process above. Specific details are given first to get the reader's attention. The topic sentence is a climax. A triangle sitting on its base reminds you to start with a specific point or detail, and then to move to a more general level to introduce the broad topic or main idea.

	<p><b>3. Topic Sentence First and Last:</b> This combines the two processes above. You start with a general topic sentence, give relevant supporting details, and then re-state the topic sentence. This gives the reader two chances to get the topic sentence. The pattern goes from general to specific, and back to general. You can use two triangles joined at their points to represent this structure pattern.</p>
<p>[Note: These first three methods are best for science and technical writing. The topic sentence can be found quickly and easily, speeding up the reading and comprehension processes.]</p>	
	<p><b>4. Topic Sentence in the Body:</b> Sometimes the topic sentence is put in the body of the paragraph. Specific details are used to catch the reader's attention. Then the general topic is mentioned, followed by more details. You can use two triangles connected at their bases to represent this pattern</p>
	<p><b>5. The Implied Topic Sentence.</b> In this approach, the topic sentence is not really stated at all. You give the reader only details and get them actively involved trying to guess "what is the topic sentence?" However, by giving control to the readers, you take a risk. They may infer another topic than you intended. To be successful, you must carefully select your details and present them in a clear manner so that most readers will get your point. This structure could be represented with a vertical line, as all the sentences of the paragraph are details.</p>
<p>[Note: These last two methods are more suitable for literary writing. These actively engage the reader's curiosity. The readers use their knowledge and imagination to relate to the writing. There is a risk the audience missed your point and thus could go off on a different path than you intended.]</p>	

## THE BASIC PURPOSES FOR WRITING PARAGRAPHS

Most paragraphs are written to describe, instruct, compare and contrast, or to show cause and effect. By recognizing the purpose of the paragraph, you can increase your reading speed and comprehension as well as improve your writing.

Most paragraphs share the same basic structure: topic sentence, body, and sometimes a "clincher." The main differences are in the paragraph body. Here is where the supporting details are given. Think of the body of the paragraph as a list of details. The following is a brief description of the list of details for each type of purpose.

- 1) DESCRIPTION:** When describing something, you give a list of descriptive details. The topic sentence states what is being described. Use "concrete" words; words that create clear mental images for the reader. The sequential order of the details is not important. If you describe a house, it is not important if you start in the kitchen, living room, or bedroom. The important thing is that you describe the house in such a way that most readers can picture it clearly in their mind.
- 2) INSTRUCTION:** To give step-by-step directions or instructions, use this approach. Now, the sequential order of details is very important. Just think of the poor results produced by reversing the instructions for installing a sink or other plumbing fixture in a house. "Persuasion" could be considered a special case of an instructive paragraph. In some cases, the purpose is to persuade a person to take a specific action: "buy our product" or "vote for our candidate."
- 3) COMPARE AND CONTRAST:** This type of paragraph is the most troublesome for many students to do consistently. The first problem is forgetting to do both compare and contrast. The second problem is mistaking the meaning of the words compare and contrast. Compare is to show similarities; contrast is to show differences. The topic sentence states what is being compared and contrasted. The details to give should state specific similarities and differences in the body of the paragraph. Some exams ask for only a comparison or a contrast, not both. Read the question carefully and answer accordingly.

- 4) CAUSE AND EFFECT:** This paragraph shows a certain action produces a specific result. The topic sentence tells the action causes the result. The body gives a detailed explanation of how the action produces the result. The supporting details are factual and the presentation is logical. If not, you are not credible and this weakens your position. Do thorough research using reliable sources. Be well organized and very logical.

## **ORGANIZE YOUR WRITING**

A well-organized paper is easier to read and understand. This results in effective communication. There are three general ways to organize your writing: chronology, priority, and logic.

- 1) CHRONOLOGY:** Time order or sequence is used to properly arrange details. Use this when time is an important factor. In history, the practice is to move from past to present. Reverse chronological order can be used to "journey back into time." Whichever approach you take, the process goes step by step through the time sequence. Movie flashbacks are a variation of a type of chronological order. The action might be in the present. Then the scene cuts to a "flashback". A variation on chronological order is the climactic / reverse climactic order. The normal sequence is to tell a story from start to finish. Or to reverse it and start at the end, and then tell the things that led up to the end.
- 2) PRIORITY:** Presenting ideas and information in rank order of greatest importance first is putting them in priority order. You can reverse the order and present the least important items first, then gradually build to the important ones. Keep in mind, though, that most people are more attentive at the start of the paper. They may lose interest later. Or, they may focus on the least important items and get lost in the details before getting to the most important item.
- 3) LOGIC:** Using logical order pre-supposes that the writer and the reader share a common base of information or viewpoint, especially the unspoken criteria of what constitutes "logic." Start off with some basics such as the English alphabet and numbers. In most cases, nearly everyone is familiar with the logical "ascending" and "descending" orders of these systems (e.g. alphabetical order/reverse alphabetical order; numerical order and reverse numerical order). When dealing with items for which alphabetizing and numbering are inappropriate, reasoning becomes important. Classification and re-classification based on comparison and contrast is one way to establish common agreement before proceeding into the details of your paper. Your reasoning must be sound and clear based on consistent facts and knowledge. For some people, going from problem to solution (or the reverse) is a variation of logical order. The same applies to cause and effect relationships.
- 4) SPATIAL:** This approach is useful when writing descriptive paragraphs. It describes things in by spatial relationships. For example, the point of view could be of a visitor to an exhibit. Their eyes are drawn to one feature, then moves to another part of the exhibit or room.
- 5) TABLE / CHART:** This method is particularly useful in writing about comparisons / contrasts. Putting the information into table for makes it easier to see a side-by-side comparison / contrast of the points of the essay or article.
- 6) HIERARCHY:** This organizational approach uses the pattern of going from general to specific (or the reverse order). Some people think of this as a

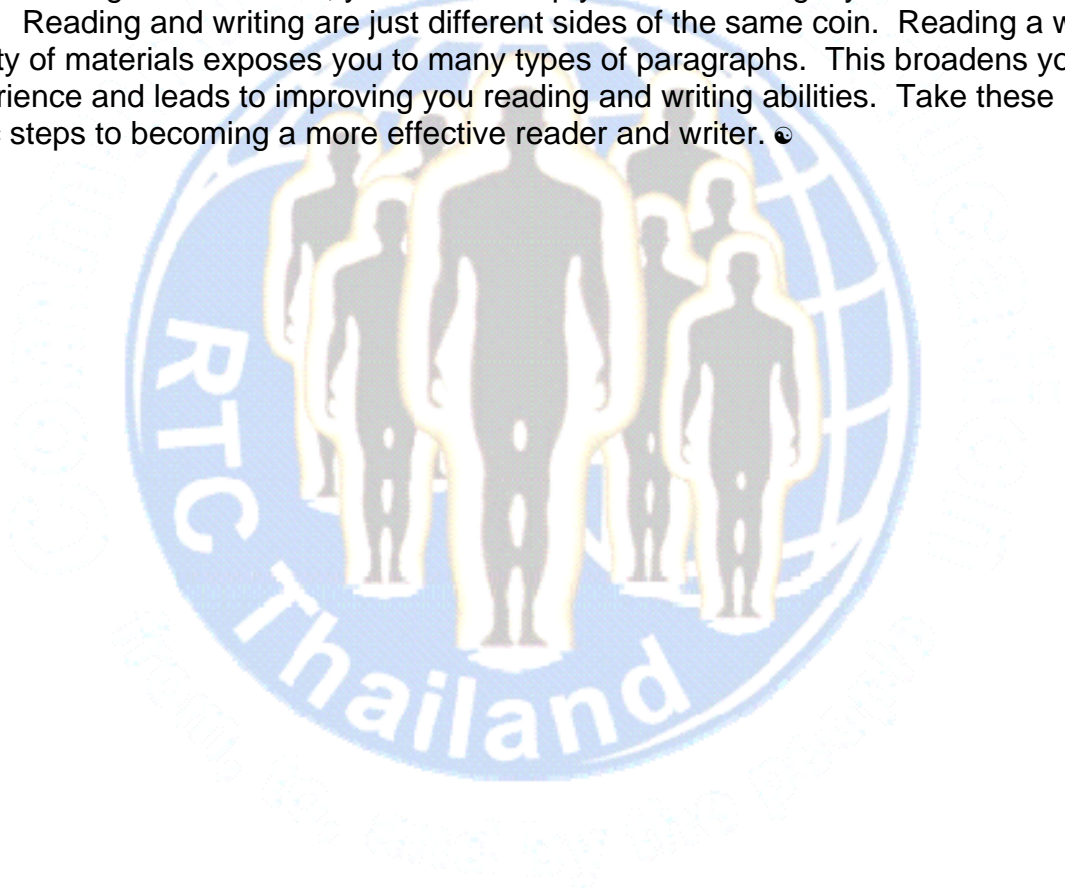
classification form of organization. For example, the topic of food can be subdivided into fruits, vegetables, meat, poultry, and fish.

## **SUMMARY**

You can read and write more effectively by understanding the structure, purposes, and organizational nature of paragraphs. Use these facts and insights about paragraphs to be an effective reader. You can get the main idea very quickly by find the topic sentence. When you recognize the purpose of the paragraph, you can focus on the relevant facts. The organization of the paragraph tells you what may be an important factor: time, rank order, or logic.

As you become a more effective reader, you can apply these same insights to your writing. Putting the topic sentence in different places in different paragraphs throughout your paper gives the paper variety. Using paragraphs for a variety of purposes and organized based on time, priority, or logic gives even more variety. Think back to the diverse examples you read and try to use the more effective ones in your writing. After a while, you will develop your own writing style.

Reading and writing are just different sides of the same coin. Reading a wide variety of materials exposes you to many types of paragraphs. This broadens your experience and leads to improving you reading and writing abilities. Take these basic steps to becoming a more effective reader and writer. ☺



## Use a Cluster Diagram to Plan Your English Writing

**Advisory Note:** We assume you know (or at least have been exposed to) basic English grammar and know how to read / write basic sentence types. Please read the paper “Understanding Paragraphs for Effective Reading and Writing” before reading this paper.

### INTRODUCTION

A well-written essay or article begins with a good plan. Many people think of the outline as the basic planning tool for writing. The typical English outline is a hierarchy with strict rules.

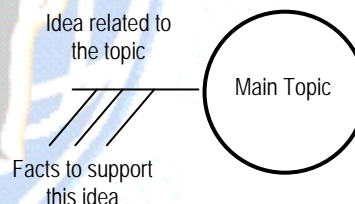
I. Introduction A. Topic Sentence B. Supporting sentences	For every “I” there must be a “II”. For every “A” there must be a “B”. For every “1” there must be a “2”, and so on. Each subdivision is indented to visually separate it from the higher level item.
II. Body A. Main Idea 1. Topic Sentence 2. Supporting facts B. Another idea 1. Topic Sentence 2. Supporting facts	Many people get “writer’s block” when trying to plan their writing using an outline. They often start out with some ideas. As they begin to fill in the outline form, they get another idea that seems out of sequence with what they first wrote down. It isn’t easy to “squeeze” the new ideas into the form. They end up tossing the first attempt and starting anew. They find themselves getting
III. Conclusion 1. Summary statements 2. Key facts from the body	

frustrated. As the outline grows, they find other ideas don’t seem to fit. They start again and again never seeming to complete their thoughts without being interrupted. The cluster diagram may be a useful approach to avoid this frustration.

### THE BASIC CLUSTER DIAGRAM

A basic cluster diagram is show below with the basic parts labeled. You start with drawing a circle in the middle of a blank sheet of paper.

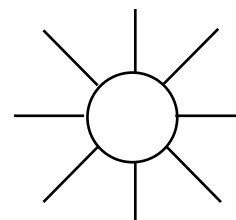
- **Circle:** You write the main topic here.
- **Rays:** Write any ideas that you think of about the topic. You add a new ray for each idea you think of related to the topic. Don’t worry about the order. Just squeeze them in as you need.



- **Feathers:** Write as many supporting facts you know for each of the ideas.

### BRAINSTORMING AND CLUSTERING

Brainstorming is an unstructured way to freely associate any and all ideas about a topic **without judgment**. It is important to put any and all ideas down on paper so you can consider them later. In the cluster diagram, each idea would be put on a separate “ray”. The general pattern looks like a simple picture of the sun. This is your “bright idea” for your essay. The cluster diagram you start with may change over time. The changes will lead you to having a strong and well-written paper.

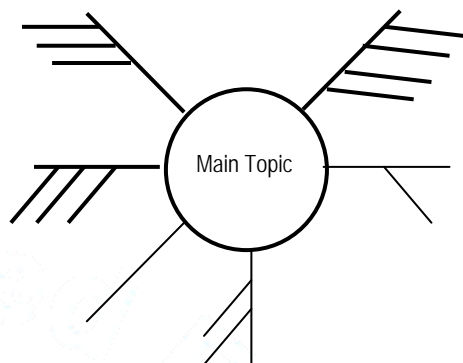


After you have the rays completed, go back add the feathers. Think of supporting facts for each ray. A good rule of thumb is to have at least 3 facts to support a ray. [Note: One supporting fact could be insufficient. It could have been a rare occurrence. Two is better than one, but three is better. More than 3 is fine, but

be sure you have sufficient time to write the entire essay if it is a timed in-class test.] At this point, it is not important if you know 3 facts for each and every ray. You are taking inventory of what facts you know to make your point. If you are writing an “in-class, timed essay”, you have to use facts you know. If writing outside of class, you have time to do some research to get the facts you need.

Here is a sample of a cluster diagram with some rays and feathers. Now you can begin to make some effective decisions about the order you use the rays. Look for the rays that have the most feathers. Remember, it is best to have at least 3 feathers to have a strong point supporting your main idea. The darker lines in the diagram represent the strongest ideas.

It is up to you to set the order you present these ideas in the essay. You might think it



best to start with your strongest point (the ray with 4 feathers). This way you might convince the reader quickly. The choice is yours. The cluster diagram shows you what you have to work with to write the essay. This is the key advantage of the cluster diagram over the traditional outline. You decide the order of writing AFTER you see the completed cluster diagram. With a traditional outline, you are creating the order of writing as you are trying to gather your thoughts.

### **BASIC PARTS OF YOUR ESSAY / ARTICLE**

Any essay or article you write has at least 3 paragraphs: an Introduction, a Body, and a Conclusion. The Introduction tells the reader the topic you will write about. The Body tells them what you want to say about the topic. The Conclusion tells them what you told them in the Body.

Most people begin writing the introduction, then the Body, and then the conclusion. This might work when you have time outside of class to review and modify the essay. But during a timed “in class essay” you are under pressure. Many students writing in class make these common mistakes: The introduction tells what will be in the essay but:

- The Body doesn't have all the ideas mentioned in the Introduction because they ran out of time. Some may not even have time to write the conclusion.
- The Body contains information not mentioned in the Introduction. During the writing, the student got sidetracked and didn't follow their writing plan.
- The Conclusion doesn't match the Introduction or the Body. Under time pressure, some of the items in the Introduction are missed. Or, the supporting facts were not mentioned in the Body. However, the student knows the point they wanted to make. So the Conclusion contains a statement that is not mentioned in the other parts of the essay.

Using a cluster diagram to plan your writing can help you avoid these common mistakes. It is a simple, free form method that doesn't impose a structured sequence for your writing. You decide on the sequence AFTER you see the information you have on hand.

### **TIMING FOR “IN-CLASS ESSAY TESTS”**

To practice and prepare to write timed, in class essays, simulate the conditions for the test. Select a topic. Watch your time carefully. Write down the

starting time. Make the cluster diagram. When you finish it, write down the time. This way you know how long it took to complete that step.

Write down the starting time for the essay writing phase. Begin by writing the Body of the essay NOT the Introduction. Follow your cluster diagram. Be sure you mention the ideas in the order of your plan. For each idea, be sure you wrote at least 3 supporting facts. When you finish this phase, write down the time it took you to complete it.

Next, write the Conclusion. Make a note of the time you start this phase. Be sure to summarize the key points you wrote in the Body. These should be the rays of your cluster diagram. Don't repeat the details. The Conclusion should be short, clear, and to the point. The reader can get the details in the Body. When you finish, write down the time.

Write the Introduction last. Write down your starting time. Writing the Introduction is easy. You already know what you wrote in the Body and the Conclusion. Now, as you write the Introduction you are guaranteed it will match the Body and the Conclusion. Your essay is whole and complete. When you finish, record the time.

You are not done yet. You need some time to proof read what you wrote. You also need some time to make any necessary corrections. You are looking for spelling, punctuation, and grammar mistakes. You should also check your cluster diagram to make sure you didn't miss any key points. Be sure you note the start and end time for this phase.

Look over the amount of time it took you to make the cluster diagram, write the Body, the Conclusion, the Introduction and to do any proof reading / corrections. Does the total time for your practice match the time allowed for the in-class essay? The best result would be for your practice time to be less than the time allowed for the test. This gives you more time to repeat the proof reading / correcting phase. If the practice time is equal to or longer than that allowed for the test, practice more. Strive to get your practice time to be less than the time allowed. It never hurts to have more time to proof read and correct your in-class essay.

## **CONCLUSION**

Cluster diagramming is an effective planning tool for writing. It is an unstructured way to inventory and evaluate the content of what you have available to write an essay. Once you see the completed diagram, you can make effective decisions about what to include and the order of presentation. Practice using cluster diagrams to improve your writing skill.

## Using MicroSoft Word to Improve Your English Writing

**Advisory Note:** We assume you have access to MS Office Word to type your English papers. If that is not the case, this paper may not be very useful for you.

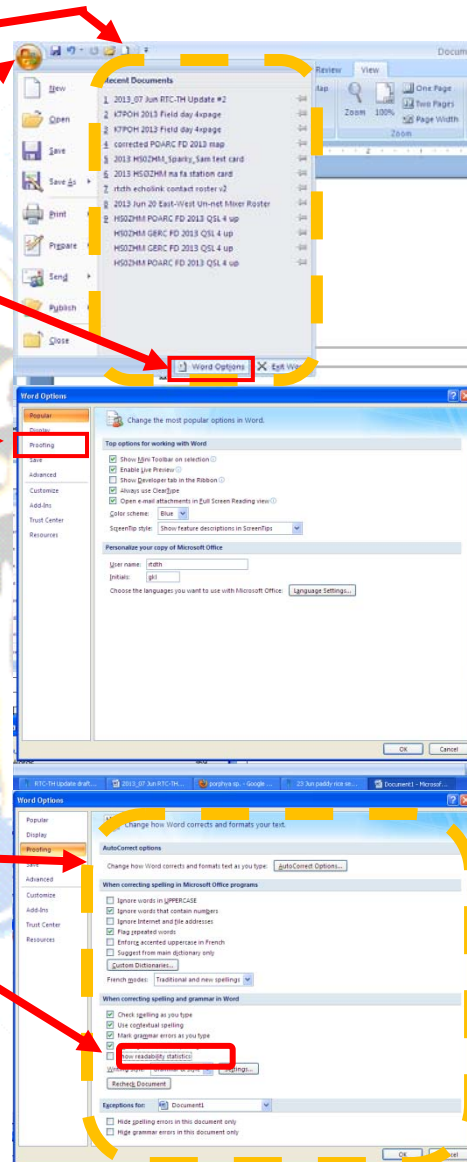
You can use a special function in the MS Word program to improve your English writing. This is the “Show Readability Statistics” function. It is embedded in the Spelling & Grammar function under the “Review” tab in the tool bar. Follow the instructions to set up the “Show Readability Statistics” function.

- Open a new MS Word document.
- Point at the MS logo in the upper left corner to open the drop down menu.
- Go to the bottom of the drop down menu; point and click on the “Word Options” tab

- In the “Word Options” Box, point and click on “Proofing”

- This changes the contents of the right side of the menu box
- In the third section from the top, point the cursor at the box “Show readability statistics”; click your mouse to put a check mark (☑) in the box.

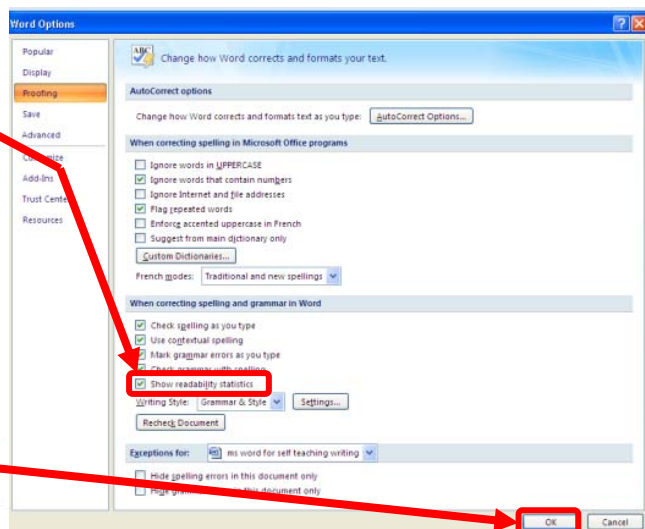
**Note:** look carefully at the screen and make your set up using the same check boxes like the screen shown at the right. All boxes should be checked in the section “When Correcting Spelling and Grammar in Word”.



**Note:** The screen shots for this article are from MS Word 2007. If you have a different version of MS Word, the screens may look different.

- After putting the check mark in the “Show Readability Statistics”, click “OK” to complete the new setting.

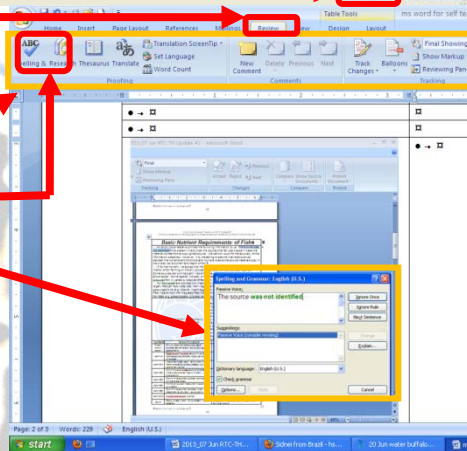
After clicking “OK”, you should be back to the blank New Document. Note: You can make this setting any time you open an MS Word document. After clicking “OK”, this locks the setting into the system. The settings will apply any time you open MS word or open an MS Word file.



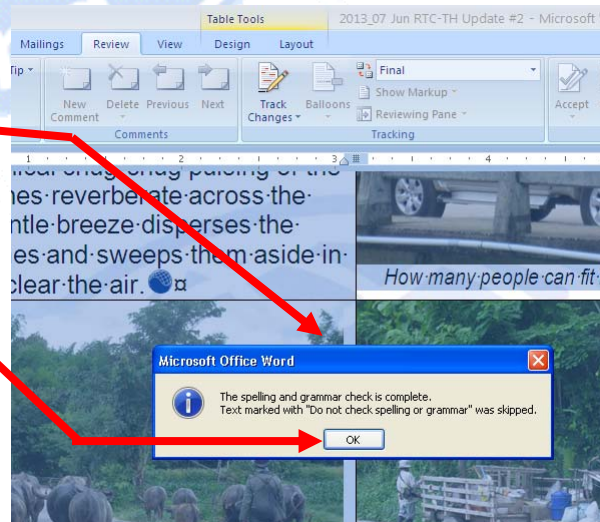
- To use this new function, open an MS Word document you want to check.
- Point and click on the “Review” tab; this will open up this tool bar.
- Then point and click on the “ABC” Spelling & Grammar icon.
- The Spelling and Grammar dialog box opens

**Note:** the program will NOT correct your spelling and grammar. It points out what it “thinks” are errors. The program points out possible errors, but you must decide what to do or how to fix it. Spelling is more obvious to correct. Grammar is more difficult. This is where my growing up with American English is an advantage.

This is how you can help yourself improve your English writing. You should go ahead and try your best to fix the problems. When you are done, you keep a copy of what you wrote. Then find someone with more experience to “smooth” your English and try to explain why they made the changes they made.



- When you finish the spelling and grammar checking, this box will pop up on your screen.
- Point and click on “OK”

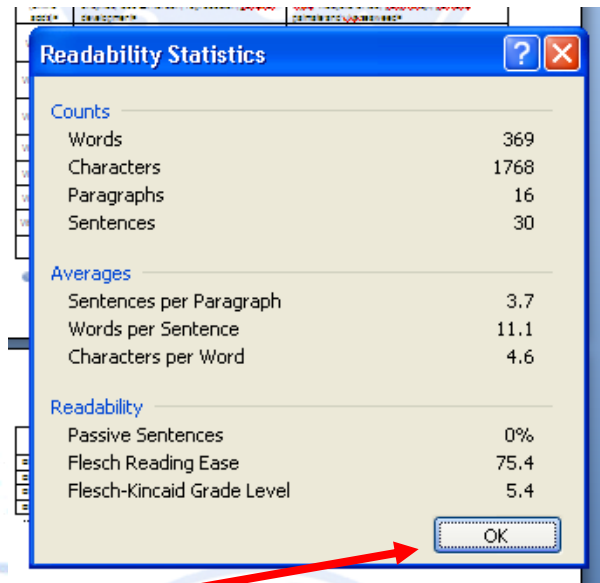


- This is the important tool to help you to improve your English writing. Many professional teachers of English argue about the truth of these statistics. In my opinion, it does not matter how true or false these statistics may be.
- What is important to you is that the program will evaluate your writing in a consistent manner. Therefore, you can use the statistics to see if your English writing is improving by comparing the statistics for your first draft to your second draft. Then when I send you a “smoothed” version of the draft you send to me, you can get the statistics and compare / contrast them to yours.

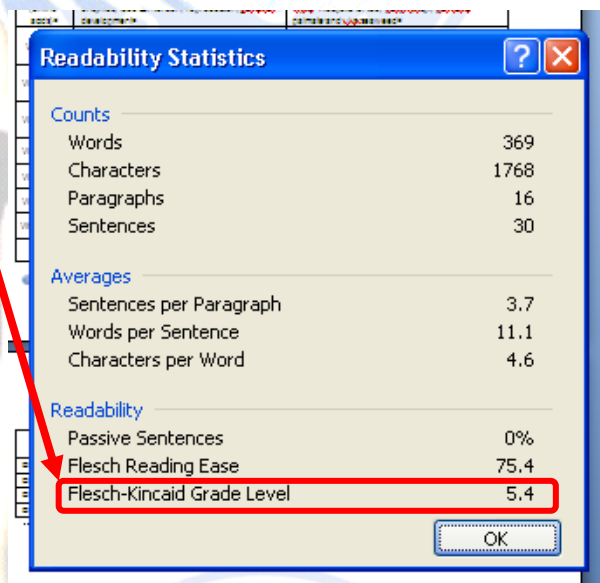
**Note:** click “OK” to close the statistics box.

- The important number to watch is the “Flesch-Kincaid Grade Level” number. This number tells you the school grade level of education a person needs to have to read and understand your English writing. It is based on American school students from grade 1 to 12. Any number higher than grade 12 or higher not measured by this method.

**Note:** Major American English newspapers and business magazines write their articles for a reading level of grade 6-8. This does not mean the readers don’t have high education. It means the newspapers and magazines want to sell the papers and magazines to readers who feel they can read and understand the articles quickly and easily. This usually means they can sell more papers and magazines and make more money.



<b>Counts</b>	
Words	369
Characters	1768
Paragraphs	16
Sentences	30
<b>Averages</b>	
Sentences per Paragraph	3.7
Words per Sentence	11.1
Characters per Word	4.6
<b>Readability</b>	
Passive Sentences	0%
Flesch Reading Ease	75.4
Flesch-Kincaid Grade Level	5.4
<input type="button" value="OK"/>	



<b>Counts</b>	
Words	369
Characters	1768
Paragraphs	16
Sentences	30
<b>Averages</b>	
Sentences per Paragraph	3.7
Words per Sentence	11.1
Characters per Word	4.6
<b>Readability</b>	
Passive Sentences	0%
Flesch Reading Ease	75.4
Flesch-Kincaid Grade Level	5.4
<input type="button" value="OK"/>	

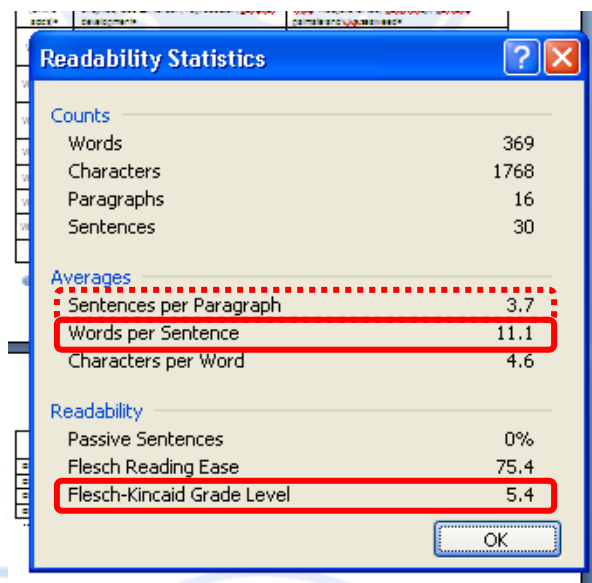
- The easy way to practice is to write a paragraph of at least seven sentences. We start here, and then can increase the number of sentences.
- Save your paragraph using its name followed by V1 (meaning version 1)
- Do a spell check, and type the following statistics at the bottom of your paper:

Flesh-Kincaid Grade Level: \_\_\_\_\_

Words per Sentence: \_\_\_\_\_

Later when you write longer articles with more than one paragraph, also write the statistic for:

Sentences per paragraph: \_\_\_\_\_



How to know when you are improving: It depends on your purpose.

- **First goal:** Flesch-Kincaid Grade Level is consistently in the 6-8 grade level. This would be good for a job where you must write in English. Lower grade levels are good for helping others learn to read and write English. Higher grade levels might be suitable for students who are trying to earn high grades for school and college. But once you graduate and want to get a job, think seriously about the professional newspaper and magazine writers and aim for grades 6-8.
- If the Grade Level number is above 6-8, do these things to bring the level down:
  - Write shorter sentences; use fewer words per sentence.
  - Use smaller words; use words with 3 syllables or less.
- If the Grade Level number is below 6-8, do these things to bring the level up.:
  - Write longer sentences; use fewer words per sentence.
  - Use bigger words; use words with more than 3 syllables.

When you want to revise your first version, open the file in MS Word; then immediately save it as a new file using the same name but change the number to V2 for the second draft, V3 for the third draft. Then re-write the paragraph using the basic methods above.

Later you can get some intermediate and advanced writing tips to improve your English writing skill.

## Manually Calculating Reading Levels

### INTRODUCTION

Robert Gunning, an American businessman, developed the FOG Index to determine the number of years of formal education a reader needs to understand a news or magazine article. The goals were to match the writing the audience and to help a writer reach a wider audience. For example, a college essay should be written to demonstrate language mastery at a college level. On the other hand, magazines and newspapers sell more copies if written at a 6<sup>th</sup>-8<sup>th</sup> grade level for a more general audience.

### THE FOG INDEX

The Fog Index is actually the final numerical result of a calculation. (This is how you can use math to improve your English.) The number matches the grade level of an American student. It basically tells you how many years of English the student completed to read and understand the article or passage.

[Note: We don't know how well this will correlate to the number of years a Thai student has studied English. That is not the purpose of this paper. We suggest using the Fog Index as a relative scale. For example, an article with a Fog Index of 9.0 will be easier to read than an article rated as 12.0. On the other, the article rated as 9.0 will be more difficult than one rated at 6.0.]

### THE CALCULATION PARAMETERS

1	The passage should have 1 or 2 complete paragraphs with a total of about 100 words. Do not leave out any sentences from the paragraph.
2	Calculate the average sentence length. Simple divide the number of words by the number of sentences.
3	Count the number of "long" words (i.e. words with 3 or more syllables). Do not count proper nouns, common jargon, or compound words. Exclude common suffixes (e.g. -es, -ed, or -ing) as syllables.
4	Calculate the % of long words in the passage. Just divide the number of long words by the total number of words in the passage. The multiply the result by 100 to get a percent.
5	Calculate the Fog Index by adding the average sentence length and the percentage of long words. Multiply the sum by 0.4 to get the Fog Index. This tells you the grade level an American student needs to read and understand the passage.

### USE IT FOR READING

People who write well read many different materials (e.g. books, magazine articles, news articles, etc.). It is important to see examples of both good and not so good writing. This helps you to recognize the difference. Once you identify elements found in good writing, you can try to use them in your own writing. This is one way to find your own writing style.

Find the Fog Index for at least 3 samples from each book or article you want to read. Then average the results for the book or article. Do this for a number of books and articles. Then plan to read the materials starting with the lowest Fog Index and work up to the higher levels. This is a graded reading series. If you start

reading something too hard, you might get discouraged. The idea is to stack the deck in your favor to pave your way to success.

### USE IT FOR YOUR WRITING

Foreign students learning to write English can use this manual calculation (especially if they do not have access to the Microsoft Word program). There are multiple strategies to take:

1. **Target Your Audience:** Use the Fog Index to adjust the reading level to match your intended audience. When writing for the general public, aim for a reading level of 6<sup>th</sup> to 8<sup>th</sup> grade for native speakers. For non-native English readers, consider going even lower. This is not meant as an insult to the readers. It is more a reminder for you to try to assure more people can read and understand your article. For college papers, aim for a higher grade level, say 10-12.
2. **Personal Development:** Writing is the artful use of the written language. Use the Fog Index as a way to practice your control. If you keep a journal, write 1 or 2 paragraphs each day (minimum of 100 words). Calculate the Fog Index. Then edit it to see if you can adjust the number upward and downward. This will show you how varying your vocabulary and sentence structure and length affect reading levels.

Keep this form clean as a master so you can make additional copies.

Fog Index: Manual Worksheet			
1	Written passage:	1A) 1 or 2 complete paragraphs	
		1B) total word count (min. of about 100 words)	
		1C) Total number of sentences	
2	Calculate the average sentence length.	2A) Simple divide the number in line 1B by the number in line 1C.	
		2B) Result of 2A is the average number of words per sentence.	
3	Count the number of "long" words		
4	Calculate the % of long words in the passage	4A) Divide the number in line 3 by the number in line 1B	
		4B) Multiply the number in line A by 100 to get a percent.	
5	Calculate the Fog Index	5A) Add the number in line 2B and the number in line 4B	
		5B) Multiply the number in line 5A by 0.4 to get the Fog Index	

Note: if you have access to the internet, you try an online Fog Index calculator at <http://gunning-fog-index.com/>

The screenshot shows the Gunning Fog Index website. At the top, the title "Gunning Fog Index" is displayed in a large, green font. Below the title, there is a brief explanation of the tool: "This is a tool that tries to calculate the Gunning Fog Index. It is a weighted average of the number of words per sentence, and the number of long words per word. An interpretation is that the text can be understood by someone who left full-time education at a later age than the index." Below this explanation is a large text area with the instruction "Copy and paste your text into the box below. Make sure you use complete sentences." The text area is currently empty.

This screenshot shows the same Gunning Fog Index website, but now with sample text pasted into the input box. The text is enclosed in a red dashed border. The text includes instructions on how to use a car's heater, horn, and lights, and advice on emergency preparedness. Below the text box, a red arrow points to a button labeled "Calculate".

You simply paste your sample passage into the window provided on the screen and click on “calculate”.

This screenshot shows the results of the Gunning Fog Index calculation. At the top, it states "THE GUNNING FOG INDEX IS 8.444". Below this, there are three bullet points with corresponding input fields: "The number of major punctuation marks, eg [, ], was 14", "The number of words was 228", and "The number of 3+ syllable words, highlighted in blue, was 11". Below these fields, there is a button labeled "Recalculate" with a red arrow pointing to it. At the bottom, there is a section titled "EDITED TEXT" with a red dashed border around the sample text, which has been modified to include punctuation marks and highlighted words.

This result is displayed on another screen (above). To adjust the reading level, you can edit the text (highlighted by the dashed box). When you are finished editing, click on “recalculate” to see the results.

# NUMERICAL OUTLINING: AN EFFECTIVE LEARNING TOOL

©1991, 1998, 2002, 2011 Revised by G.K. Lee

Proper preparation for class results in more effective learning. Most students have a hard time reading assignments prior to going to class. You can preview the reading assignment by making a numerical outline. Then in class, you can follow the lecture or discussion even though you haven't completely read the assignment.

Decimal outlining creates a numerical hierarchy and linkage of the key topics in a chapter. You can easily recognize the main ideas, secondary ideas, and supporting details and relevant examples. You can easily see the relationships of the concepts and facts because of the decimal notations. At the same time, it highlights key terms and phrases. If you include page numbers in your numerical outline, you have ready access to the textbook information at your fingertips.

**An Example:** Here is a numerical outline for the article “Understanding Paragraphs for Effective Reading and Writing.” (This article is in this section of your Guide.) The numbering begins with the title of the article. Each major subheading is assigned a decimal number after 1.0, with subdivisions of the subheading using another decimal number. Your visual clue is the type style and size used for the subheadings. (Note: For longer articles, it is also useful to note the page numbers for each subheading to make it easier to find later.)

- 1.0 Understanding Paragraphs for Effective Reading and Writing (p. 13)
- 1.1 Definition of a Paragraph (p. 13)
- 1.2 Paragraph Form and Structural Patterns (p. 13)
- 1.2.1 Topic Sentence First (p. 13)
- 1.2.2 Topic Sentence Last (p. 13)
- 1.2.3 Topic Sentence: First and Last (p. 14)
- 1.2.4 Topic Sentence in the Body (p. 14)
- 1.2.5 The Implied Topic Sentence (p. 14)
- 1.3 The Basic Purposes for Writing Paragraphs (p. 14)
- 1.3.1 Description (p. 14)
- 1.3.2 Instruction (p. 14)
- 1.3.3 Compare and Contrast (p. 14)
- 1.3.4 Cause and Effect (p. 15)
- 1.4 Organize Your Writing (p. 15)
- 1.4.1 Chronology (p. 15)
- 1.4.2 Priority (p. 15)
- 1.4.3 Logic (p. 15)
- 1.4.4 Spatial (p. 15)
- 1.4.5 Table / Chart (p. 15)
- 1.4.6 Hierarchy (p. 15)
- 1.5 Summary (p. 16)

You can use the numerical outline in a number of ways. In class, keep the outline handy and in clear view on your desk. When the discussion or lecture mentions a topic, term, or phrase you don't recognize, look for it in the numerical outline. When you find it, you quickly know how that topic connects to other topics in the chapter. You can reference the numerical outline in your class notes, indicating that this topic was brought up in class. You need to look up the details for that topic

later. If you recorded the page numbers in your numerical outline, you can quickly and easily find the information you need.

Numerical outlines are useful for test preparation. Most students have trouble finding enough time to adequately review for tests. Let's say you have only 30 minutes to study before going to work. Typically, you start at the beginning of the chapter, get 30 minutes into the chapter and stop. You don't get to see the rest of the chapter because you must go to work. If this is the extent of your review for the test, it is no surprise that you are not well prepared for a test of the entire chapter. Using a numerical outline, you can cover the entire chapter in 30 minutes, but not in great detail. The important thing is that you make one complete pass through the whole chapter in 30 minutes. In this way, you have an overall review of all the topics of the chapter. How is this possible? Look at the numerical outline above. If you only have 30 minutes to review, then review only the topics at the first decimal level (e.g. 1.1, 1.2, 1.3, 1.4, and 1.5). You now have touched on all of the major topics of the chapter. If you have more time, go to the next decimal level. At each increase in time and decimal level, you get more and more detail.

The numerical outline method produces a natural and orderly indentation pattern. Use the numerical outline in class. Keep it on the desk top for reference. Use the numerical "code" for a topic to keep your notes neat and easy to read. This also gives you page references to the text book. Strive to become an active listener by using the standard English question words as you listen to a speaker. This active approach will improve your listening abilities and study skills. Find methods to take good notes. This helps you retain what you heard.

## **SUMMARY**

Get into the habit of making a numerical outline before reading a chapter. It is an effective previewing technique and provides you with a mental map of what will be presented in the chapter. When you don't have time to read the chapter before going to class, the numerical outline makes you are aware of the major topics of the chapter. When you hear the lecture or discussion, you are familiar with the topics and can follow the lesson. The numerical outline serves as a framework for your lecture notes. The method is a simple and fast. You can use to identify main topics and supporting subtopics and examples in your text readings. You can prepare for lectures and have an outline of the lesson before you go to class. Use this simple technique to improve your studying.☺

## EFFECTIVE SHORT CUTS TO READING A CHAPTER

©1986, 1991, 1998, 2002, 2011, Revised G.K. Lee

Reading is an essential study skill for success. Here is a basic study approach to try: Preview, View, and Review. Ideally, you should complete all reading assignments before going to class. By the time you take a test, you should have read the chapter or chapters a number of times. In reality, most students do not have enough time to do all the reading, as they should. This paper offers suggestions on short cuts in reading a chapter when time is limited. This is an emergency method. It should not replace full and comprehensive reading of an assignment!

Written language has been one of the main ways people are able to transmit information from one generation to the next. It is more permanent than information transmitted orally. Most of us are familiar with the party games "gossip" or "telephone" where a simple message is whispered from one person to the next all around the room. By the time the message gets back to the first person, there seems to be little resemblance to the original message. The written word can be seen and confirmed by many people, thus adding to its authenticity and accuracy.

Effective studying requires knowing what to look for and where to look for it. The process starts with a numerical outline to preview the chapter. If you are not familiar with the topic, the numerical outline serves as a "map" showing you the overall situation. Use the following list of suggestions to become an active learner.

### **PREVIEW: BEFORE YOU READ:**

Do the following to preview the reading assignment.

#### **1. KNOW THE PURPOSE OR THE GOAL FOR THE READING ASSIGNMENT:**

You increase your effectiveness in studying by have clear goals. Start by reading the Chapter Summary first. The summary tells you the important points that were made in the chapter. Then read the Introduction which advertises the important things that "will be" given in the chapter. It may surprise you that these are always the same. So by reading both, you have a more complete list of important points to watch for in the chapter.

Make a numerical outline (see the paper "Numerical Outlining: An Effective Learning Tool.") The numerical outline helps you identify the key terms and new words you need for the chapter. This is how you build your vocabulary. Language is an integral part of all learning. Precise use of language is essential to effective communication. If you prepare the vocabulary before doing the reading, your reading will not be interrupted to stop and look up new words.

#### **2. LOOK AT THE PICTURES:** We've all heard that old saying "a picture is worth a thousand words." Look at the diagrams, pictures, charts, tables and other illustrations in the chapter. Have the list of main topics and the numerical outline for the chapter close at hand. Educational research has shown that when students are tested on materials, their retention of data is 60% higher when an illustration is used with the text.

#### **3. CONNECT THE PURPOSE / GOALS WITH THE DIAGRAMS:** Make note of the page numbers of selected illustrations to the numerical outline. Graphic displays help you to visually correlate variables. For example, a diagram showing temperature and precipitation data for 12 months is much easier and faster to

"read" than the written description in the text. If you don't read the full text, at least you can go to class somewhat prepared. You have an overview of the chapter. You can follow the lecture and discussion.

### **VIEW: READ THE TEXT**

This is your actual encounter with the text. You should do this only after you have prepared for the trip.

**1. FIRST-JUST READ THROUGH IT:** Since you previewed the chapter, you know the main points and know the key terms. Test-drive the chapter by reading through it quickly. Use your newly acquired vocabulary to get the overall view of the chapter. Do not take notes during the first reading. The only notes you should make are of differences between your numerical outline and the actual text. Do not use a highlighter now. This way you avoid painting the pages with color. Just read through the chapter. This reading will help you refine your understanding of the key concepts and improve your working knowledge of the vocabulary. When you encounter new words, do not stop to look them up. Try to guess the meaning from the root, prefix or suffix and context. Make a note in the margin the page using a pencil as to your guess at the meaning. After you finish reading the chapter, look up the words in the glossary of the text. Use a dictionary only after you check the glossary. Some words have special meanings specific to the subject or discipline. If you use the dictionary first, you may not pick the relevant definition. With practice, you will amaze yourself at your ability to guess the meanings of new words!

**2. TAKE NOTES DURING SECOND READING:** During the second reading, you are more familiar with the text. Now your purpose is to find supporting details for the main points of the chapter. This is when you should highlight and take notes. You are more likely to record and highlight only what is most important to you. In your notes, be sure to record the page numbers for reference. Later, you can quickly and efficiently find the original passage, if needed.

### **REVIEW AFTER READING**

Here are things to consider after you finished the reading assignment. Notice that each of these items gives you the opportunity to use a different learning method: writing (verbal text), drawing (visual/graphic), and speaking (verbal/auditory).

**1. WRITE A SHORT SUMMARY:** Try to answer all the basic English question words about the chapter: who, what, when, where, how, and why. This is a quick and simple way to test your reading comprehension and retention of the essential concepts and terms. Make an effort to use your own words and style to express your ideas. Avoid imitating and parroting back the wording of the text. That puts you at risk of plagiarizing. But do make an effort to use the appropriate vocabulary.

**2. MAKE & LABEL DIAGRAMS USING THE NEW VOCABULARY:** Remember, "A picture is worth a thousand words." So try to sketch a systems diagram or flow chart using the essential vocabulary. This diagram shows if you understand how the terms fit together in a logical sequence and structure. If you can make a clear and effective diagram, you can demonstrate your understanding and mastery of the chapter.

- 3. DISCUSS WITH CLASSMATES:** Most people learn more by trying to teach or explain things to others. Talk with classmates and study partners. This gives you practice at interpersonal communication. At the same time, you practice using the knowledge and vocabulary you acquired. Other people may not understand you. This challenges you to find innovative and creative ways to explain the material. The end result is that you effectively review (view again) the chapter. This gives you the chance to find out what you know and how well you know it before the exam.
- 4. COMPARE READING NOTES TO LECTURE NOTES:** Look over your numerical outline, notes from reading, and lecture discussion notes. Realize that lecture and discussion can supplement the text. They can provide clarification as well as more current data and information. Technology is changing more and more rapidly these days. No matter how "new" the book, it may be outdated by late breaking news and advances. To properly review for an exam, you need to consciously link the numerical outline to the textbook and the lectures and discussions. If something is not clear, the page references in the numerical outline and the reading notes let you access the relevant pages quickly.

### **SUMMARY**

Reading a chapter is similar to preparing for a trip to an unfamiliar place. You get a map to plan the trip (make a numerical outline) and get some information (preview the chapter). During the trip, you are checking your preparatory notes (expectations) against your actual observations. At the end, you recount the highlights of the trip. You take an active role throughout the planning and the trip. Your studies are a trip into the realm of data, information and knowledge. Plan it well to increase your ability to perform well. Then you will be in control of your studies and your ultimate success. ☺

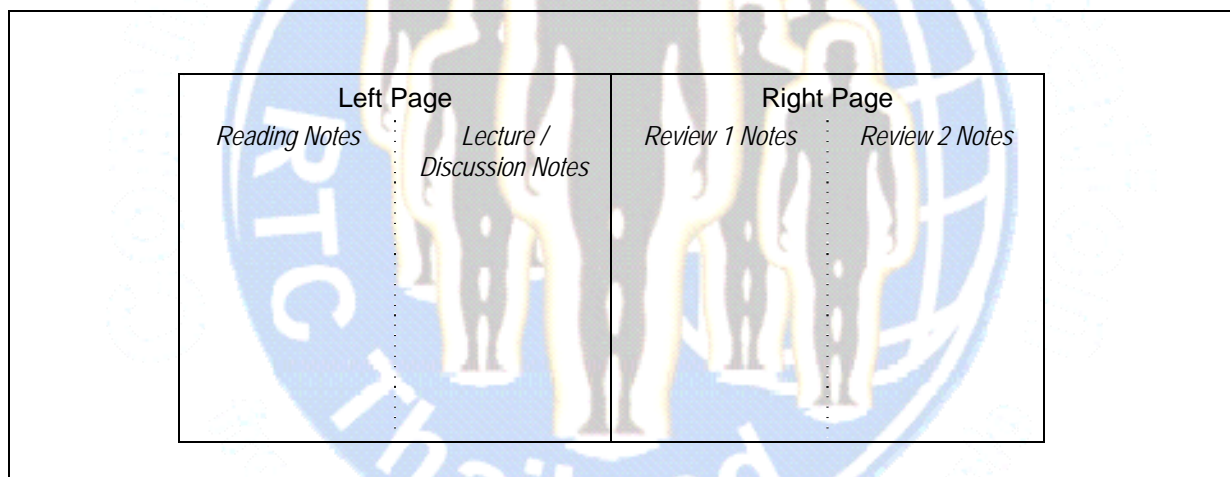
## EFFECTIVE NOTE TAKING FOR READING, CLASS, AND REVIEW

©1989, 1992, 1998, 2002, Revised 2011, G.K. Lee

Effective note taking can enhance your learning efficiency. The key is to link notes taken during reading, class lecture/discussion, and your study review. This paper gives you practical suggestions to do this. (You should have read and practiced the methods discussed in other papers in the Basic Study Skills collection.)

### COLUMNAR NOTE TAKING

Use a columnar format for taking notes. Open your notebook so that you can see 2 blank pages in front of you. Fold each page toward the binding seam of the notebook to create 4 vertical columns. Label the columns starting at the left: Reading Notes, Lecture/Discussion Notes, Review 1 Notes, and Review 2 Notes. All note taking should be done under the proper column heading. The notes should correlate across the columns. For example, notes taken during reading should match up to being said in class. When reviewing for exams, additional notes related to the reading and lecture notes can be added in the appropriate columns, but matching across the "row". Writing chapter and page numbers for readings, and dates of the lecture notes make it easier to "recover" data for exam reviews.



**Reading Notes:** You should have prepared a Numerical outline as a preview of the assignment before reading the chapter. Keep the Numerical outline close at hand as you do the first reading (without taking notes). Take your notes during the second reading. This way you avoid dividing your time and attention between reading and note taking. Your notes should prepare you for class, help you understand the material, and provide you with sources of questions for the class discussion sessions and the instructor. You are not re-writing the book! Make note of relevant page numbers in the text so you can access the information faster. This also links your reading notes to the Numerical outline for the chapter. Synthesize the text data and information by sketching or making flowcharts to picture the key points as they relate to one another. Beware of inconsistencies between the text and the graphics. Strive for an understanding of the material. Link your notes to the diagrams you make by putting index numbers in the diagram keyed to your notes. Remember, a picture is worth a thousand words. So rather than re-write thousands of words in your notebook, make summary diagrams and sketches. You'll save a lot of time. Spend

that time reviewing your annotated sketches. (Remember, research shows retention can increase from 25% to 60% when relevant diagrams are used. That's significant for increasing your understanding of the subject and performance in class.

**Lecture/Discussion Notes:** Keep your Numerical outline on the desktop during lecture/discussion sessions. This will help you to keep track of the topics in class and how they connect to the text. All class discussion and lecture notes should be written directly across from the corresponding Reading Notes. Any relevant back up data and information for the lecture can be easily found by referring to your Reading Notes. Ideally, class discussion and lecture supplement the reading assignment.

**Review 1:** You should review your notes and lessons at least once a week. By doing this routinely, you keep the information fresh in your mind. To conduct the review, simply read over the notes in the Reading and Lecture / Discussion columns. If you need to refresh your memory or get further clarification, the page numbers should be in the Reading Note column or the Numerical outline. Make notes in the Review 1 column for items or topics with which you had trouble. Make additional notes to help you clarify and understand those topics.

**Review 2:** Use this column for notes needed in preparing for exams. Essentially, you look over the other 3 columns and identify the key topics for the exam. Write any necessary clarifying notes in this column. Just as before, links the columns to the Numerical outline and the text passages make retrieving supporting data and information very quick and easy.

#### **ADDITIONAL THOUGHTS:**

- 1) Your notes need to make sense to you.** Don't worry about what others will think about your notes. This also means that you should not lend your notes to others. Not only do you run the risk of losing valuable information that took time and effort for you to compile, your notes may not even be understood by others.
- 2) Form a study group with others.** The key purpose is to discuss and exchange information as a different way to preview and review the course materials. These discussions give you the chance to use the vocabulary and concepts you are studying. In the process of trying to explain these to others, you "test" your comprehension and get more familiar with the subject matter.
- 3) Periodic review** of your notes is a repetitive process that makes you more familiar with the course materials. In this sense, it is not important how long you study as it is important how often you see the material. ☺

## ACTIVE LISTENING LEADS TO EFFECTIVE LEARNING

©1986, 1998, 2005, 2011, Revised 2013, G.K. Lee

Educational research reveals that we spend about 70% of each day communicating by reading, writing, listening, and speaking. In an average day, our communication time might be spent this way:

Listening	Speaking	Reading	Writing
45%	30%	16%	9%

In other studies, researchers learned people use listening to get 90% of their information, yet they retain only 25% of they heard. In 48 hours, 1/2 of that was forgotten. In other words, you usually only remember 12.5% of what you heard, and this makes up about 90% of your information! If you can improve your listening skills, you can become a more effective learner. Here is what might happen in a sample lesson:

Number of key lecture facts given in lecture	Number of key lecture facts remembered	Number of key lecture facts remembered after 2 days	...and 90% of what most people know they remembered from 12.5% of what they heard
20	5	2.5	

**Listening Is A Passive Psycho-Physical Response.** Your ears wait for sound waves to arrive. These waves are passively received by your ears and converted to nerve impulses that travel to the brain. The auditory system is partly mechanical and is slower than the brain. It is estimated that the brain is working about 4 times faster than your ears. Another way to look at this is to say only 1/4 of your brain is needed to do the listening, leaving the other 3/4 of your brain to do other things---such as daydream. You can become a more effective listener by using more of your brainpower. You can do this by becoming an active listener.

**Become An "Active" Listener.** Engage additional brainpower by using the six basic questions words in English: who, what, when, where, how, and why. Listen to the speaker and at the same time ask yourself a series of questions: Who is the speaker? What is the main idea of the talk? When did this happen? Where did it happen? How did it happen? Why did it happen? This is how you can use your brain more when listening.

**Try To Understand The Speaker's Point Of View.** You don't have to agree with it, but try to remain objective and unemotional; think clearly. Listen carefully to the spoken words without pre-judging them. Use your brainpower to question what is being presented. At the same time, remember to keep an open mind. It is important not to **react** emotionally to the spoken words. Many people hear what they want to hear and ignore the rest. Strive to actively keep your mind and ears open; listen to the message.

**Don't just assume you heard was what was meant.** Ask pertinent and relevant questions seeking clarification and understanding. Don't ask detracting or confrontational questions. Focus on the learning process. If the words or the message aren't clear, ask questions to clarify your understanding. Strive for understanding the point of view of the speaker. Ask questions, mentally to yourself

and aloud to the speaker when it is appropriate to do so. It doesn't hurt you to listen to a speaker, no matter what their point of view. In the end, you still have the power to decide for yourself after the speech.

When listening in class, learn to take good notes. The functional definition of "good notes" is notes that help you recall what was said in class. No one needs to be able to read them and understand them except you. They are there only for YOU.

Remember, "A picture is worth a thousand words." Making diagrams or flow charts to represent concepts is also helpful. The diagram should contain key terms and show the relationship of the terms to each other. This enhances your comprehension of the words. It also reinforces the connections / interconnections between the terms. After using this technique, compare / contrast your notes with a classmate. You will be surprised what they heard and wrote in contrast to your notes! **[Note:** Research shows studying text with relevant graphics can improve retention up to 60%. This is a significant increase over studying only text.]

Number of key lecture facts given in lecture	Number of key lecture facts remembered	Number of key lecture facts remembered after 2 days	...and 90% of what most people know they remembered
20	5	2.5	from 12.5% of what they heard
		4	Relevant graphics can <b>increase</b> retention by <b>60%</b> . You may retain <b>25%</b> of the lecture

Here is another listening activity to try with some friends. Listen to a tape recording of a short speech. Each person should take notes as the tape is played. At the end of the speech, exchange notes. Then play the tape again. This time, each person adds to the notes they got from someone else. At the end of the second playing of the tape, look at your own notes to see what your friend added. Each person hears the same speech in a slightly different way. They each focus on what they feel is important and filter out what they think is not.

Listening is a major communication activity in our daily lives. Most of what we hear is not retained. But most listeners and listening are passive. Strive to become an active listener by using the Basic English question words as you listen to a speaker. This active approach will improve your listening abilities and study skills. Find methods to take good illustrated notes. This helps you retain what you heard. ☺

# EFFECTIVE PROBLEM SOLVING

©1986, Revised 1998, G.K. Lee

Today's employers expect good workers to be effective problem solvers. According to government studies, employers believe people learn to be effective problem solvers in schools. Yet recent studies and educational critics point out the widespread failures of the schools in preparing students for the Information Age work place.

This paper is a brief summary of ten general problem-solving methods. These methods can be used singly or in combinations depending on the particulars of the problems you encounter. Consider these approaches as guidelines, but be flexible and creative in adapting these to your needs. Taking a more systematic approach enhances your problem solving skills. Finding reasonable solutions and alternatives may be easier than you think!

## THE GENERAL PROBLEM SOLVING APPROACH

You can adapt the general problem solving approach used in Algebra as the foundation for all effective problem solving: 1) clearly state the problem; 2) identify the variables; 3) state the relationships between the variables; 4) determine a problem solving strategy; 5) attempt the solution and identify alternative solutions; 6) check or validate the solution or solution alternatives. As in Algebra class, record each step in the process. If you have errors, it will be easier to find and correct them.

## TEN BASIC PROBLEM SOLVING STRATEGIES

There is no particular order, preference or importance to this list. Read the brief descriptions. Then apply them appropriately to help solve your problems.

- 1) USE OR MAKE A TABLE.** A table is an orderly relational arrangement of data (a matrix). The table consists of a series of columns and rows. The advantage of this method is that you can easily see what data you have or don't have. This becomes very obvious when you see if the boxes in the table or chart or filled or empty.
- 2) MAKE AN ORGANIZED LIST.** This process is similar to an inventory. It is another method data organization. You can see what has been done or what needs to be done by examining the list. It is a very handy way to record computational results.
- 3) GUESS AND CHECK.** This method can be used when dealing with very large numbers or data sets. Make an educated guess to get close to the correct answer. After each guess, you check the answer to see if it meets the conditions of the problem. By comparing the results with subsequent guesses, you narrow in on the correct answer. Use this approach is when it takes too long to organize the data into a list or a table.
- 4) LOOK FOR OR USE A PATTERN.** Repetition in the data leads you to a pattern. It can be numerical, alphabetical, visual, or behavioral. Once you identify the pattern, you can use it to predict the next event. Sometimes making a table or list helps you detect and see a pattern.
- 5) DRAW A PICTURE OR DIAGRAM.** "A picture is worth a thousand words." It may be helpful to clarify the problem by making a sketch of it. It is especially

useful for map problems. It can also show the physical relationships of the variables well.

- 6) WORK BACKWARDS.** Use this method when a known result is given or desired. Use the resulting data to re-do calculations to determine the other variables. This is similar to getting the answer to an Algebra problem and finding the values of the other terms. Think of it as playing "Jeopardy" where they give you the answer and you must guess the question.
- 7) USE OBJECTS.** Here is a way to visualize the problem by using real objects. This may help you to actually see the relationships between the variables. Detectives "re-enact" a crime by using objects to help solve the problem.
- 8) USE LOGICAL REASONING.** Use this method in problems that involve or imply conditional statements. Watch for the clue words such as "if", "then", and "else." For example, "if this is true, then...", or "if this is not true, then..." Consider using a chart, table, or diagram to organize or sort out the data, variables, and relationships. Focus on the variables and their inter-relationships.
- 9) MAKE IT SIMPLER.** When a problem is very complex, break it down into smaller parts. You will have more problems to solve, but they will be smaller and easier to solve than the original one. Remember the old saying "Divide and conquer"?
- 10) BRAINSTORM.** When nothing else works, it's time to seek out a different approach. Take a fresh look at the problem by considering all possibilities (without judging them) as opposed to the probabilities. Nothing is "too far out" when you brainstorm. List all ideas; then sort through them. In the brainstorming process, you should be extremely flexible, creative, imaginative and open-minded.

Effective problem solving requires a systematic approach in order to be successful. The process begins with a clear problem statement. Then identify all of the relevant variables, state their inter-relationships, and find a problem solving strategy. When attempting to work the solution, be aware that there may not be a single answer. Be open to other solution alternatives. Each will have advantages and disadvantages associated with it. Be sure to check or validate each solution or alternative to be sure it solves the problem or presents a reasonable solution. The guidelines presented in this paper are a start. You should apply them to your problems and track your performance. Adapt these strategies to your individual style. With practice, you can improve your problem solving skills and become a more effective decision maker and Information Age worker. ☺

## Basic Test Taking Skills

© 1986 - 2002, 2005, Revised 2011, G.K. Lee. All rights reserved.

This paper deals with some very common and basic test taking skills when taking timed (limited duration), multiple choice Scantron-based tests. Of course, there is no substitute for careful review and study of the subject matter to prepare for tests.

**Use the Proper Materials:** Be sure you have the specified Scantron form, a couple of #2 lead pencils, a white eraser or liquid correcting fluid. Use Scantron forms that are neat and clean. Do not use torn, folded, crumpled or wrinkled forms. These can jam or tear in the machine. A damaged or lost test paper means problems for you. Mark your answer choices lightly. This makes it easier to erase cleanly should you decide to change any answers. Be sure to leave some time, about 1-2 minutes, at the end of the test to fully darken your final answer choices.

**Know the Time Limits:** Be sure you know exactly how much time you have to complete the test. Then pace yourself and leave a few minutes at the end to check your work, the paper, and lean things up before submitting your paper.

**Check the Tests Paper:** Before answering any questions, quickly look over the exam papers for completeness. You should know the total number of pages and questions to be answered. Then quickly estimate the time available per question. This will help you to pace yourself to be sure you can complete the test in the time allowed.

**“Easy” Answers, First Pass:** Quickly go through the questions and answer all the “easy” questions you can. Skip any questions you cannot answer quickly. Be sure to make one complete pass through the entire exam. Check your time and go your second pass.

**“Process of Elimination”, Second Pass:** On your second pass through the exam, look at the questions you skipped the first time. If you can eliminate some answer choices, do so, and keep track. That is know what questions you can eliminate only 1 choice, 2 choices, 3 choices, etc. The more choices you eliminate, the better the odds you have of “guessing” the correct answer.

**Last Chance:** If time is running out, and there are no penalties for “guessing” or “incorrect” answers, take your chance on any unanswered questions. Pick your favorite letter/number choice and mark it for all unanswered questions. You may get a few more correct answers and that can only help your score. [Note: You can tell if you are penalized for guessing by the scoring method. If your test score is based on the number of correct answers minus the number wrong (or fraction of the wrong answers), there is a penalty for guessing.]

**Resist Changing Answers:** Unless you have good hard facts to justify changing an answer, don't do it. If you do decide to change an answer, be sure to erase thoroughly. Better yet, use white correcting fluid to cover the old answer. This keeps the scoring machine from detecting any graphite (pencil lead material) from the old mark that can lead to a “mistake” for your score.

**Preparing for a Test** begins before you go to class, continues with what you do in class, and ends with reviewing for the test. Look over the checklist (below) and

take an inventory of your test preparation methods. [Note: Also see the “Guide for Self-Learning”.]

### Before Going to Class Checklist

	Consciously strive to learn something new each day.
	Confirm assignments and due dates
	Buy the required textbooks
	Make a numerical outline before reading the assignment
	Read the assigned textbook materials
	Take notes of the reading assignment
	Summarize the reading assignment
	Identify the 5 key points of the reading assignment
	Complete any homework assignment
	Discuss the reading and homework assignments with a study partner or group
	Prepare a list of questions or points for clarification in class
	Visit the instructor during office hours to clarify questions on the assignments

### During Class Checklist

	Strive to learn one new idea / fact during the class
	Bring the required textbooks to class
	Use a numerical outline to guide my active listening
	Participate actively in class discussions
	Ask questions to clarify comprehension of the assignments
	Actively listen to the lecture / discussion act
	Take notes of the lecture / discussion activity
	Contribute additional extra-curricular materials / information
	Assist others in learning the lesson without disturbing the class

### After Class Checklist

	Review my class notes from the immediately past class meeting
	Use my numerical outline as a study aid during my reviews
	Transcribe (manually or typewritten) my class notes
	Review my class notes relative to my reading assignment notes and textbook
	Create practice test questions or practice taking a test
	Discuss the current assignments with a study partner or group
	Organize a study group or get a study partner
	Try to teach the lessons to others
	Periodically review all relevant notes for the current unit well before the test
	Actively use / apply the knowledge and skills from the current lesson
	Discuss the lesson with family members
	Consciously think of how to make use of what I learned

## LEARNING LOGS

© 1990, 2005, Revised 2013, G.K. Lee. All rights reserved.

A Learning Log is a simple and easy to use device to facilitate your learning. It takes 5 minutes or less to do. You use it to “internalize” or personalize your lessons. It asks three simple questions.

**What did I learn that I didn’t know before?** This simple question is linked to a series of important learning questions and ideas. You could just as well be asking:

- What did I learn that was entirely new to me?
- What did I learn about a topic that I thought I already knew about?
- What did I learn about a topic that I thought I didn’t need to know anything about?

**How will I make use of this new knowledge?** There is a common expression “Use it or lose it.” If you learn something but don’t use it, you probably won’t remember it very long. In a school class, the most obvious use of anything you learn is to pass a test.

But you should strive to learn beyond merely passing tests. Make a conscious effort to connect new learning to your past knowledge and experience base. Numerous studies on cognitive learning document the power of knowledge is increased when it is highly interconnected.

**What didn’t I understand about this week’s lesson?** This is an excellent way for you to be honest with yourself and to find out what you don’t know BEFORE an exam. Get the answers to what you don’t know and prepare better for the exam.

**Don’t lose this opportunity to learn?** This simple learning tool is enriched and fortified with learning opportunities. Don’t overlook the obvious or trivialize this simple appearing form. Get into the habit of completing a learning log after each lecture or reading assignment. If that is too much effort, then at least do it once each week. ☺

Lesson	Comments	Verified by
Lesson:	What I learned that I didn’t know before.	
	How can I make use of this new knowledge?	
Taught by	What I didn’t understand about the lesson?	
Date		



Community-based Education

# Learning Log

By:

*Community-based Education of, by, and for the people.*

Complete the necessary information in the boxes on the left. Learning logs are used to **A)** give you a chance to think about what you learned; **B)** give you another way to ask questions about the lessons. If you fully understand the lesson, write "no questions at this time" in answer to the item "What I did not understand about the lesson." After the lesson, get a Program staff member to review your log, answer any questions, and to sign the "Verified by" box. Keep this log in your notebook.

Lesson	Comments	Verified by
<b>Lesson:</b>  Taught by  Date	What I learned that I didn't know before.  How can I make use of this new knowledge?  What I didn't understand about the lesson?	
<b>Lesson:</b>  Taught by  Date	What I learned that I didn't know before.  How can I make use of this new knowledge?  What I didn't understand about the lesson?	
<b>Lesson:</b>  Taught by  Date	What I learned that I didn't know before.  How can I make use of this new knowledge?  What I didn't understand about the lesson?	

# IT-IS Literacy: A Model for Technology Learning

©1993, 1998, 2002 Revised 2011 by G.K. Lee

Geography has been significantly impacted by three broad technologies: remote sensing, Global Positioning System (GPS), and Geographic Information Systems (GIS). Amazingly, these technologies have been in existence for several years (some for decades), and yet most schools have not yet fully begun to teach about these technologies. This has occurred for a number of reasons: secrecy and classification of the technology for national security; high cost for technology; shortages of trained personnel; resistance due to technophobia by faculty; lack of adequate funding for training faculty, among other reasons. This paper presents a conceptual model of IT-IS to help guide students in making effective decisions about their education. It is imperative that each student consciously decides to include or exclude IT-IS training in his or her education. They must take charge of their future through a carefully designed educational plan to better prepare them to be effective Information Age workers. If not, they will be relegated to low paying jobs lacking mobility and longevity in the workforce. This will begin the downward spiral for many of them, and will lead to a greater stratification of society into "haves" and "have-nots."

Education is a key to survival in an ever more rapidly changing world based on IT-IS. This is nothing new. The entire history of humankind has been immersed in information processing from the beginning of time. The tools used in information processing have changed tremendously. The primary lesson gained from history is the process of learning. The IT-IS model is effective because while the specific hardware and software technologies can change over time, the concept of inter-connecting the technologies remains essentially the same. Convergence and integration enable the IT-IS user to continue to function regardless of the changes in the specific technologies or systems. Significant changes have occurred in the world, and education needs to adjust to them. The Information Age has begun and our basic concepts of education and literacy need to be updated. Students need a firm foundation in Information Technology (IT) and Information Systems (IS) Literacy. IT training enables people to use information technology. People use IS education to combine information technologies into a system used to achieve their goals. IT-IS Literacy must be incorporated into all disciplines at all levels of education.

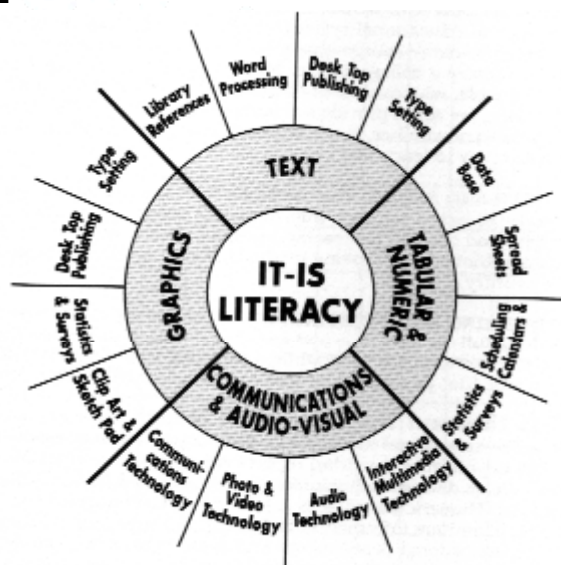
## THE UPDATED REALITIES

- 1. Education and Jobs:** In the past, we were told getting a higher education would assure a high paying job. The current educational system stresses concepts, theory, and specialization at the expense of practice. It is common for many college graduates to have jobs unrelated to their major. More than 70% of all jobs in the U.S. do not require a college degree. Most jobs call for generalists; persons who can do more than one function, who are trainable, who can adapt to changing needs of their employer. In addition to the traditional knowledge-based education, we must provide students with basic practical job skills and creative problem-solving skills. Regardless of their major or educational goal most people must get a job. In order to keep their jobs, workers need to learn how to learn and become life-long learners.

- 2. Jobs and Skills:** The transition from the Industrial Age to the Information Age began with a great need for knowledge-based workers. Information processing was done at local levels, dependent upon individual mental activity and manual processing methods. Today, we are working at global levels, involving multi-disciplinary, multi-cultural, multi-national group interaction, and using automated processing methods. We must include basic Information Technology training as part of basic education throughout the country.
- 3. Working and Studying:** In the past, most students could study full-time. Today, many students are working full- or part-time and going to school. If and when they transfer from community colleges, they will probably continue to work while completing their degrees. With basic IT skills, they will be qualified to get part-time jobs that pay more and that are better suited to their long-range goals.

### IT-IS LITERACY: THE CONCEPTUAL MODEL

The conceptual model for IT-IS Literacy can be presented in a simple diagram (see attached figure). In many organizations, written reports are compiled from various sources, using a variety of information technologies. These diverse technologies can be clustered in four broad categories: Text-based, Graphics-based, Tabular/Numeric-based, and Audio-Visual Communications-based. Under each broad category are subcategories of various information technologies. These technologies can be related to traditional academic and vocational educational departments and disciplines.



Academic departments should identify the key IT and IS functions essential to their disciplines. (**Note:** Get the IT-IS Literacy sample in the Guide to Self-Learning to see how the model is applied at a personal level.)

Courses must be upgraded to incorporate the use of the necessary and appropriate IT and IS required by employers. IT-IS should be made integral parts of the course. This requires faculty get updated on IT-IS. IT training can be a convergent force to forging interdisciplinary connections, linking an academic course with a vocational course. For example, Physical Geography Lab courses could link to the Engineering Technology courses in CAD (Computer Aided Drafting). The obvious links of mapping to drafting serve as a common base. At more specific levels, physical environmental factors significantly influence engineering design.

This conceptual model can do a number of things for educational institutions:

- 1. Cost-Effective Resource Allocation:** A campus-wide survey of IT-IS could reveal that many departments share the use of various IT-IS resources. Areas with a high degree of overlap allow for the sharing of hardware/ software. Fund-seeking efforts can be better focused and expenditures concentrated to better effect. Sharing these resources improves providing educational opportunities to our students. How many times have we seen the scenario of a department not being able to offer updated courses because of lack of funding for high tech equipment?

- 2. Unity Through Diversity:** The model promotes a sense of unity in an institution based on the diversity of IT-IS and academic/ vocational programs. All educational segments of a school are incorporated: Community Skills, Vocational Education, Academic, Contract Education, and Community Education. By crossing many of the traditional barriers of the existing educational system we get a stronger sense of unity. Recently, the emphasis has been on diversity almost to a point of self-imposed segregation and separatism. The purpose of educational institutions should be to provide learning opportunities for all students. This can be better achieved by a unified and integrated curriculum.
- 3. Interdisciplinary Awareness:** The increasing need for group interaction in today's global economy requires that we take an inter-disciplinary approach in education. In the current system, students do not always see this as part of their education. The current education system is built on separating disciplines into departments. The IT-IS Literacy model creates a natural avenue for interdisciplinary communication. Cost-effective funding would result in interdisciplinary action by the faculty. Students can then observe and experience working and learning in an interdisciplinary environment. This model is closer to the real world of work.
- 4. Program Flexibility:** The IT-IS model presents an educationally integrated buffet for students. Any combination of classes can be linked to meet a wide variety of education/training needs. This applies to regular credit classes and contract education programs. The model can be arranged in 3 tiers: beginning, intermediate, and advanced. This flexibility permits schools to respond quickly to changes and needs in the market place. If learning is to be a life-long commitment, then we must have a conceptual model capable of flexibility and adaptability. Implementing such a model enables a school to be ready to adapt to changing market conditions to ensure relevant educational opportunities for all people.
- 5. Synergy on Campus:** A cost-effective campus, drawing on a new sense of unity derived from an inter-disciplinary based flexible program, will become an increasingly significant educational institution. Such a school can serve as a driving force to fuel the economy by producing effective workers for the Information Age. It can serve as a model for other communities, both here and abroad.

An IT-IS Literacy program is a necessary addition to the traditional literacy of reading, writing, and arithmetic. We still need that basic education. But we should develop and integrate IT-IS Literacy to this basic education. By adopting and implementing this model in our schools, people will become IT-IS Literate. If we don't realize IT-IS Literacy, our students will find it is harder to get a job.

**Note to Students:** You cannot afford to wait for schools to provide IT-IS programs. Take this model, and use it to guide your educational program. Most campuses already have a variety of IT-IS elements. But these elements are not always integrated as indicated in the IT-IS model. Take control of your education and future. Use the model to assess your personal IT-IS status. Review your major field relative to the IT-IS requirements for employment. Compare and contrast this to your current status. Make up the difference between the two by getting yourself "up to speed"

and qualified for employment. By taking the initiative, you increase your probability of success. Remember, no one has more at stake in your future than you! ☺

### **INTERNATIONAL POSTSCRIPT:**

#### **LOW TECH IT-IS APPLICATION IN RURAL THAILAND**

During the summers of 1999 and 2000, I conducted a volunteer training program in soil erosion control in northern Thailand. Ironically, this can serve as an example of the inherent power of the IT-IS Literacy model.

#### **The Project**

The project took place in the Ban Tha Kho, a sub-district of Mae Suai, Chiang Rai Province, Thailand. This rural village had no telephone. One week prior to our arrival, the first computer was installed. Ironically, this story has little to do with computer technology---and everything to do with information systems.

The other volunteer and I did not speak Thai. The Chief Administrative Officer of the sub-district office learned English in school, but had never used it outside the classroom. In summer 1999, we spent 7 days training 5 other local Thai volunteers from 3 villages. None of these volunteers spoke English. They made a commitment to train others after we left. The project was directed to reducing soil erosion and reducing chemical pesticide and fertilizer use. Thus, the training focused on low-tech, hands-on, low-cost soil analysis, composting, and non-toxic pest control. These lead to environmental protection, and ultimately an improvement in the quality of life for the people.

#### **Project Summary ala the IT-IS Literacy Model**

- 1. Cost-Effective Resource Allocation:** This project cost the Royal Thai government little or nothing. The volunteers paid their own expenses to participate in the project. The Thai villagers gave up time from tending their fields to get the training. And they volunteered their time to teach back to fellow villagers. No fancy equipment was used. We made equipment from discarded plastic bottles and locally available off-the-shelf components. In the end, the effectiveness of the project is revealed in the numbers. In summer of 2000, we provided 3 days of additional training to the original 5 trainees and added 1 more Thai. Again, the trainees did not speak English. By summer of 2001, a year after the project ended, more than 600 people from 23 villages were trained! And it all started with 2 people and 10 hours of training!
- 2. Unity Through Diversity:** The American volunteers were urban folk of diverse backgrounds: American-born Chinese, American-born Japanese-Korean, American-born Italian, and an American-reared Thai, among others. The villagers were mostly ethnic Thai, but the program expanded to villages with Akha, Lisu, and other ethnicities. In the end, we are all members of the one human race. We all need clean air and water, food, and shelter. We want peace and security for our families.
- 3. Interdisciplinary Awareness:** We used the Geographic Systems Model and the IT-IS Literacy Model to integrate the knowledge and skills needed to train the local Thais. All of these were adapted to local conditions of weather and climate (Atmosphere), terrain and soils (Lithosphere), surface hydrology (Hydrosphere), and local flora, fauna, and culture (Biosphere).

- 4. Program Flexibility:** Working in a foreign country and a rural environment with volunteers with little international experience calls for quite a bit of flexibility. Village life is quite different from city life. Schedules are often changed for a variety of reasons---some quite understandable and others defy the imagination. The lack of modern communications technology, few transportation resources, little or no support funding, operating in the monsoon rainy season using dirt roads---well, let's just say it was challenging. Without flexibility, patience, an open-mind, and a good sense of humor, any reasonable person might have gone bonkers.
- 5. Synergy:** This proved to be the brightest jewel in the crowning success of the project. The villagers took all of the training to a much higher level than I had hoped for. I imagined the improvement of the soil was the key to producing more and better crops. The increased yields were going to be the means to improving the economic conditions for the farmers. The farmers readily saw the value of the soil analysis, composting, and non-toxic pest control. But some of them really focused on composting. By the end of 2001, there were 8 composting teams (ranging from 15 to 35 people on a team) in 6 different villages. These teams sought to make compost in commercial quantities for sale! Each team was able to produce about 3000 kg (about 3 tons) of compost every 3 months. Their return on investment was about 9.7 times their cost!!! Commercial composting was not part of the volunteer training.

The Thai volunteer project aptly demonstrated the power of two fundamental conceptual models: The Geographic Systems Model and the IT-IS Literacy Model. Ironically, I conceived the IT-IS Literacy Model to deal with moving my students into the high-tech Information Age. And yet, in the digitally and electronically isolation of rural Thailand, I learned the true power of the IT-IS Literacy Model is in the ability to transfer knowledge among people. ☺

## Appendix 1: RTC-TH C-bE Trilogy Matrix

Right columns show corresponding page numbers for topics in the different C-bE publications	RTC-TH-CbE-2010-3 Guide		
	RTC-TH-CbE-2010-2 Basic Study		to Self- Learning Page
	RTC-TH-CbE-2010-1 Community-based Education	Skills	
Title / Topic	Page	Page	
<b>1.0 INTRODUCTION</b>	1		
<b>2.0 P.L.A.N.T. (Personal Learning and Natural Teaching).</b>	2		
2.1 Education Defined	3		
2.2 Education is Holistic			
2.3 Self-selection			
2.4 Teachers: Examples & Facilitators			
2.5 Students as Learners	4		
2.6 Students as Teachers			
2.7 Ethics and Integrity			
<b>3.0 GUIDING PRINCIPLES OF RTC-TH C-bE</b>	5		
3.1 Self-Selection / Unconditional Acceptance	6		
3.2 Mutual Respect, Mutual Benefit / Thumper's Dad's Rule			2
3.3 Networking			2
3.4 There Are No Dumb Questions			
3.5 Privileges & Responsibilities	7		
3.6 Teach By Example; Live And Be The Example			
3.7 Seeking the Facts & Finding the Truth Using "FILCHeRS"			
3.8 Caring and Sharing (Including Teach-Backs) / Synergy	8		
3.9 Stay Close to the People; Serve the People With All Your Heart			
3.10 Learning is a Life-Long Activity	9		
<b>4.0 SOME EDUCATIONAL CONCEPTS</b>			
4.1 Maslow's Hierarchy of Needs	11		
4.2 The Scientific Method			
4.3 General Systems Theory	13		
4.4 Geographic Systems Model	14		
4.5 Yin-Yang & Goldilocks	15	1	3-4
4.6 Learning Styles		42-46	7-8
4.7 IT-IS LITERACY	16		
4.8 Classification & Reclassification / Contrast			
4.9 Pattern Recognition	17		
4.10 High To Low			
4.11 Problem Solving	18	36-37	4-6
4.12 Decision Making			
4.13 Listening & Learning	19	34-35	
4.14 Time Management		8-10	
4.15 Waste Reduction to Boost Efficiency & to Economize	20		
4.16 Curiosity and Learning to Be Your Own Best Teacher			
4.17 S.C.A.N.S & Self-Evaluation	21	6-7	14-17
4.18 The Learning Log		40-41	13
4.19 The Teach Back			20-23
<b>5.0 SUMMARY</b>	22		
Appendix 1: RTC-TH C-bE Trilogy Matrix	23		
Appendix 2: Time / Schedule Matrix Form	24		
Appendix 3: The SCANS Check Lists	26	6-7	
Appendix 4: Learning Log	27	40-41	
Appendix 5: Teach Back Log			