

Sabbatical Report

2005-2006

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Background

Currently

It has been said that with the help of modern technology knowledge is doubling every two to three years. With respect to mathematics however, one continually reads about today students' struggles to achieve success. There are many programs and countless dollars spent at the national, state, and local levels to help our students, but so far, it appears that no one has found the magic formula. My solution to this dilemma, which is very simple and typically universally ignored, is that we must "teach our students *how to learn*". Worldwide, we send our children off to school without really showing them how to "do school". I cannot fault the current generation of educators as they were never taught themselves, nor were their teachers trained in this area either. I believe, that as a society, we simply have not evolved enough! Fortunately, many students learn how to learn by themselves, but unfortunately, far too many of our students unnecessarily struggle with their education. My sabbatical project is my personal attempt to help students achieve educational success.

Gary Long

I have taught mathematics for 36 years, 15 years at Anaheim High School, and 21 years at Mt. San Antonio College. I believe that now is the time for my first sabbatical. For many years I have believed that I could help students succeed in their mathematics course work. To this end, I have taught Math 96 "Strategies for Success in Mathematics" for over a dozen years and I intend to write a textbook about this subject in the near future.

Math 96

"Strategies for Success in Mathematics" is a six week, credit/no credit, course running six times per school year. Unlike any other mathematics course, there are no prerequisites, and no strict mathematical curricula that "must be covered". It is in this unique environment and with the help of thousands of students, including elementary school teachers, middle school teachers, high school teachers, college professors, and university administrators providing feedback that has allowed the content of this course to undergo continuous improvement. This course has provided me with the breeding ground for the "garylong Success System" (glSS). Briefly, glSS is the amplification of the formula "*Perspective + Tools + Plans + Action = Success*". If you *structure knowledge* as does *nature*, one finds that tools can be designed to master every aspect of new information such as collecting, organizing, understanding, and reproducing. The great thing about these tools is that they are simple, easy, and fun to do! Armed with glSS many students find remarkable success.

Sabbatical Project

Definition

Enable more students to succeed, in mathematics specifically, and in educational and life goals generally.

Methodology

Improve the Math 96 course by enhancement, simplification, and expansion. Create a web presence to expand the audience of students that I can assist.

Project Activities

Research.

Review Literature. Read books and internet resources concerning topics such as accelerated learning, self-improvement, mind/brain theory, intelligence, motivation, and other relevant areas.

Software Skills. Learn Front Page in order to create appropriate web resources for students. Learn Power Point in order to present my research and Success System to students and others. Learn Geometry Sketch Pad to help illustrate “glStructured Knowledge” on web pages, power point presentations, and paper handouts. Enhance existing skills with Mind Manager (a mind mapping program) with respect to learning how to add tablet enabled mind maps to web pages. Enhance existing skills with PhotoShop Elements to add photographs to paper and web documents. Explore the feasibility of adding audio and/or video to power point and web presentations.

Investigate New Ideas. Diffusion Limited Aggregation. I conjecture that I can use this concept as a visual “Model of Understanding” which would confirm certain aspects of my Success System. Super Conscious Mind. I believe that this concept would be a welcome addition to my existing “Mind Stories” which solve test anxiety issues and dictate accelerated learning capabilities. Other Ideas. I have numerous other ideas that may germinate into part of the “Success System” and I know that many other ideas will arise as a result of the above mentioned *Literature Review*.

Improve Math 96

Mind Map Stories. The course is broken down into approximately 60 “stories”. For each story there exists 0 to 5 mind maps, some are given as handouts to students and some are not. I would like to mind map all “un-mind mapped” stories and redo and improve other story mind maps utilizing new insights resulting from research. New ideas may yield new stories which will also need to be mind mapped.

Write glTOOLS. Once students understand how knowledge can be naturally and simply structured (glStructure), then tools can be applied enabling them to efficiently master this knowledge. The big three tools are “Mind Mapping” (address knowledge – global perspective), “Tell Yourself a Story” (understand knowledge - theoretical perspective),

and “Cards” (understand knowledge – mechanical perspective). Currently these tools are delivered to students in mind map format and verbally explained by me. Example applications of these tools using a variety of current MSAC mathematics courses are provided to students. As a consequence of this delivery method (mind maps, verbal explanations, examples) the exact strategies of these tools are often knowingly or unknowingly modified which unfortunately usually reduces their value. Exacerbating this situation are students that are absent or simply do not understand the tools (miss class, miss the discussion, never feel completely comfortable about tool usage). Since these tools are of extreme importance to this class I believe I need to describe them explicitly so that they can be read and reread until mastered. Each tool alone has had the ability to *dramatically* improve the educational careers of many of my past students! In addition to explaining why these tools work, I must write down step by step application directions. Furthermore, understanding the 80/20 Rule (80% of the value of an activity can be accomplished by 20% effort), I must discuss different application depths of these tools to create a better fit with students’ natural strengths (here I am thinking Howard Gardner’s Multiple Intelligence Theory). Additionally, I must upgrade my tool usage examples to include more of the various MSAC mathematics courses and update to current textbooks on others.

Brochure. Even though a MSAC counselor has taken Math 96 (Staff Development Credit) and other counselors routinely recommend this course for certain students, not all counselors are aware of the actual content and potential of the course. Coupled with my belief that *everyone* can benefit from “learning how to learn”, I believe I should create a brochure to help promote this course.

Create assignments. To help solidify the content of Math 96, I believe that I should begin to create assignments. Currently, another text book “How to be a Great Math Student” by Richard Manning Smith, is used for this purpose. Creating my own assignments would help students focus their thoughts in ways that are much more consistent with course content.

Internet

Math 96. On my MSAC web site (which currently does not exist) I would like to post a “Story List” which would list the content of the course as well as briefly describe each of the “Stories”. I would also have the opportunity to supply links to other resources for the various ideas promoted in the course as well as facilitate deeper understanding of ideas.

Math 71. For years now, for every course I have taught, I have supplied hand drawn mind maps for every section to my students. Beginning Fall 2005, a new Math 71 textbook will be used necessitating a new set of mind maps. After learning how to create a web site and learning how to create the tablet enabled Mind Manager mind maps, I would like to post these on my MSAC web site. This would allow new dimensions to my mind maps (color, photographs, hyperlinks, possibly audio and/or video), as well as to open up this resource to any MSAC Math 71 student. I would also like to post Math 71 “Tell Yourself a Story” examples.

Timeline

#	Activity	Anticipated Accomplishment Date
1	Read/Study at least 10 Appropriate Books	Feb 2006
2	Read/Study Appropriate Internet Resources	Jan 2006
3	Learn Front Page	Nov 2005
4	Learn Power Point	Oct 2005
5	Learn Geometry Sketch Pad	Sep 2005
6	Enhance Mind Manager skills	Oct 2005
7	Enhance PhotoShop Elements skills	Dec 2005
8	Investigate Diffusion Limited Aggregation	Dec 2005
9	Investigate Super Conscious Mind	Dec 2005
10	Investigate Other Ideas	Apr 2006
11	Create/Upgrade Math 96 Story Mind Maps	Mar 2006
12	Write up glTOOL: "Math Mind Mapping"	Dec 2005
13	Write up glTOOL: "Tell Yourself a Story"	Dec 2005
14	Write up glTOOL: "Cards"	Dec 2005
15	Design Math 96 Brochure	May 2006
16	Create some Math 96 assignments	Feb 2006
17	Post complete Math 96 Story List on web site	Apr 2006
18	Post Math 96 Resource Hyperlinks on web site	Apr 2006
19	Post at least 3 chapters of Math 71 MMs on web site	May 2006
20	Post at least 3 chapters of Math 71 TYAS on web site	May 2006
21	Complete Sabbatical Report	Aug 2006

Value of Sabbatical Project

I believe that this project would be tremendous for my own professional growth as a college professor. My gains would then influence the instruction in all of my math classes. Furthermore, my ability to share my ideas and research to other faculty through staff development would certainly be enhanced.

Value to students *is* the main focus of this project. Students will find increased success not only in their mathematics courses, but in the rest of their courses as well. The self-esteem of these students will definitely improve.

Increased student success, increased student retention in mathematics and other courses will be valued by the college. With a web presence, the distribution of my Success System and its principles have unlimited potential! There is also the possibility of the "Strategies" course to serve as a bench mark course to be offered at other colleges. Furthermore, this sabbatical project would bring my textbook closer to fruition. This in turn would allow other faculty to reap the benefits of my years of research and continual improvements to the course as they assist students realize educational success. Additionally, those who choose to take Math 96 for Staff Development Credit, will find an improved course.

Need

As part of this sabbatical proposal is the need for me to continue to teach Math 96 each semester. The act of teaching a new class every six weeks and striving for continuous improvement has been of inestimable value to everyone involved. With the production of so many upgraded and new stories, glTOOL write-ups, and new delivery methods I truly need the feedback that six iterations of this course can provide.

Furthermore, I have been the ONLY teacher of this course for approximately the last 15 years (except once for a special program not opened to all students). Math 96 is prescribed for some students to allow a 3rd attempt by our "Repeat Policy Committee" and consequently must be taught to continue operating as we (Mathematics Department) do now.

Gary Long

Sabbatical Application Revisions

January 24, 2005

Sabbatical and Leave Committee:

Enclosed are revisions requested by the Salary and Leaves Committee including some commentary on a requested deviation from established practice.

The Mathematics Department Scheduling Committee has told me that they **MUST** know my plans for next year as our teaching schedules will be finalized this week. I would appreciate a decision on my sabbatical application by Wednesday January 26 if at all possible.

Sincerely,

Gary Long

BIBLIOGRAPHY Read/Study ten appropriate books

1. Blakeslee, T. (1996). **Beyond The Conscious Mind: Unlocking the Secrets of the Self**. New York, NY: Plenum Trade.
2. Buzan, T. (2000). **Head First: 10 ways to tap into your genius**. London, UK: Thorsons.
3. Dryden, G. & Vos, J (2001). **The Learning Revolution: To change the way the world learns**. Stafford, UK: Network Educational Press.
4. Mann, S. (1987). **Triggers: A New Approach to Self-motivation**. Englewood Cliffs, NJ: Prentice Hall.
5. Meier, D. (2000). **The Accelerated Learning Handbook**. New York, NY: McGraw-Hill.
6. Russell, L. (1999). **The Accelerated Learning Field book: Making the Instructional Process FAST, FLEXIBLE, and FUN**. San Francisco, CA: Jossey-Bass Pfeiffer.
7. Russell, P. (1979). **The Brain Book**. New York, NY: Penguin Group.
8. Scheele, P. (1997). **Natural Brilliance: Move from Feeling Stuck to Achieving Success**. Wayzata, MN: Learning Strategies Corporation.
9. Siler, T. (1996). **Think Like a Genius: The Ultimate User's Manual for Your Brain**. New York, NY: Bantam Books.
10. Tracy, B (2002). **Create Your Own Future: How to Master the 12 Critical Factors of Unlimited Success**. Hoboken, NJ: John Wiley & Sons.

Internet Resources Examples

Brain Gym – Educational Kinesiology; <http://braingym.org>

Project Renaissance with Win Wenger, Ph.D.; www.winwenger.com

Accelerated Learning; www.superlearning.com

New Horizons for learning; www.newhorizons.org

Study Skills; <http://ollie.dcccd.edu/StudyHelp/StudySkills/>

Learning Styles; http://iws.ccccd.edu/mbrooks/learning_styles/learning_styles.htm

Learning Strategies; www.learningstrategies.com

Learning Disabilities Resource Community; <http://ldrc.ca/>

Assessments; www.wooster.k12.oh.us/highschool/classprojects/assessments.htm

Eight Kinds of Smart Course; www.multi-intell.com/Eight_Smarts_Course.html

Diffusion Limited Aggregation; <http://apricot.polyu.edu.hk/~lam/dla/dla.html>

Request to teach during the sabbatical comments.

I realize that my request to teach Math 96 "Strategies for Success in Mathematics" may be a deviation from established practices. However, from the perspective of "value to the college", I strongly believe that this is the proper course of action. I presume the rationale for this past practice is the realization that a mind free from the necessity of the daily work routine is a different mind and hopefully one which is much more creative and productive when given a sabbatical project. If this presumption is correct, then please note that I am fully aware of this mind (which personally takes about 4 weeks to get to) and this is precisely why I have chosen not to teach summer school ever since I have been financially able. I believe that by not teaching Summer School 2005 and focusing on only one educational project that can I reach and maintain that mental state.

In my sabbatical proposal I listed two reasons for this request. 1) With the production numerous new and upgraded writings and "stories", the process of research/create/execute/reflect/improve is vitally important. However, it requires the "execute" part. Teaching this course six times per year and continually trying to improve it has been incredibly beneficial to the present state of this course. 2) Math 96 is prescribed for many students to allow a 3rd attempt by our "Repeat Policy Committee". I am and have been the ONLY professor of this course for over a dozen years. Therefore, it is essential to the success of MSAC students that I continue to teach Math 96. This sabbatical project will vastly help bring to fruition a strategies book that others can use, taking advantage of my many years of research and development and thereby facilitating my removal from the current "one man show".

On a personal level, I do not believe that it would be financially prudent for me to take a 20% pay cut at this time in my career.

I appreciate your consideration.

Activity # 1

Read/Study ten appropriate books.

Activity #1: Read/Study ten appropriate books.

The “stories” told in Math 96 are a synthesis of inputs from many different areas such as my own educational and teaching experiences, my interests, internet research, and the reading of hundreds of books. Often individual mind maps contain content collected from numerous books and other resources as well as my own original thoughts. The purpose of this activity to “read/study ten appropriate books” was to expand my current thoughts ideas from a variety of others in search of ways that I could improve Math 96.

1.

Blakeslee, T. (1996). **Beyond The Conscious Mind: Unlocking the Secrets of the Self**. New York, NY: Plenum Trade.

I was hoping that this book would teach me more about the “super conscious mind” and introduce me to strategies that I could teach my students to help them help themselves. Unfortunately Blakeslee took off in another direction. He expanded upon Roger Sperry’s Nobel Prize-winning split-brain experiments. He believed Sperry’s model of the mind was a gross simplification and concluded that the neurons of the brain spontaneously organize into hundreds of independent and specialized modules. Blakeslee then discussed these modules throughout the book, especially the “gap filling” self module. This book did not contribute to the course.

2.

Buzan, T. (2000). **Head First: 10 ways to tap into your natural genius**. London, UK: Thorsons.

Tony Buzan, the inventor of mind mapping, is one of my favorite authors. My purpose in reading this book was to expand my understanding of multiple intelligence theory. MI theory is discussed early in Math 96 as a natural learning strategy effectively used by preschool children and is later built into the adaptive learning system. After examining each of the intelligences, Buzan focused on strategies that could be used to further develop them. This was a very good book; however I did have an issue with Buzan’s extensions of Harvard’s Howard Gardner’s strict intelligence identification criteria.

3.

Dryden, G. & Vos, J (2001). **The Learning Revolution: To change the way the world learns**. Stafford, UK: Network Educational Press.

7.

Russell, P. (1979). **The Brain Book**. New York, NY: Penguin Group.

Since this book was written in the late 1970's and has often been used as a resource book for many of the learning books that I have read, I felt like I already knew most of the content. The book did help me improve a number of the story mind maps and make me go back to a number of my other books to clarify concepts.

8.

Scheele, P. (1997). **Natural Brilliance: Move from Feeling Stuck to Achieving Success**. Wayzata, MN: Learning Strategies Corporation.

This book was selected for the same purpose as Mann's "Trigger" book (4.) Scheele is the author of the "PhotoReading" course that I took in 1991, as well as the creator of the paralingual tapes used for assigned listening in Math 96. Unfortunately, the book attempting to simulate a four day training session, or a 10 hour audio course, is beyond the scope of what I can accomplish in Math 96.

9.

Siler, T. (1996). **Think Like a Genius: The Ultimate User's Manual for Your Brain**. New York, NY: Bantam Books.

According to Siler, one can think like a genius by a process he coined "metaphorming" – the act of changing something from one state of matter and meaning to another. It begins with transferring new meanings and associations from one object or idea to another. Here I was pleasantly surprised to find that his strategy was exactly what I was already doing! My structured knowledge model of organizing new information is precisely a metaphorm – a deeper way of thinking and creating. Siler claims that while a picture may be worth a 1000 words, a model is worth a 1000 pictures!

10.

Tracy, B. (2002). **Create Your Own Future: How to Master the 12 Critical Factors of Unlimited Success**. Hoboken, NJ: John Wiley & Sons.

Tracy is one of my all time favorite authors and speakers. This book, like his others, is packed with simple but extremely potent ideas about achieving success. His ideas (and stories) have been incorporated in numerous Math 96 stories throughout the course! Tracy presents very profound material with elegant simplicity. His writings model what I strive for in my own.

This book is truly crammed with many ideas covering a wide range of educational issues. The ideas are very practical and can easily be put to use by any learner. While I was already familiar with many of the topics in the book, it did help me to enhance my understandings, stories, and mind maps.

4.

Mann, S. (1987). **Triggers: A New Approach to Self-motivation**. Englewood Cliffs, NJ: Prentice Hall.

Unfortunately, knowing *what* to do to improve does not necessarily imply that a person will actually apply this knowledge. This dilemma is quite often discussed by self-help authors and speakers and appears to be a rather universal issue. I realize that I too have to wrestle with this concept. The “trigger” strategy was essentially explained in the first several pages of the book. The rest of the book simply repeated and amplified the strategy with the author discussing many therapeutic case studies. I believe the trigger idea is probably very valid and would be a valuable addition to a Math 96 follow up class, say Math 97. Currently, time limitations do not permit its use.

5.

Meier, D. (2000). **The Accelerated Learning Handbook**. New York, NY: McGraw-Hill.

This was a wonderful book on designing and delivering training programs using an accelerated learning approach. While the book’s focus was on training workers for several days as opposed to teaching students for an entire course, it was filled with useful ideas, philosophies, and strategies. A number of concepts from this book found their way onto my story mind maps and Meier definitely helped formulate and enhance my understanding of accelerated learning. The main issue that I struggled with throughout the book however, was his continual belittling of the “lecture” strategy. This “pour and snore” (Meier’s words) methodology is my main strategy of teaching. I kept waiting for ideas of how to conform to “student centered” strategies in a mathematics classroom but I never found them.

6.

Russell, L. (1999). **The Accelerated Learning Field book: Making the Instructional Process FAST, FLEXIBLE, and FUN**. San Francisco, CA: Jossey-Bass Pfeiffer.

This was another book focusing on presenting training workshops and should prove beneficial to me someday when I can expand my audience. The ideas in this book are very practical and a number of them have already been implemented as I continue to promote the non-transferable Math 96 course. Knowledge gained from Russell allowed me to enhance a number of the story mind maps.

Activity # 2

Read/Study Appropriate Internet Resources.

Activity #2: Read/Study Appropriate Internet Resources.

The following internet resources are a *sample* of the sites that have been used in various capacities of this sabbatical project. This list is similar to those sites that are listed as links at <http://elearn.mtsac.edu/glong/Math96/links96.htm>.

Entire categories of additional websites that I have read/studied are *not* listed. Those categories include photography, illustrator and other Adobe products, web design, mathematics, computers, and more.

To easily visit a sampling of sites, click the links on my website.

<http://en.wikipedia.org/wiki/Consciousness>
<http://www.metamath.com/lswweb/dvclearn.htm>
<http://answers.google.com/answers/threadview?id=112576>
<http://www.learningstrategies.com/>
<http://www.news.harvard.edu/gazette/1999/04.15/magnetism.html>
<http://encarta.msn.com/encnet/refpages/RefArtTextonly.aspx?refid=761578303&find=1>
http://www.it-cortex.com/Pareto_law.htm
<http://www.winwenger.com/>
<http://www.innerpeacemusic.com/>
<http://www.trancemaker.co.uk/hypnosis/humanmind.htm>
<http://www.winwenger.com/ebooks/guaran.htm>
<http://www.tmforyou.co.nz/abouttm.htm>
<http://www.akri.org/cognition/learhow.htm>
<http://www.arthursclipart.com/insects/butterbw.htm>
http://www.beautyanalysis.com/index2_mba.htm
<http://www-psych.stanford.edu/~kalina/BB/Lecture01/>
<http://www.brainconnection.com/>
<http://www.brainwaves.com/index.html>
<http://www.yogateacher.com/text/additionaltopics/breath.html>
<http://sprott.physics.wisc.edu/pickover/graphcp.html>
<http://www.mathacademy.com/pr/mini/text/anxiety/index.asp>
<http://www.anatomy.unimelb.edu.au/researchlabs/rees/projects.html>
<http://www.epsilonlearning.com/focus.htm>
<http://www.essentialfloatation.com/theories-of-floating.htm>
<http://www.mcs.surrey.ac.uk/Personal/R.Knott/Fibonacci/fib.html>
<http://www.imbb.forth.gr/people/poirazi/researchCN.html>
<http://classes.yale.edu/fractals/IntroToFrac/SelfSimEx/SelfSimEx.html>
<http://butterflywebsite.com/clipart/constructtable.cfm>
http://quantumfuture.net/quantum_future/papers/qfract/images/index.htm

<http://www.halexandria.org/dward101.htm>
<http://www.graphicandfractalworld.com/F5.html>
<http://guts.studentorg.wisc.edu/SS/sshandbk.htm>
<http://www.infed.org/thinkers/gardner.htm>
<http://andrewduncan.ca/~otoreke/gallery/gallery.html>
<http://www.genesis-sim.org/GENESIS/gum-tutorials/beeman/genesis-intro.html>
<http://www.anastasia.com/e19/std/>
<http://sprott.physics.wisc.edu/fractals/collect/2005/>
<http://olc.spsd.sk.ca/DE/PD/instr/strats/jigsaw/index.html>
<http://www.trufax.org/general/twz.html>
http://www.mindtools.com/pages/article/newISS_01.htm
<http://www.learningandteaching.info/learning/lerncrv.htm>
http://www.crawfordinternational.com/cai_learning_solutions.asp
<http://www1.chapman.edu/soe/faculty/piper/2042/cone1.htm>
<http://www.ct4me.net/>
<http://www.mbari.org/staff/conn/botany/reds/microcladia/fractal.htm>
<http://www.mind-pad.com/>
<http://www.gp-training.net/training/theory/multint/multint.htm>
<http://ucsdnews.ucsd.edu/newsrel/science/sdivlabor.asp>
<http://goldennumber.net/contents.htm>
http://www.physiol.ucl.ac.uk/research/attwell_d/
<http://emotiontoolkit.com/postthink.shtml>
<http://www.madsci.org/posts/archives/mar98/889467626.Ns.r.html>
<http://www.intent.com/sg/>
<http://www.potentialsunlimited.com/>
<http://www.creativitysoftware.com/fractals-images/pages-hs/squiggle.htm>
<http://www.aolej.com/stereo/>
<http://www.testprepreview.com/>
<http://www.annawise.com/>
<http://www.mcs.surrey.ac.uk/Personal/R.Knott/Fibonacci/fibnat.html>
<http://whgbetc.com/mind/inteldiv1.html>

http://www.salem.k12.ma.us/schools/saltonstall/cyberfair2004/multint_body_des.html
<http://www.learning-styles-online.com/>
<http://www.timethoughts.com/time/prioritize-with-80-20-rule.htm>
<http://www.leonardconsulting.com/Whole%20Brain%20Learning2.htm>
<http://tell.fl.purdue.edu/JapanProj/FLClipart/Verbs.html>
<http://www.vern.com/images/>
<http://www2.tafe.sa.edu.au/lsrc/one/natproj/tal/bestprac/HTM/WBRAINL.HTM>
http://www.12manage.com/methods_herrmann_whole_brain.html
<http://www.recallplus.com/index.asp>
<http://pavlovpublishing.com/beyondok/>
http://en.wikipedia.org/wiki/Mind_map
<http://www.jcu.edu.au/studying/services/studyskills/mindmap/>
<http://www.peterussell.com/mindmaps/mindmap.html>
<http://www.mind-mapping.co.uk/index.htm>
<http://members.optusnet.com.au/~charles57/Creative/Mindmap/>
<http://mindmapping.typepad.com/>
<http://www.mindjet.com/us/>
<http://www.braingym.org/>
<http://www.superlearning.com/index.html>
http://www.learntolearn.org/usa/index_us.htm
<http://www.ldrc.ca/projects/projects.php?id=26>
<http://ollie.dcccd.edu/Services/StudyHelp/StudySkills/>
http://iws.ccccd.edu/mbrooks/learning_styles/learning_styles.htm
<http://www.newhorizons.org/>
<http://encarta.msn.com/Default.aspx>
<http://apricot.polyu.edu.hk/dla/dla.html>

Activity # 3

Learn FrontPage.

Activity #3: Learn FrontPage.

Short answer, see <http://elearn.mtsac.edu/glong> .

To learn FrontPage, a web design program belonging to the Microsoft Office Family, I did a number of things.

- I went to Mt. Sac's staff development website, read all pertinent material, and completed all tutorials.
- I learned at Microsoft's FrontPage training site at <http://office.microsoft.com/en-us/training/CR061832701033.aspx>
- I read and reread the book: Online Training Solutions, Inc. (2004). Microsoft Office FrontPage 2003. Redmond, WA: Microsoft Press
- I read the book: Vander Veer, Lowe, Ray E., Ray D., Dean, McCue, Weadock, Nielsen, Aviram, Lockwood, Siddalingaiah. (2004). Creating Web Pages for Dummies. Hoboken, NJ: Wiley Publishing, Inc.
- I read FrontPage Help files.

Activity # 4

Learn PowerPoint.

Activity #4: Learn PowerPoint.

To learn PowerPoint I read a book and completed all tutorials:

Perspection (1999). Microsoft PowerPoint At a Glance. Redmond, WA: Microsoft Press

PowerPoint appears to be a relatively simple program that is actually incredibly powerful. I would like to return to PowerPoint after I understand movie editing.

Activity # 5

Learn Geometry Sketch Pad.

Activity #5: Learn Geometry Sketch Pad.

My purpose in wanting to learn the Geometry Sketch Pad (GSP) program was to be able to draw icons that could be used in other output.

I read, studied, and activated a book.

- Chanan, Steven (2001). The Geometer's SketchPad. Emeryville, CA: Key Curriculum Press

At the very end of the book I got to the *Iterate* command, my goal, but unfortunately discovered that it was not powerful enough to meet my needs. This fact was confirmed after additional study in the GSP reference manual. I realized later that I was quite naïve in believing GSP could satisfy my needs. For implications, see Activity #10.

A future project is to be able to “Structure” people online! One of the components of the Math 96 Success System is to “Get Structured”. During the kinesthetic portion of this process, my final GSP project will (finally) become *very* relevant! (Delayed gratification here!)

Activity # 6

Enhance Mind Manager Skills.

Activity #6: Enhance Mind Manager Skills.

Short answer: see Activity #11 and Activity #19.

I enhanced my Mind Manager skills by reading all Help information several times – there is no other documentation. I have spent many hours using this software.

Activity # 7

Enhance PhotoShop Elements Skills.

Activity #7: Enhance PhotoShop Elements Skills.

To enhance my PhotoShop skills I read and studied several books, explored many internet resources, and spent many hours using this software. The books that I read include:

- Kelby, Scott. (2005). the photoshop elements 3 book for digital photographers. New Riders / Peachpit
- Brundage, Barbara. (2005). PhotoShop Elements 3, The Missing Manual. Sebastopol, CA: O'Reilly Media, Inc.
- Adobe. (2005). PhotoShop Elements 4.0 User Guide. Adobe Systems Inc.

Additionally I used a number of other photography books as reference material.

Activity # 8

Investigate Diffusion Limited Aggregation.

Activity # 8: Investigate Diffusion Limited Aggregation.

Investigation

To investigate this concept I explored a number of websites on the internet (often authored by physics professors) and read about it in a number of fractal geometry books. Below is a sampling of resources:

Internet

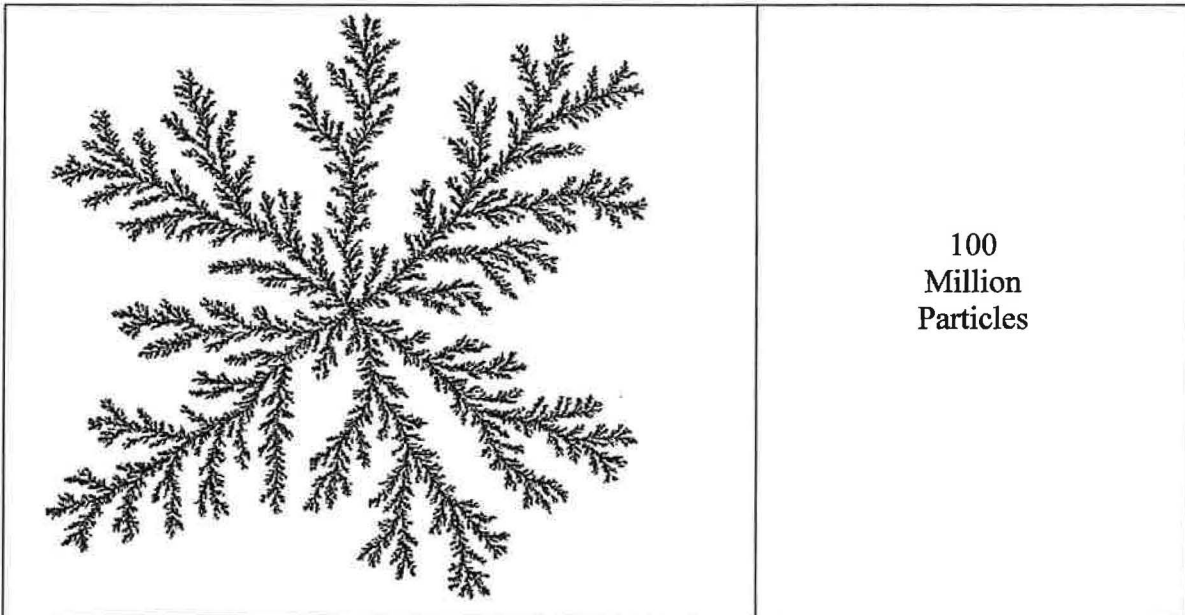
<http://www-personal.umich.edu/~lsander/>
<http://apricot.polyu.edu.hk/~lam/dla/dla.html>
<http://library.wolfram.com/infocenter/Articles/2866/>

Books

Peitgen, Jügens, Saupe (1992). Fractals for the Classroom. New York: Springer-Verlag
Peterson, Ivars (1988). The Mathematical Tourist. New York: W. H. Freeman and Co.
Lesmoir-Gordon, Rood, Edney (2000). Introducing Fractal Geometry. Victoria, Australia: McPherson.

Purpose

If certain assumptions are made about the launching, attaching, and destroying of a particle, a beautiful structure can be found. Applications are found in many areas of research.



By changing some construction assumptions of the DLA model, and replacing “particle” with “new information”, great theoretical consequences are possible. The model suggests that information can indeed be organized by garylong Knowledge Structure!

Furthermore, it also logics that the prepare component of the **96 Learning System** has very *significant* benefits! Notice the use of the DLA structure as a metaphorm (Stiler, Activity #1).

No 96 Story

I entertained the idea of a “DLA Story” but have thus far ruled against it. The story would seemingly diverge from the current direction of the class. It would take too much time for me to explain and for students to realize the esoteric significance of the model. This story would therefore rank too low on a “value to time spent to achieve” ratio.

Future Value

I will continue to learn from this model. In my mind, the model has confirmed the significance and appropriateness of preparing for class. The DLA story may be relevant for a future talk, paper, or perhaps as part of a Math 97 curriculum.

Activity # 9

Investigate Super Conscious Mind.

Activity # 9: Investigate Super Conscious Mind

Investigation

To investigate this concept I explored a number of websites on the internet and read about it in several books. Below is a sampling of resources:

Internet

<http://www.briantracy.com/main/article.asp?ArticleID=83>

<http://www.deeptrancenow.com/superconscious.htm>

http://www.hypnosisinfortworthtexas.com/how_hypnosis_works.htm

Books

Hill, Napoleon (1937). Think and Grow Rich. New York: Fawcett World Library.

Tracy, Brian (2002). Create Your Own Future. Hoboken, NJ: John Wiley & Sons.

Keifer, Michael Monroe (1995). The Powermind System. Edina, MN: Kiefer Enterprises International Press Division.

Purpose

The brain and the mind are important topics in the foundational portion of the course. The subconscious mind is the focus of the “cBar” and “Internal Dialogue” stories and from these stories *very* important understandings with *very* significant implications are born. These ideas are eventually incorporated into the 96 Learning System. To expand this area of thought, I believe that a “Super Conscious Mind” story would complement the existing conscious, subconscious, and unconscious mind discussions. Moreover, it would provide additional global understandings of the learning system as well as provide additional motivation for the execution of the system.

No 96 Story

I did develop this “story” and delivered it in several iterations of the course early in the sabbatical year. The super conscious mind concept was introduced via a funny scene from a movie shown in the first week of the course. Following the inevitable laughter, the scene was analyzed for deeper meaning and the foundations for additional learning were established. After understanding how to take advantage of characteristics of the subconscious mind, powers of the super conscious mind were hinted at. Finally, the super conscious mind story was formally told near the end of the course after discussions of the importance of written planning and goal setting were introduced.

As the sabbatical year continued and the benefits from my newly acquired ability to use the software program called “Illustrator” (See Activity #10) were introduced into the course, I was forced to remove the “Super Conscious Mind” story. I believe that the concrete benefits to the learning system accomplished by meaningful visuals made

possible by “Illustrator” are more important than gains from the more esoteric “Super Conscious Mind” story.

Future Value

The empowering notion of continued improvement to Math 96 given the freedom to evolve is balanced with a time limitation. To add something to the course at its current stage of development means something must be subtracted. I believe the super conscious mind concept would be an excellent addition to the course, but not at the expense of more basic and practical concepts. The story may return in Math 97 or as part of a future reading assignment.

Activity # 10

Investigate Other Ideas.

Activity #10: Investigate other ideas.

The most significant “other” activity I completed was to learn an Adobe Creative Suite 2 program called “Illustrator”. After learning Geometry Sketch Pad (Activity #5) and PowerPoint (Activity #5), I came to the realization of how limited the drawing capabilities were in these programs. For many years I have appreciated the power of visuals and have encapsulated many ideas, stories, and concepts into hand drawn pictures and icons that I distribute to my students. This strategy however has serious limitations. The drawings were difficult to reproduce as they were redrawn each time they were needed; they lacked color, and were often too simplistic to really meet my needs.

Mt. Sac’s Photographics Department has a site license to Adobe’s Creative Suite 2 and issued me a copy. One of the programs in this suite, Illustrator, is the premier drawing program used by graphic artists throughout the world. I read that “every item that you see as you walk down the aisles at a grocery store had its packaging designed by Illustrator”! To learn Illustrator, I read and studied two books:

- Golding, Mordy. (2006). Adobe Creative Suite 2 All in One. Indianapolis, IN: Sams Publishing
- Underdahl B., Alspach T. (2005). Illustrator CS2 Bible. Hoboken, NJ: Wiley Publishing.

In addition to these two thick paperback books, I watched an 18 hour training DVD: Total Training for Adobe Illustrator CS2 by Deke McClelland. After several months of studying, I became able to produce meaningful results. The graphics power that I have dreamed about for over a decade is now within my tool set and as a result, Math 96 has taken another significant leap forward. Let me provide an example.

For years I have attempted to perform a “structural analysis” of a typical mathematics class routine. I have been through a number of different versions of this “story”. In many iterations of the Math 96 course I brushed over this concept because of my inability to make my students really understand me. Personally, I believe that this structural analysis of class is an “educational breakthrough” and clearly explains why so many students seem to struggle in their mathematics course while being successful in other subjects. The first time that I believe I *ever* got anybody to grasp the concept was when I could use visuals created by Illustrator. This occurred in the 5th Math 96 course (of 6) offered during my sabbatical year. By using pictures, I had pre-algebra students understanding – a significant triumph!

I believe that significant results can be facilitated by following a “system”. The “Math 96 Success System” and the “96 Learning System” are written as computer programs using pictures. These “picture programs” are illustrated on the “story mind maps”. Forms containing “picture programs” allow students to follow these systems in a much easier way. For years these forms have been hand drawn. By using Illustrator, these forms

have a very significant upgrade. The “TWR” and “Plan Analysis” forms, each taking several days to create, contain a wealth of information that would be so much more complex if delivered in words.

Another significant area of “other ideas” is movies. I bought a Sony digital video camera and read the Operating Guide several times. I also bought a digital video editing program (Adobe Premiere Elements 2) and read its User’s Guide. I also read the books:

- Barrett, Colin (2005). digital video for beginners. New York, NY: Lark Books
- Grisetti S., Engels C. (2006) Adobe Premiere Elements 2 in a Snap. Indianapolis, IN: Sams Publishing

My planned initial educational application is in the “butterflying” concept described below.

In the “96 Learning System”, structured knowledge is explored from multiple modalities – one of which is the “butterfly mode”. This concept has been included for the last 20 iterations or so of Math 96, but always as a very intuitive and loosely defined skill. With the addition of structural graphics now available due to the Illustrator program, concepts have become more defined. New handouts have been produced and in depth discussion of the butterflying skill have been included in the course. For further improvements, I would like to make a movie (to post on my website) of myself teaching a typical mathematical concept with students taking notes in real time. I would then like to critique these typical math class routines by both the professor and the student. This activity would pull together a structural analysis of class, the “butterflying skill”, and the Structure Notes tool in a realistic and eye opening fashion. I believe that by learning these new skills and perspectives that a student’s mathematics class experience will never be the same again and will undoubtedly be enhanced many times over!

Activity # 11

Create/Upgrade Math 96 Story Mind Maps.

Activity #11: Create/Upgrade Math 96 Story Mind Maps.

This activity is the heart of my sabbatical project. The Math 96 course is composed of about fifty “stories”. Each of these “stories” is delivered verbally in class and is accompanied with one or more mind maps; some also include additional documentation and example packages. Modularizing the course in this way allows considerable flexibility. Stories can easily be moved or reshuffled as the course evolves and accommodates external constraints such as scheduling issues. This modularization also allows for independent improvement of each of the stories.

Prior to this sabbatical project, hand drawn mind maps for many of the stories were distributed to the students. For a number of stories, I used my own personal mind maps as notes for in-class delivery, but these were not given to students. During this sabbatical project, I have created computer drawn mind maps for **all** the stories. Using the computer to create or redo the mind maps has many bonuses. First, it forced me to rethink, update, and enhance each map. I verified concepts, added new ideas – original and results from new research, and generally improved the content of the mind maps. Second, by using technology, I added a variety of visuals. We know that our minds are naturally image processors as opposed to word processors. By using pictures, students can understand and remember considerably easier than in more traditional formats. The story mind maps typically contain a wealth of information gathered from a number of resources. Images from throughout the world are included. Illustrator drawings that took minutes to hours to days to produce can now be effortlessly included. Thirdly, continued improvement is now enormously easier. Contrasted to redrawing mind maps by hand, the benefits of the computerized versions are obvious. I would estimate that with each iteration of the Math 96 course, over 90% of the story mind maps changed and 100% of the Day mind maps changed.

Be aware that by looking at a mind map and *not* hearing the associated story, only the gist of a lesson can be understood. Mind maps offer addressed key concepts which are understood only if accompanied with meaning. Meaning is supplied by the associated story which is verbally delivered in class. See Activity #17 for a synopsis of each of the stories.

What follows in this Activity are the handouts distributed in the Math 96 course. Included are several handouts that I did not produce and they should be easily identified. Excluded are several “business” handouts that students receive such as syllabus, etc.

♥ You!!



Winner



The Race!



Decisions

- Perspectives
- Decision Point
- Quotes
- Bottom Line



Script

My name is __ and the math class that I'm currently taking is __. I think math __. During tests I feel __. One thing I would like to get out of this class is __. (Optional: Also I'd like to say __.)



Business

- Syllabus
- Paraliminal Doc
- Hand Outs
- This
- Testimonials

Roll



gl

1

- Perspectives
- Understandings 1-6 Foundation
- Strategies
- < Before
- = During 7-10 96 Learning System
- > After
- >> More



The Weekly Routine

11 Plan



"The Treasure"

GUARANTEED SUCCESS!

12 96 Learning System



96 Success Strategy

... everybody's favorite radio station!



WIIIFM

- 5 Pass Course
- 4 Pass Tests
- 3 Answer Questions
- Perform Tasks
- 1 Understand Questions
- Desired State of Consciousness

Goal

Assumptions

0 + 1 + 2 = 3
 3 implies 4
 4 implies 5



Mechanical System

Automatically

More Brain

Brain Friendly

Natural Strengths



Store Multiple Locations

Want



Simple

Easy

Fun



Rewarding

(c) 2006 Gary Long

Gary Long and Math 96 – Some History

I started teaching mathematics in 1969. After a number of years in the classroom, I began sharing a tool called TYAS that I developed while I was a graduate mathematics student. The results were *outstanding*. Everyone that seriously used the tool began getting “A’s” and usually “A+’s” on all of their tests! It was at this time that I began to believe that I could help students to succeed in their mathematics courses. Actually TYAS will work in *all* of your courses and yes, you will learn it in this class.

In the early 1990’s I began teaching Math 96. This course is unique in a number of ways. Its focus is the *process* of “succeeding in your mathematics class”. Once you begin thinking about this, you realize that you have spent very little time studying this *process* and most all of your time studying *content*. Society sends its children “to school” but never teaches them how to “do school”! Fortunately many students figure it out by themselves, but unfortunately, far too many students needlessly struggle to succeed.

Since there is no mathematical content requirement for Math 96, the class has the freedom to evolve, and running six times per year, evolve rather quickly. Given this opportunity to continually improve the course, Math 96 has gone through a number of growth spurts. The first big one came when I took a “PhotoReading Course” offered by Learning Strategies Corporation. PhotoReading, or whole mind reading, allows one to mentally photograph the pages of a book at a rate of about 25,000 words per minute. By applying various “activation strategies”, this information is then brought to conscious awareness. It was an amazing course and as you will find out, the “96 Learning System” shares some of the same fundamental principles. The PhotoReading course also introduced me to “accelerated learning”. This is the ability to learn 4 to 10 times faster than normal, the way you learned as a child. Armed with the ability to process a book in several hours, I then read over 100 books on learning and related topics, which in turn, vastly improved Math 96. The next growth spurt occurred when other teachers and counselors from elementary to university began taking the course. The pressure to improve was greatest when mathematics professors were in class. In fall 2005 I was granted a sabbatical leave from my normal teaching duties so that I could devote an entire year to improving Math 96.

A number of my interests have found their way into the Math 96 course.

I was one of the first kids on the block to get into computers. I have spent 1000’s of hours writing computer programs. I have taught Computer Science for over dozen years. As a result, you will find that the 96 Learning System is written as a program. Simple, easy, fun steps, requiring the minimum amount of effort to receive the maximum amount of results!

I like to trade futures, stocks, and mutual funds on an intraday, daily, and weekly time horizon. As a result, I have become aware of the need to develop a *system* to do what

needs to be done and do it as efficiently as possible. Day trading especially has made me aware of the differences between two states of mind, one under stress and the other not under stress. You can understand and remember something, but if you cannot *produce* under stress then the chain to success is broken. Soon you will understand exactly why test anxiety exists and exactly what you must do to resolve this issue.

I like photography. I have taken pictures for many years, had my own darkroom, and now use a computer to enhance the photographs I take. You will soon understand that visual memory is large and nearly perfect! It is an ideal place to effortlessly store a large wealth of information encapsulated into a visual. Math 96 utilizes many visuals and you will learn how to take advantage of this brain friendly strategy.

I believe in personal fitness. I define this as paying attention to a variety of aerobic exercises, resistance training, learning, and diet. This will influence a number of the “Stories” you will hear. You will also find that these principles are incorporated into “The Weekly Routine” as we set up a customized workout plan for ourselves to achieve our own individual goals.

I love Math. With that mind I have attempted to resolve every aspect of the course into its simplest elements -- easy to understand and easy to do.

Finally, as an educator, spending many years in the mathematics classroom, I understand the realities of the challenging task that you have of being a student. You will be presented with a very realistic strategy – and yet – one that *guarantees* your success!

***So get ready for an exciting adventure and find that beautiful,
Successful person that is already within you!***



glong@mtsac.edu
(909) 594-5611 x4644

Growth Learning
It's OK to ...
Change Your Mind

- Move
- Reflect
- Correct
- Repeat



Strategy



Bottom Line



Priest / Smoker Story

Lesson

Even though you may have thought a certain way, maybe even for a long time, there always exists the possibility of another perspective, from which you would have completely different thoughts!



Influence Decisions



Perspectives



Decisions



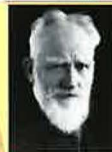
Executives

60% wrong!



T. Roosevelt
26th US President

"In any moment of decision, the best thing you can do is the right thing, the next best thing is the wrong thing, and the worst thing you can do is nothing."



George Bernard Shaw
writer

"Those who cannot change their minds cannot change anything."

Anon

"If you always do what you have always done then you will always get what you have always gotten!"



Quotes



Decision Points

Studies



Pepsico

There is always
 another perspective.

Note



There is a 1st Time for
Every New Thought

(c) 2006 Gary Long



Magnify Your Efforts

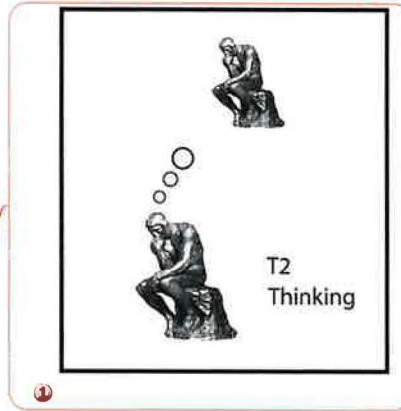
Success Stories



More Learning Tools
...Later



Tools



"Thinking about Thinking"

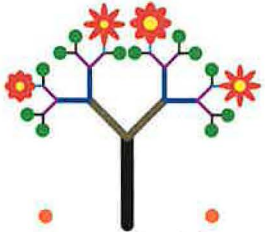
Meta Thinking

Strategy *Use T2 to Improve T1*

2

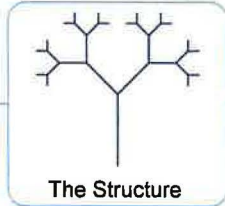
Kinesthetically
Mathematically
Visually

Introduce "The Structure"



Structured Knowledge

Application #1



The Structure



The "Mind Mapping" TOOL

Application #2



Star of Wonder



Self Imposed
Self Limiting Rules!



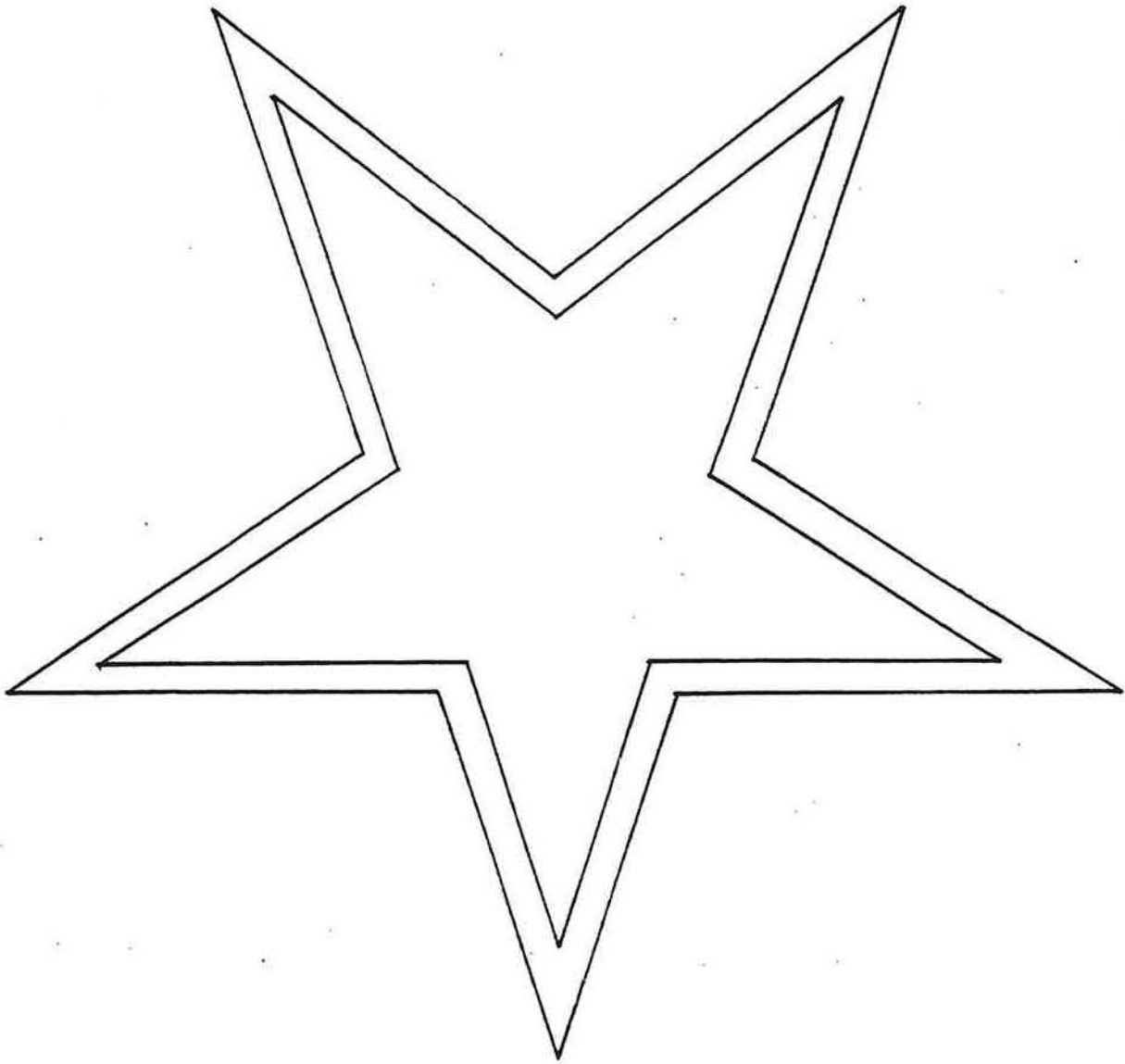
New Thought

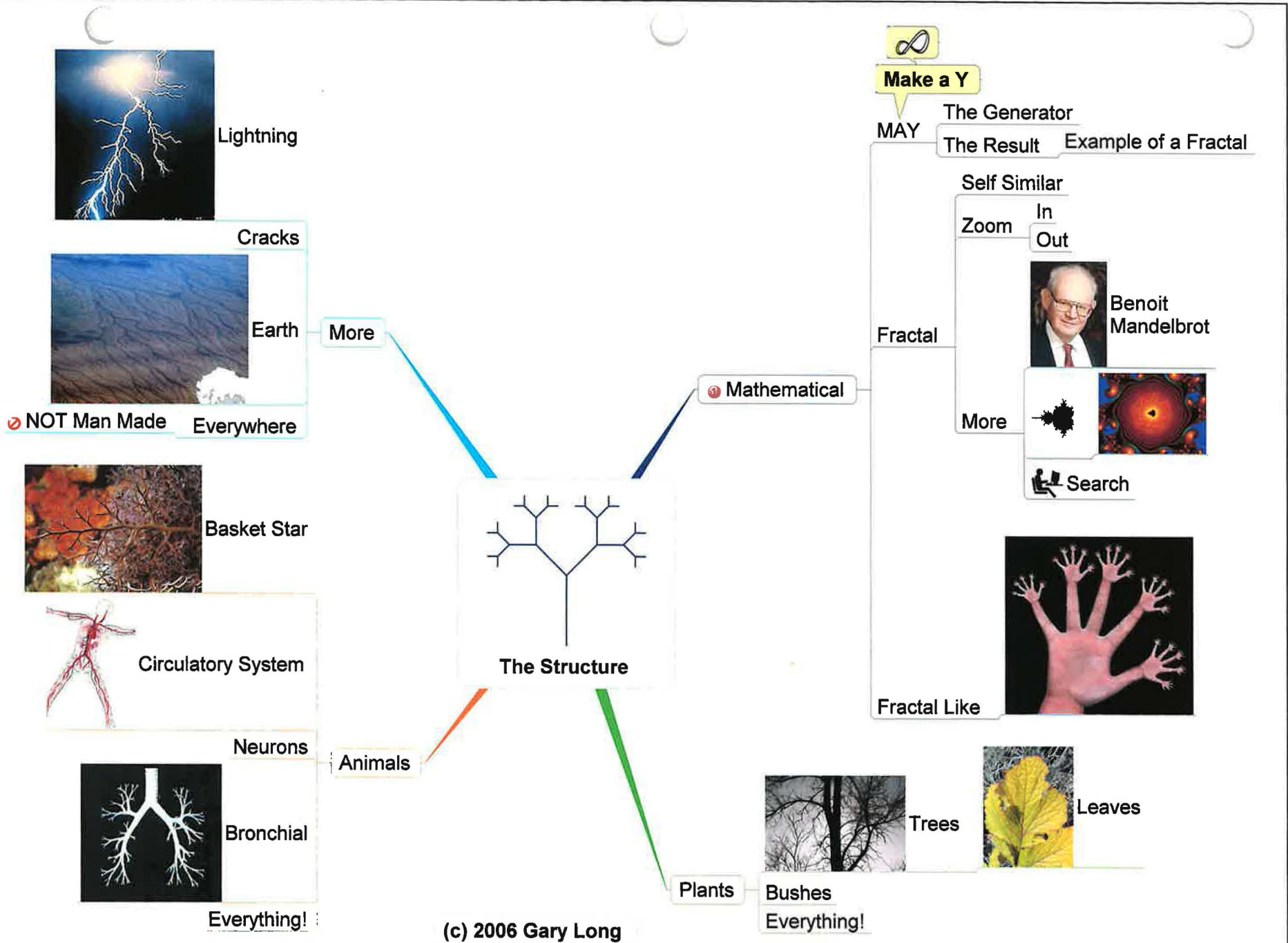


Discover

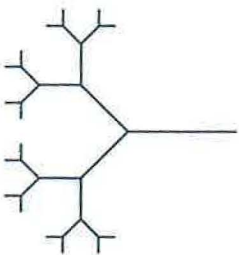
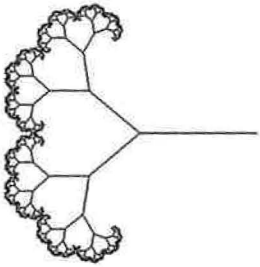
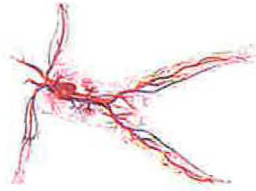
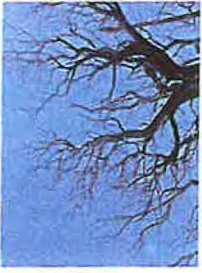
Big Reward!

(c) 2006 Gary Long





(c) 2006 Gary Long



Mind Mapping Reference

Gary Long

The Brain Book, Peter Russell:	Note Taking
Mind Mapping, Joyce Wycoff:	Mind Map on Mind Mapping
Mind Maps, Emilio Estany:	PhotoReading Instructor
The PhotoReading Whole Mind System, Paul Scheele:	Create a mind map.
Quantum Learning, Bobbi DePorter:	Notes
Working Woman, Barbara Lau:	Mind Mapping
Investor's Business Daily, Linda Stockman-Vines:	Be Different

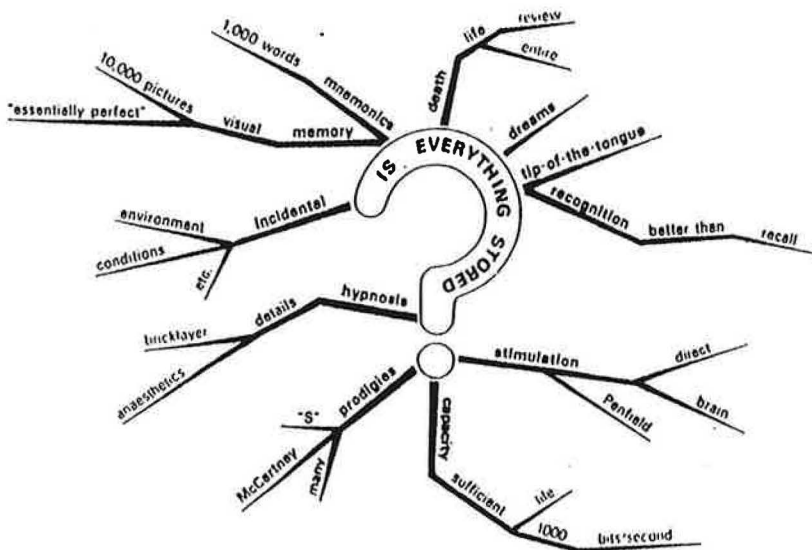
I was in an office somewhere. I could see the desk. I was there and someone was calling to me—a man leaning on a desk with a pencil in his hand.¹⁹

Moving the electrode just one millimeter away would usually bring forth a completely different memory.²⁰

It is unlikely that the points stimulated were the points at which those specific memories were recorded. The points stimulated were in the "association areas" of the cortex, areas involved in the processing and integration of information, and it is most likely that the stimulation was creating a specific pattern of electrical activity that corresponded to a retrieval cue for a specific memory. The memory itself, though, as we saw in the previous chapter, is very probably distributed throughout the brain.

Each of the lines of evidence discussed in this chapter show that we remember far more than we may ordinarily be aware of. Taken together, they suggest that our memories are vastly greater than we usually imagine. They do not prove we remember everything, but given that the brain has sufficient capacity to do so, it is a possibility.

Figure 51



13. Note Taking

- How are ideas linked?
- What are key words?
- Can note taking be improved?
- Are mind maps the answer?
- How are mind maps made?
- When are mind maps used?

As noted in chapter 1, the human brain is very different from a computer. Whereas a computer works in a linear, step-by-step fashion—albeit very fast—the brain works associatively as well as linearly, carrying on thousands of different processes at the same time, comparing, integrating, and synthesizing as it goes. Thus a person often finds that in conversation his mind is not behaving linearly but racing on in different directions, exploring new ideas and the ramifications of what is being said, and at the same time taking in subtle changes in intonation, body position, facial expression, the eyes, etc., as well as the linear sequence of words.

Association plays a dominant role in nearly every mental function, and words themselves are no exception. Every single word has numerous links attaching it to other ideas and concepts. You have only to take

a simple word and start writing down any associations that come to your mind to see that this is true. Given only a minute or two, most people will quickly generate ten or twenty different associations to the word. And these ten or twenty associations are by no means exhaustive. The same word given to ten different people will usually produce sets of associations with very few words in common. Even nonsense syllables have associations. *Boc* is meaningless according to the dictionary, but sit down with a paper and pencil and it is easy to generate several different associations.

Considerable use of this associative power of words is made in creative writing. Part of the art of creative writing is to produce associative images that go beyond the text itself. These offshoots are not linear; they have no well-defined temporal sequence but occur while one is reading, in parallel. Both the writing or reading of such a text tends to make fuller use of the right half of the mind. Scientific writing, on the other hand, tends to be primarily linear, making more use of the left hemisphere. The aim of a scientific paper is not to produce numerous images and send the mind soaring off on other ideas, but to be as specific and linear as possible so that only the one desired idea comes across.

KEY WORDS

We saw earlier that words that had greater significance, had greater meaning, were more outstanding, and generated stronger images were very much easier to remember. When we read, we automatically pick out these more memorable words from the text, and the rest of the material is generally forgotten within a second or two. Thus, take the following sentence: "Astronomers are now suggesting that black holes may not, after all, be entirely black, but may in fact be capable of radiating energy." The key ideas in this sentence, the words that are most memorable and contain the essence of the sentence, are *astronomers, black holes, not black, radiating energy*. The rest of the words are merely grammatical constructions and emphases; they are not necessary for recall.

Key words tend to be the nouns and verbs in a sentence—though sometimes adjectives and adverbs may be significant enough to become key words. Key words are generally concrete rather than abstract. It has been found that concrete words generate images faster than abstract words—one and a half seconds faster on the average—and that the

images they generate are richer and have more associations.¹ For this reason they are better remembered.

In a study by Michael Howe at Exeter University students' notes were examined and the ratio of key words to non-key words measured. It was found that the higher the percentage of key words present in the notes, the better was the recall.² Because of their greater meaningful content key words "lock up" more information in memory and are "keys" to recalling the ideas. In the foregoing case you have only to recall the two keys *black holes* and *radiating energy* to unlock the memory of the main idea contained in the sentence.

So that you can get a feel of key words, go back and count how many words in the above three paragraphs of this chapter are actually key words.*

When a young child begins to speak, he starts with key words, stringing them together directly—for example "John ball," or "Susan tired." It is not until later that sentences are expanded and non-key words included to give expressions such as "I want to play with the ball" or "Susan is feeling tired."

We see the same pattern in the historical development of written language. The earlier written languages tended to contain a much higher percentage of key words. This was probably because there was a shortage of material on which to write, scribes being limited to carving on stone or writing on bark or dried leaves; hence it was essential to use words as efficiently as possible. Thus in a Latin sentence there are a higher proportion of nouns and verbs; prepositions, conjunctions, and pronouns are often integrated into the word endings—hence the more complex grammatical structure of Latin. If we go back further to the ancient Indian language of Sanskrit, we find that sentences consist almost entirely of key words. Yet in Sanskrit there is no loss of meaning or significance; if anything, it is more flexible than modern languages.

KEY WORDS AND NOTE TAKING

Although people such as "S" could remember everything that was said without writing anything down, most people find that taking notes helps their recall. Michael Howe in his investigation of students' notes found that items that were noted were six times as likely to be remembered as items that were not written down.³

*About thirty.

Taking notes serves several functions besides the simple storage of information. Indeed, simply getting every word down without attention to meaning and significance can often interfere with subsequent memory of the material. In addition to being a means of storing information, taking notes (as opposed to mere copying) performs the valuable functions of

- encoding the information;
- imposing organization upon the material;
- allowing associations, inferences, and interpretations to be jotted down;
- bringing attention to what is important; and
- bringing attention to what is written.

These are all very valuable for later recall. It has also been shown that the longer the lecture or study session, the more valuable are notes.⁴

The subject of note taking is, however, rarely studied, let alone taught. Thus, although much of a student's life is concerned with the taking of notes, he is seldom, if ever, given much guidance on how best to do so. Most people start out by writing grammatically correct phrases and sentences. Over time they gradually refine these, developing their own shorthand notation and abbreviations in order to make the notes more efficient, making important items outstanding by underlining. Even so, conventional notes still tend to be very cumbersome and inefficient compared with what is possible with key-word notes. When students are asked to take notes in whatever way they have found to be the most efficient and effective, it is usually found that only 5 to 10 percent of the words written are actually key words.

Since it is the key words that are remembered, notes such as those in Figure 52 have a number of serious disadvantages:

1. Time and energy are wasted in taking the notes.
2. Other information may be missed while the student is busy noting.
3. Time is wasted reading the notes.
4. Further time is wasted sorting out key words from irrelevant words.

As well as serving as an (information storage) system, (notes) also allow one to (encode) the information, (organise) it, make (associations) and (inferences) and think about what is (significant).

Figure 52 Conventional linear notes. Only the key concepts (circled) are really necessary.

5. Key words are dissociated (a) visually, (b) in time—this decreases comprehension and memory.
6. The attention wanders more easily.
7. Review is lengthy and laborious.

In short, conventional notes are more like a system to aid forgetting rather than a system to help remembering.

Since we do not remember complete sentences, it is a waste of time to write them down. It is the key words that are recalled, and it is the key words that should be abstracted and recorded. In selecting the key words, a person is brought into active contact with the information. He is not simply copying down material in a semiconscious manner but is becoming immediately aware of the meaning and significance of the ideas, analyzing them, and forming images and associations between them. The memory process is thereby given tremendous help.

MIND MAPS

Most people who have ever had difficulty remembering something from their notes have probably noticed that they may well be able to remember where it had been written on the page, with what other ideas it was associated, and any outstanding visual associations, such as accompanying diagrams. The memory is in fact working excellently, recalling all possible associations, meaningful connections, and outstanding factors. The reason that the recall is difficult is because the notes were not initially made with an awareness of what would be good for recall.

Notes in neat lines may be highly commendable as far as the writing of essays is concerned, but they offer little foothold for memory. In the system of mind maps, developed by Buzan,⁵ all the various factors that enhance recall have been brought together in order to produce a much more effective system of note taking. To make a mind map one starts in the center of the paper, with the major idea, and works outward in all directions, producing a growing and organized structure composed of key words and key images. (See, for example, the summary mind maps at the end of each chapter.)

Organization, association, clustering, visual memory, outstandingness, and other phenomena that naturally facilitate human memory can be used to make mind maps more effective in the following ways:

Organization. The brain spontaneously imposes its own subjective organization on all the material it remembers. Even when the material is completely random, subjective organization aids recall. The more we deliberately organize the material, the more we are helping the memory process. In making mind maps the organization is made concrete in the structure of the pattern.

Moreover, the very activity of organizing the material is itself helpful to memory. Having to work out where a given piece of information fits into the pattern as a whole, and how it interconnects with other areas, brings you into more immediate contact with the note-taking process than do straightforward linear notes. This increases the depth of processing and so makes for better memory.

The fact that mind maps often take on an organiclike structure reflects their organized nature. An organism is an organized array of living cells. A billion cells put together in a jar do not create an organism; it is the interrelation and organization of the elements that is important. In the same way, it is the organization and interrelation of

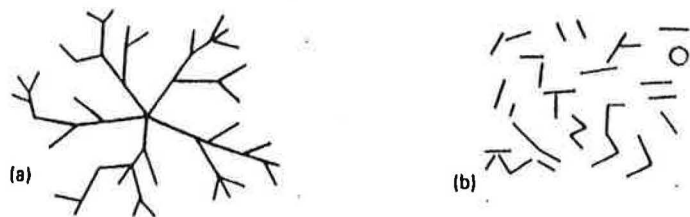


Figure 53 (a) Structured pattern; (b) less structured pattern.

the elements in the notes that give mind maps their organic structure and their value.

Key Words. Key-word notes are far more effective than phrases or sentences. The brain automatically drops the inessentials, and we should do the same in note taking. So only record the key ideas. This has several additional advantages:

1. The bulk is significantly reduced.
2. The recorded words are rich in imagery.
3. The very act of extracting the key words involves you more in understanding the material and further increases the depth of processing.

Association. Since words and ideas that are closely associated are recalled together, it helps memory if they are put together visually in the notes. This reinforces the association and results in a natural clustering of ideas into themes.

Since all the ideas in any one set of notes will be related to the theme of the notes, it is best to start with a key word for the overall theme in the center of the page. The center should be a strong visual image so that everything in the pattern is associated with it.

Clustering. As well as having a well-defined center, a mind map will naturally tend to have a number of subcenters radiating from it, and from these a number of sub-subcenters, and so on. In most practical situations there are seldom more than seven or eight subcenters, so the material can be organized into a number of easily remembered chunks. Similarly, the number of chunks radiating from each subcenter again will usually be within the immediate memory capacity.

Visual Memory. Since visual images are much better recalled than words, the more visual the mind map is made, the better. This can be done in a number of ways:

1. Each word should be printed rather than written in script. This gives the word a clearer visual image, makes it more easily remembered and less likely to be confused with other words. Lower-case letters are better than capitals, since they are more easily read and give better shape recognition.⁶ However, where

the word is to be made more outstanding, capitals can be used with good effect.

2. Each of the key words should be printed on a line and each of the lines joined to other lines to give structure to the pattern. The initial inclination might be to join the words up by lines, but this is less flexible. It creates a weaker visual structure than does writing words along the lines themselves, and tends to produce networks that close in on themselves, making additions difficult.
3. Colored images are much better remembered than black and white ones. Therefore, use as many colors as possible in a mind map. Different colors can be used for different themes. They can also be used to make specific parts of the map outstanding. The more daring you are with color, the better.
4. The mind maps can be given depth. The centers and subcenters can be given three-dimensional shapes, providing the map with a more solid visual structure.
5. Use other images besides words. Whenever a simple visual image comes to mind, use it. If diagrams and pictures are part of the material, include them as part of the pattern.
6. Use arrows to link and associate different areas in the pattern.
7. Groups of words can be outlined or their background shaded to hold them together as a unit.

Outstandingness. Whenever an item is outstanding in some way or another, it is better remembered. When you make mind maps, every center should be unique; you should use different key words, different colors, and different shapes. Wherever parts of the pattern stand out, they will be better remembered.

Conscious Involvement. The more you participate actively and consciously in the note-taking process, the better. Mind maps intrinsically are more fun and spontaneously hold the attention more. Wherever possible, think of original ways in which to note the material. The greater the originality and creativity, the greater the interest, and the better the memory. Wherever you have been particularly creative in

a pattern, you will always remember that part well. Try to be creative throughout.

With conventional linear notes spontaneous associations have to be held over until you reach the place where they are relevant, and by then the idea may well have been forgotten. Because mind maps are growing the whole time in all directions, associations can be included as soon as they arise. With mind maps the faster you go, the better.

Everybody's memory is a personal affair. We each have our own associations and our own mnemonics. So allow your pattern to be personal, including your own codes and symbols as much as possible. Remember only to use key words and key images. When you look for key words, always remember that they are primarily nouns, and they contain the essential substance of an idea. It might be a good exercise to go back and pick out the key points on mind mapping from the last 4 pages. As you do so, compare them with the mind map in Figure 54, which contains the basic information contained in these pages. As well as showing you how a mind map is created, it will also serve as a very useful review of this section.

WHY USE MIND MAPS?

You will notice that mind maps are reminiscent of the semantic memory structures we looked at on pages 105-106. The similarity is no accident. Since they include as many of the natural memory processes as possible, the mind maps are beginning to take on the same structure as that of the memory itself. A mind map works in the same manner as the brain itself. It is therefore an excellent interface between the brain and the written or spoken word.

Paradoxically one of the greatest advantages of mind maps is that they are seldom needed again. The very act of constructing a map is itself so effective in fixing ideas in memory that very often a whole map can be recalled without going back to it at all. A mind map is so strongly visual and uses so many of the natural functions of memory that frequently it can be simply read off in the "mind's eye."

APPLICATIONS OF MIND MAPS

Whenever information is being taken in, mind maps help organize it into a form that is easily assimilated by the brain and easily remembered. Thus they can be used for noting books, lectures, meetings, interviews, telephone conversations, etc. (fig. 53).

Whenever information is being retrieved from memory, mind maps allow ideas to be quickly noted as they occur, in an organized manner, obviating the relatively laborious process of forming neat sentences and writing them out in full. They therefore serve as a quick and efficient means of review, and so keep recall at a high level.

In a study of note taking in which recall was tested after review, it was found that good notes were "definitely useful for review, but poor notes were not."⁷ Howe compared the review value of mind maps using shape, color, boxes, and different letterings with ordinary prose notes and found that recall rose by 50 percent with mind maps.⁸

In another instance a college lecturer in English was concerned that "of the 300 or so books I have read in the last 10 years on Theology, Philosophy, Psychology, Health, Nutrition and Literature, only the haziest of notions of their contents remained in my memory. And yet I had understood almost everything in these books when I read them. . . . [I now realize] understanding is *not* remembering." Using mind maps and a systematic procedure of review and rereview, he reports that "in two days I had three or four patterns of all I needed from the book. . . . It was interesting to find a note at the end of the book saying that it had taken me two weeks to read it in 1969. From two weeks to two days, *with* [mind maps], was quite an improvement."⁹

Because of the large amount of association involved in mind maps, they can be very creative; they tend to generate new ideas and associations that have not been thought of before. Every item in a map is in effect the center of another map, and one could go on generating maps *ad infinitum*.

Mind maps are very valuable in any planning or organization, whether it is of books, reports, lectures, meetings, study, daily tasks, or future activities. In this case do not try to put the material into a linear form until all the relevant information has been retrieved and incorporated into the pattern. Then go over the pattern labeling the branches (1), (2), (3), etc., according to whatever order seems appropriate. By leaving the linearization to last, you avoid the messy problems that arise

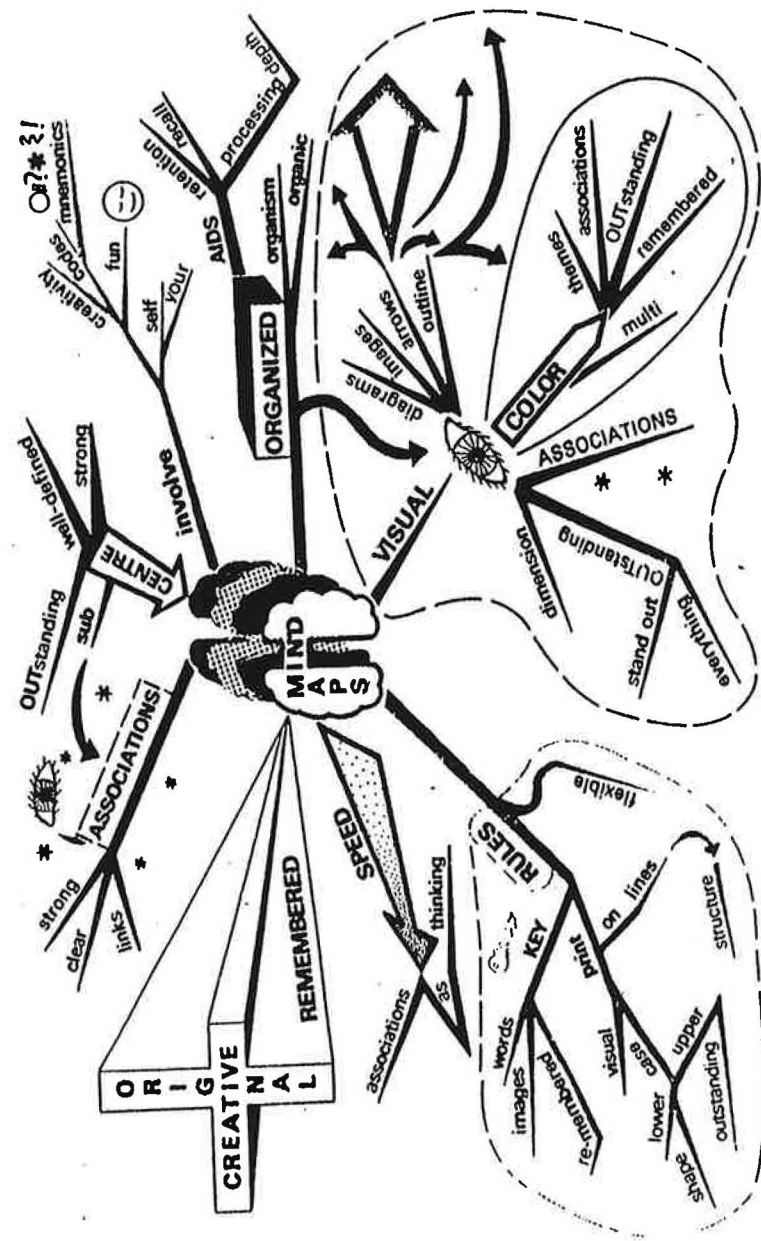


Figure 54 Mind maps on mind-mapping.

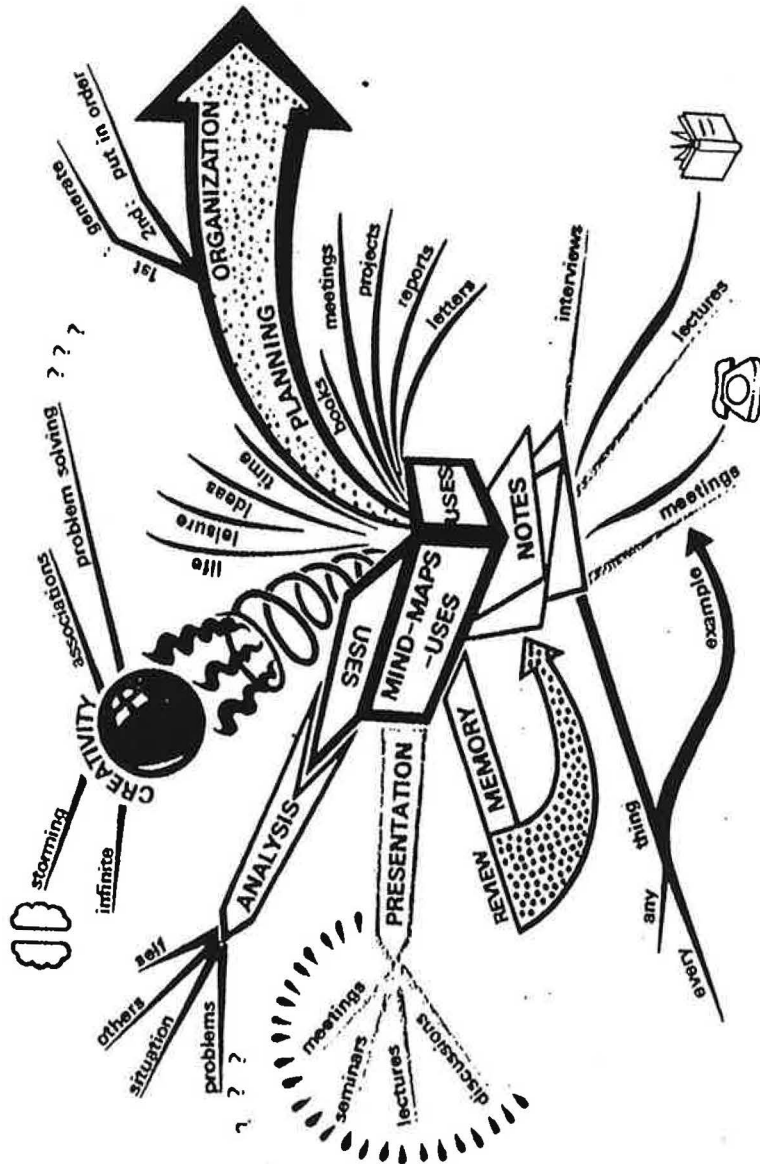


Figure 55

in lists when you start shuffling things around as you recall later points.

The creative potential of a mind map is very useful in brainstorming, either individually or in groups. If you are looking for a solution to a problem, you need only start with the basic problem as the center and generate associations and ideas from it in order to arrive at a large number of different possible approaches, many of which you would never have thought of if you had approached the problem linearly. In this situation do not discard "useless" solutions immediately. Put them into the pattern, as they may themselves later generate useful associations.

Mind maps can also be valuable in giving presentations and lectures. If the key points to be covered are put up in front of the group, it makes it easier for the others to follow. It also helps the lecturer keep to his themes and know where he is going (fig. 56).

Mind maps can be used with great effectiveness in almost any instance where one would normally write or jot down words. Even a book, which is a long linear list of ideas when it appears in print, can be approached as a series of mind maps in the writing stage. This book, for example, was not written from beginning to end as a series of sentences; it was drawn as a set of 7 major mind maps, springing from which came some 150 minor maps. All of the basic work was done in mind-map form. It was only when the book was finally being prepared for printing that it was transposed into a linear form.

In short, mind maps can be used in virtually any situation where there is a flow of information between the mind and the outside world, no matter which direction the flow (fig. 57).

Figure 56

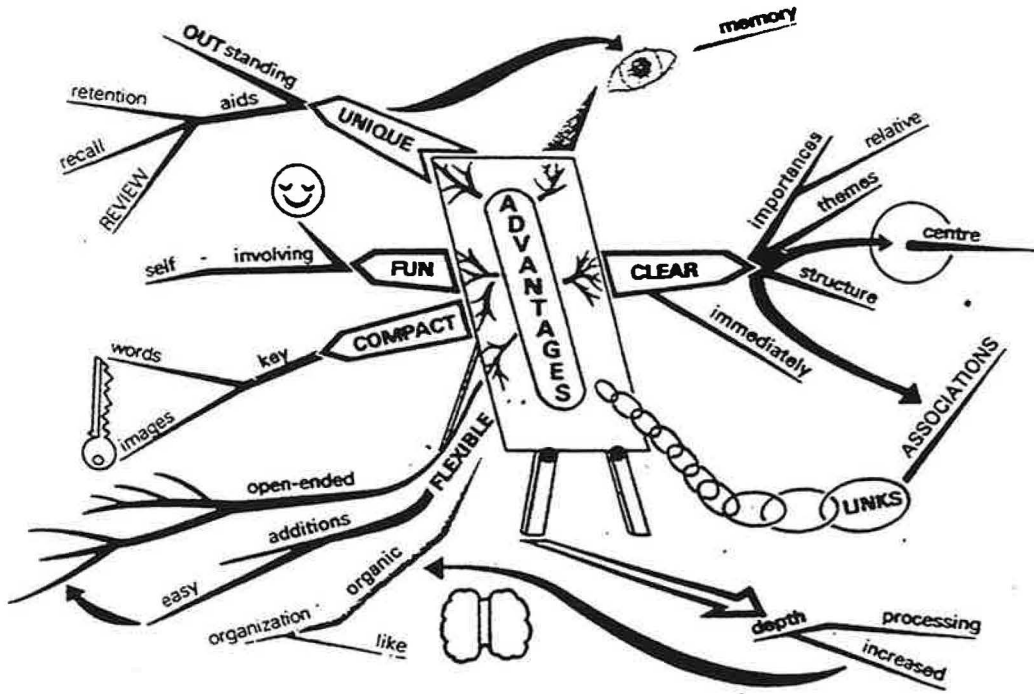
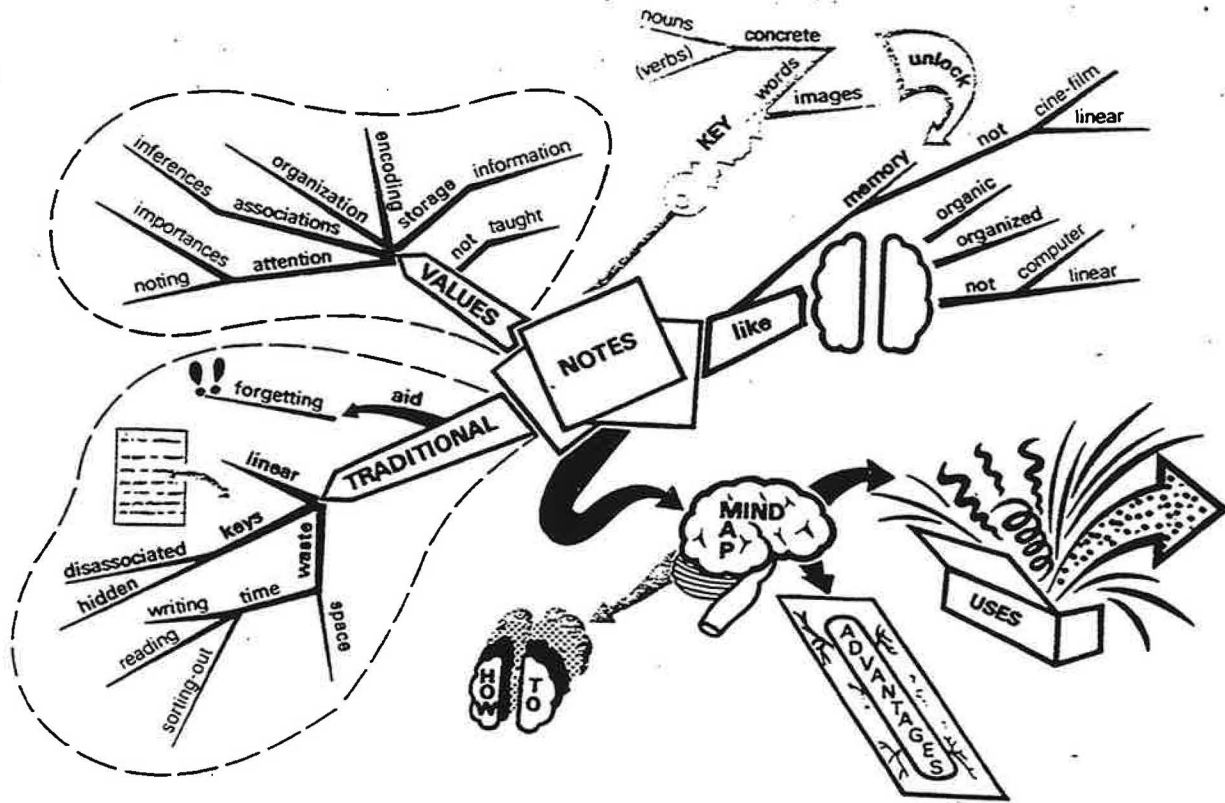
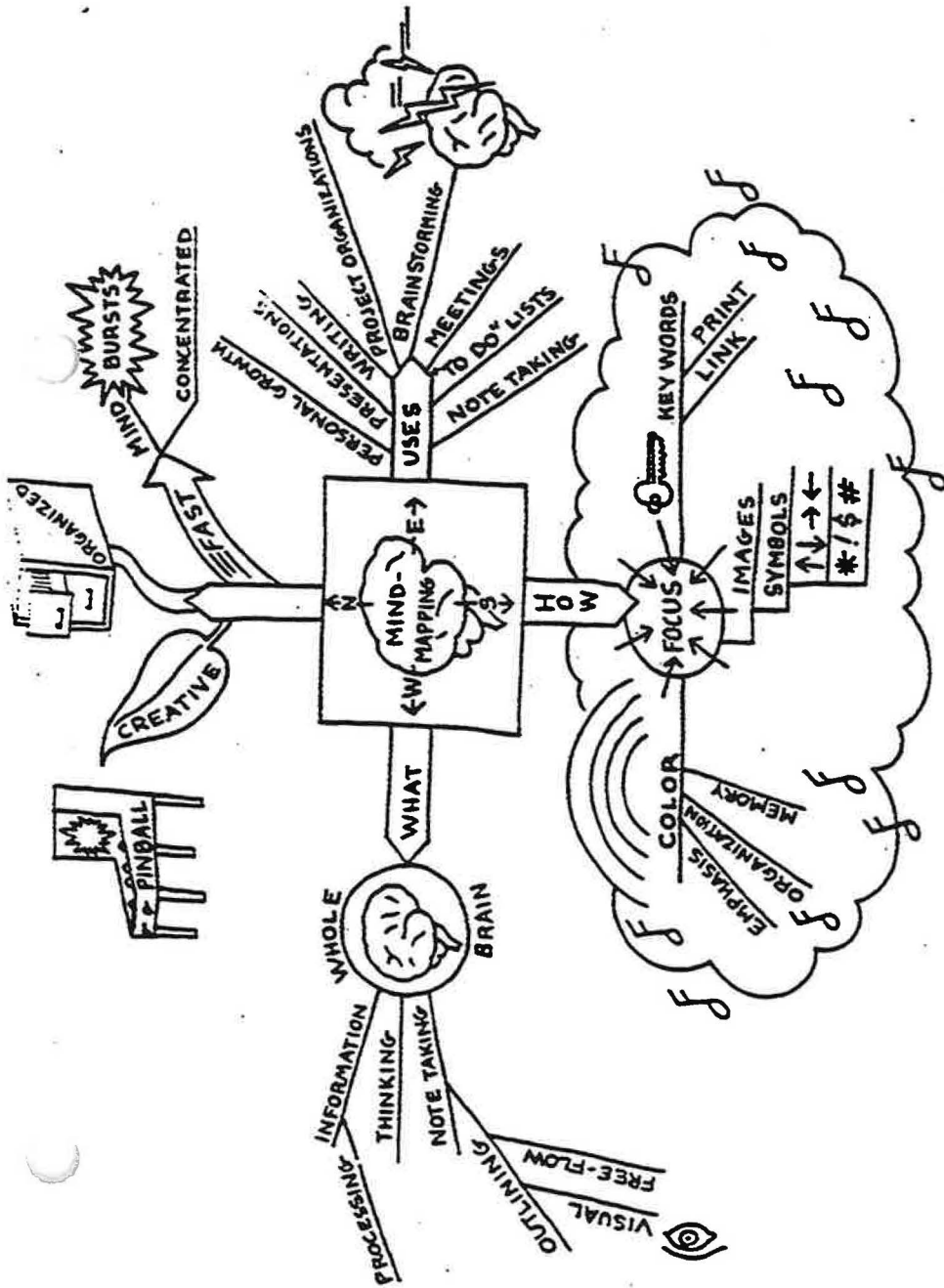


Figure 57





MIND MAPPING
Joyce Wycoff

Mind Maps

A mind-map is a creative pattern of connected ideas. It is similar to a sentence diagram, a road map or a blue print, Although its is often called "clustering" or "mapping" there are some important differences which you'll soon discover.

While any note-taking system can sort material, the unique value of mind mapping is that you'll understand your material far better and boost your recall of it dramatically.

Why? When done properly, mind maps *appeal powerfully to the right side of the brain.* (which processed color, relationships, pictures and symbols). This team up with the traditional appeal of words (which are primarily a left-hemisphere domain activity). When done with colleague or partner, mind maps can appeal to the auditory, visual and kinesthetic learners. Mind maps can be used for personal note-taking, planning, review, problem solving, speeches and studying.

The steps to making mind maps are simple:

1. Start with a topic and circle it in the center of your paper.
2. Add branches to hold key sub-topics.
3. Add details to the branches.
4. Personalize it for the "right brain"

In textbooks or non non-fiction, your branches might be labeled by chapter sub heading, bold face, print or common and likely categories, such as who, what, how, why, when and where.

Or in short articles, it may be by segment such as history, geography, sociology or even by chronology. In fiction, branches could be label by characters, setting, plot, conflicts and resolution.

Here are some tips on how to personalize it for the right brain, since that's the uniqueness and power of mind maps. To be truly effective, use at least **three colors** and use **pictures** and **symbols** for every key idea. **Print all words** on lines using **UPPER** and lower case. Use your paper horizontally and use medium thick pens. Vary the size of words by level of importance.

Use a different color for each branch and use arrows to show relationships. Keep all words near "eye level" and easy to read. Put creativity, zest, action, and personally in your mind map.

Use them every chance you can since practice helps makes the process easier and results more satisfying. Expect big results: more fun, better understanding and stronger recall.

EMILIO ESTANQ
THE EXPANDING MIND

author is trying to sell you and is composed of key terms.

- The solutions emerge to suggest a remedy for the problems.

The train of thought is one scheme used by authors to present information. Discover other structures within articles or books. These structures for presenting information show you where to super read and dip to quickly get the information you need.

One more point about super reading and dipping: though these strategies may sound like conventional speed reading, they are not. Super reading and dipping take place after you PhotoRead. In addition, the goal is not to memorize the material or make it all available to the conscious mind. Instead, super reading and dipping help you sense its structure, retrieve essential information, categorize the material in a meaningful way, and build a mental summary. As a result, your comprehension and long-term retention of the material increases.

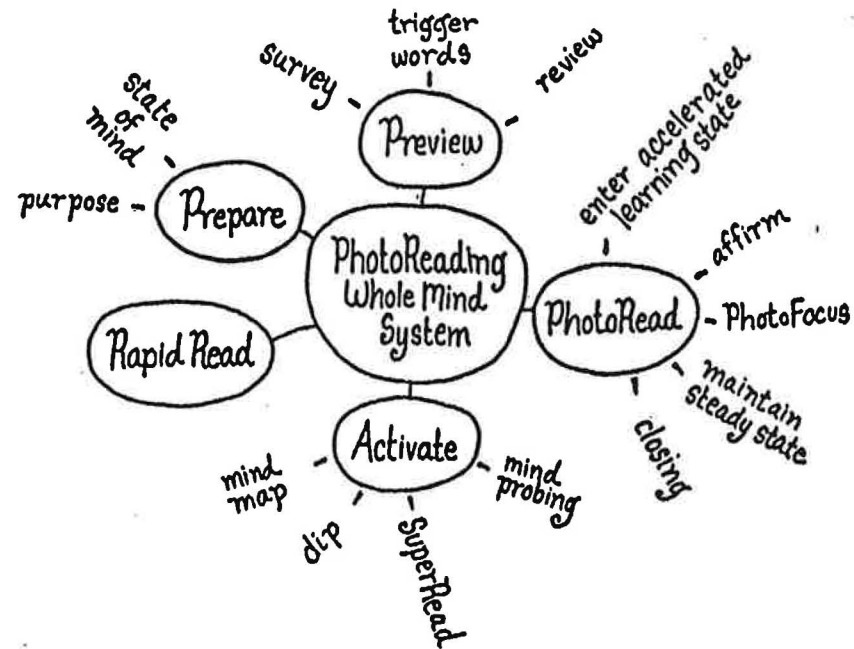
Create a mind map

While looking through a box of my old graduate school materials, I discovered a wonderful contrast between two types of class notes. One type of notes was the traditional linear outline of everything the professor said—an endless series of unintelligible scratching. I remembered trying to decipher those notes while reviewing for tests; what a horrid chore.

The second type of notes was an alternative, highly visual set of colorful diagrams called "mind maps." They reminded me how fun it was to create and review class information. Looking them over brought back a flood of vivid details. Mind mapping, as it is called, had transformed my classroom experience forever.

Mind mapping is fast, highly efficient, and promotes long-term retention. It is an excellent way to activate and synthesize information after super reading and dipping.

Following is a mind map that sums up the five steps of the PhotoReading whole mind system.



After looking at a few mind maps, you can deduce the basic guidelines for this system:

- Put the core concept in the center of the page.
- Write supporting concepts on connecting lines radiating from the center.
- Use key terms only—often they will be trigger words identified in your preview. Express each concept in three words or less.
- Include visual elements—cartoons, images, symbols, icons—wherever they seem appropriate.
- Add color. In the above mind map, for example, all the words pertaining to Step 1 could be written in one color, all those second color, and so on.



Read
Bullets

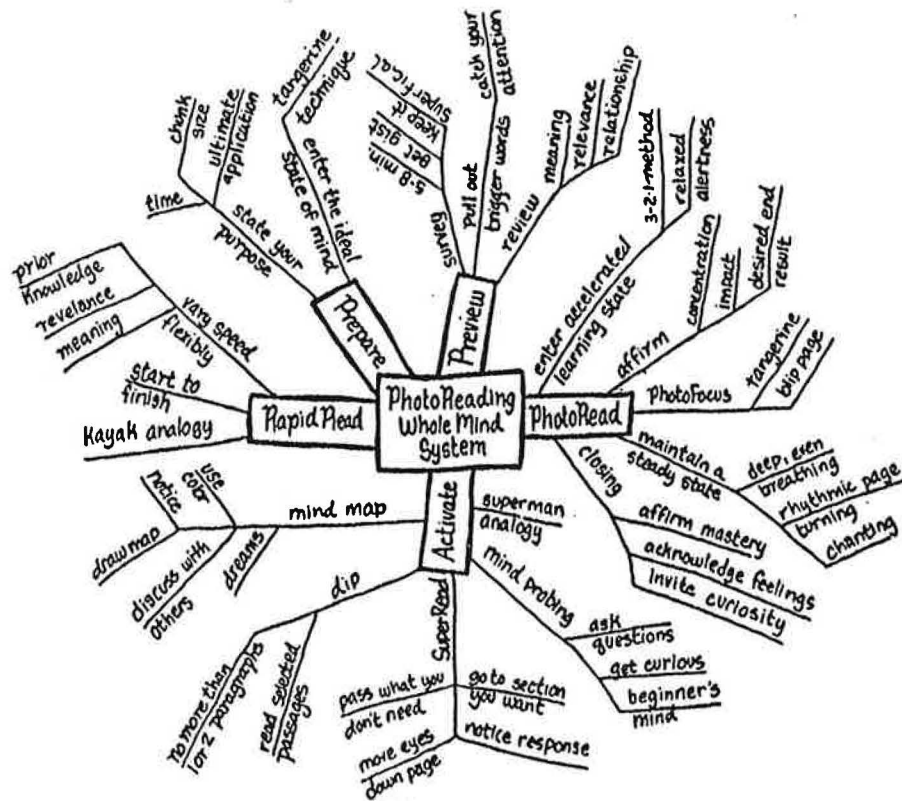
the best books on mind mapping explain this technique }
They are *Use Both Sides of Your Brain* by Tony Buzan }
Mapping by Joyce Wycoff. }
and mapping, you may also find it helps to use sheets } *

of paper that are larger than the standard 8-1/2 by 11 inches. If you do stick to standard-sized paper, at least turn the paper sideways so that you are writing on a horizontal frame. Most people find this gives them more room to record ideas.



Mind maps are highly individual. Your mind maps will look different than anyone else's, even if you are making notes on the same material. That is okay. Ideally, your mind map reflects your experience. The images and associations that promote your long-term memory are unique to you.

Following is another mind map of the whole mind reading system, illustrating a different format:



Even if it feels awkward at first, play with mind mapping as an activation exercise. Because mind mapping uses visual memory and spatial intelligence, it accesses the most powerful memory centers of the brain. Moreover, mind mapping mirrors the way the mind works—linking ideas by branching association rather than linear logic. Perhaps that is why mind maps begin to feel so natural so soon.

Gain a new experience of memory



This book is about shifting your paradigm of reading as a whole. To aid that process, we need to reconsider the role of memory.



In the last few years, I have become fascinated by the work of Gerald Edelman, MD, a Nobel prize winning neurologist and author of *The Remembered Present* and *Bright Air, Brilliant Fire*. Edelman's ideas offer the most convincing explanation I have yet found for what may be happening when we activate material we have PhotoRead.

Edelman's theory claims that memories are not stored in a localized fashion in the brain but are reinvented each time we access them. What happens when we remember is that we create a mental context for an idea, re-enter important cues or bits of related information, and follow neural "tracks" that have been laid by previous experience. When enough cues are entered and the correct neural pathways are stimulated, the ideas and images we want to "remember" are not recalled from storage but are recreated right on the spot.

Applying this view to PhotoReading and activating, we begin to understand what might be happening to produce such remarkable results. When we PhotoRead, the brain processes written materials more physiologically than cognitively. That physical exposure to the brain opens neural networks inside the brain that can lead to later mental connections.

The result is increased speed, familiarity, and ease of comprehension. You will have the ability to connect with the most important information almost instantly, rather than trying to figure it out as you read. You do not have to waste time investing hours in a book to get the knowledge you want.

Picture this: You've just come out of an important three-hour planning meeting. For most of that time, you were scribbling notes feverishly, trying to preserve the important points everyone was making. You get back to your desk, open your notes — and just stare. All you see is a bunch of words. Even though your jottings are comprehensive, none of the important points leap out at you. You have bits of what everyone said, but you're not sure how they fit together. It's as if you've got the pieces of a jigsaw puzzle, yet you can't see the whole picture.

What do you do? Embarrass yourself by going back and asking the others to explain what they meant? Take whatever action you can and hope it coincides with the overall plan? Pray for divine guidance?

If you've ever had such a problem, you need this chapter. Here you will discover note-taking techniques that will increase your ability to see the big picture, help you review more efficiently, and enable you to recall more accurately.

Why Take Notes, Anyway?

Effective note-taking is one of the most important skills anyone ever learns. For students, it often means the difference between scoring high or low at test time. For business people, it can mean keeping track of important tasks and projects instead of getting lost in a sea of scattered slips of paper.

The reason for taking notes in the first place is that note-taking enhances recall. The amazing human mind — your mind — stores everything you see, hear, and feel. Your memory is perfect, just like a computer. The trick is not to help the mind remember; it does that automatically. The trick is to help yourself *recall* what's stored in your memory.

Most of us recall best when we *write things down*. Without taking notes and reviewing them, most people are able to recall only a small percentage of material

Check the boxes below if any of the statements sound familiar.

- My notepads contain pages and pages of incomprehensible notes.
- My desk is cluttered with scraps of paper reminding me to do this or that.
- I'm tired of using index cards to organize my speeches and reports.

— *If so, read on!*

This chapter gives you step-by-step directions for two note-taking methods that will help you eliminate the negatives checked above.

they heard or read as recently as the day before. Effective note-taking saves time by helping you file information easily and recall it on demand.

"Mental notes" don't work because the brain focuses on whatever is vying for its attention at a particular moment. And even when we do remember a "mental note," it often comes back to us in the same fuzzy, haphazard way we stored it in our brains originally. So if you want to remember something — if you *have* to remember it — write it down.

But what exactly should we write down? How *much* should we write, and in what format? Should we take notes in a traditional outline form, a summary, or maybe a series of statements? What should good notes look like?

The Not-So-Good, Old-Fashioned Outline Format

Most of us were taught at some time to take notes using an outline format, similar to the notes at right. This style was taught to many of us by teachers who outlined their notes or lectures and simply figured that if they taught in outline form, we should learn in outline form. The trouble is, even when teachers work from an outline, they rarely deliver the material in the same way. They forget things and backtrack. They digress. Someone asks a question, and the teacher answers it, often including important material that wasn't in the outline at all.

When a speaker backtracks to something she forgot, you've got to find a way to fit that information into your nice, neat format. Instead of taking effective notes and really understanding what's being presented, you end up losing the substance of it in the "form" of your note-taking. The traditional outline style also makes it tough to get an overview and see connections between ideas. Furthermore, reviewing outlined notes is so boring, you're tempted to just skip it all together.

Traditional outline note-taking forms are usually difficult to follow and rarely present the "true" substance of the subject matter.

Beowulf

I. Background information

A. History

1. Oldest epic poem written in English
2. Composed in the 8th century
3. Only existing manuscript damaged in a fire in 1731, many lines and words of poem lost

B. Language

1. Written in Old English (Anglo-Saxon)
2. Alliterative meter - alliteration is principal organizing device
 - a) Each line is divided into two half lines, with four strong stresses per line
 - b) Stressed syllables in first half-line alliterate with stressed syllables of second half line
 - c) Example: "In a somer seson, whan soft was the sonne"
(Piers Plowman)

II. Text

A. Plot

1. Poem is about two Scandinavian tribes, the Danes and the Geats
2. Beowulf - hero of story, warrior
3. Beowulf fights three monsters: Grendal, Grendal's mother, and dragon
4. Monsters represent distortion of social form, associated with social evil
 - a) Eat people
 - b) Don't pay feudal money to kings

Working as the Brain Works

Your main objective in note-taking is to *get the key points* from books, reports, lectures, whatever. Good, effective notes help you to remember details about the key points, understand major concepts, and see relationships among them.

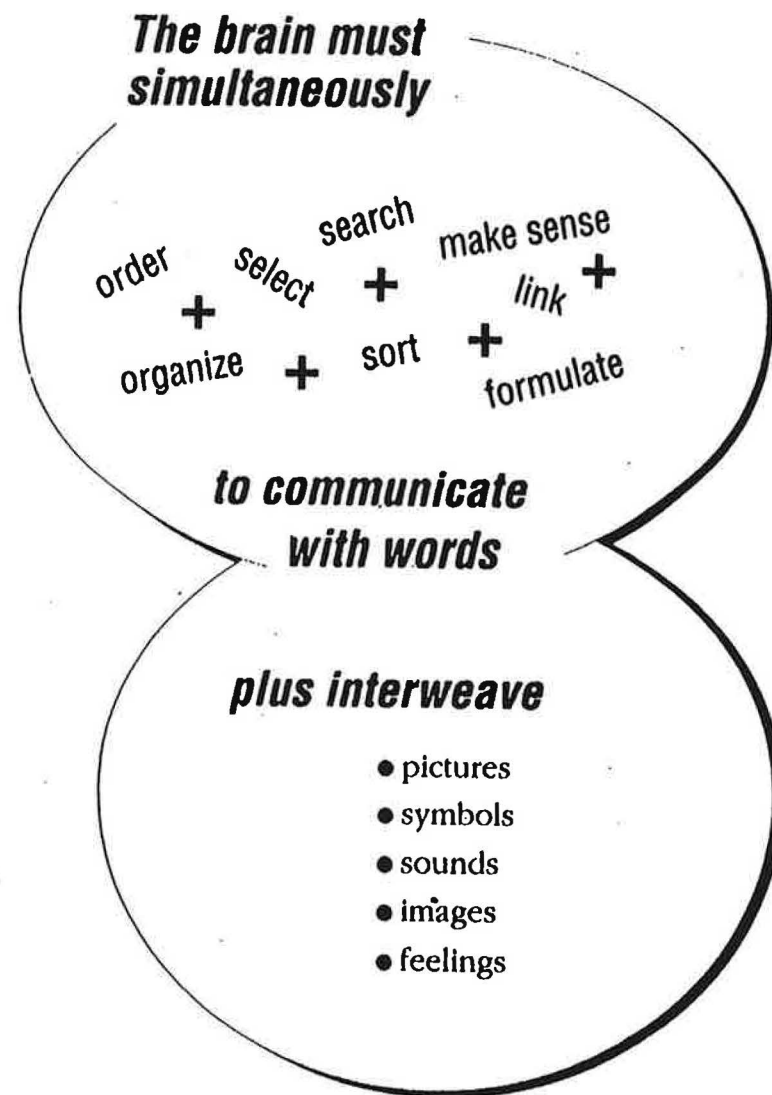
Recent research on how the brain stores and recalls information has resulted in new note-taking techniques that make it possible for you to be better organized, increase your understanding, retain information longer, and gain new insight.

Until recently, it was thought that our brains processed information linearly — that is, in a structured, ordered format, like a list. We assumed this because the two most conscious forms of human communication are both linear — speech and print. But that's because physical limitations require that our mouths form only one word at a time. And if we want others to understand us, those words need to be in some sort of order, rather than just a jumble of sounds. Now, however, scientists recognize that this is the “outcome,” not the “process” of communication. In fact, the process the mind goes through before it produces those linear speech patterns is anything but linear.

For us to communicate with words, our brains must simultaneously search, sort, select, formulate, order, organize, link, and make sense of a mixture of pre-conscious words and ideas. At the same time, these words are interwoven with pictures, symbols, images, sounds, and feelings. So what we have is a marvelous jumble that bounces furiously around in the brain but comes out one word at a time, connected by logic, ordered by grammar, and making pretty good sense.

That's what happens on the communicator's end — in the brain of the person who's talking. The same kind of thing happens for the people hearing those words. Although they hear them one at a time, understanding

Linear communication requires the mind to sort through bits of diverse, random, and chaotic information.



them is a complex matter. Listeners must define each word in the context of the words before and after it. Then, based on their own perceptions, experiences, and biases, they must interpret what the words mean.

Research into this complex process of communication has resulted in a reevaluation of how textbooks are written, how effective teaching is done, and how effective notes are taken.

Following are two note-taking techniques that I have found to be especially effective — Mind Mapping and Notes:TM (which stands for Notes: Taking and Making). Both styles can enable you to see the whole picture at one glance and make the mental connections that help you understand and remember.

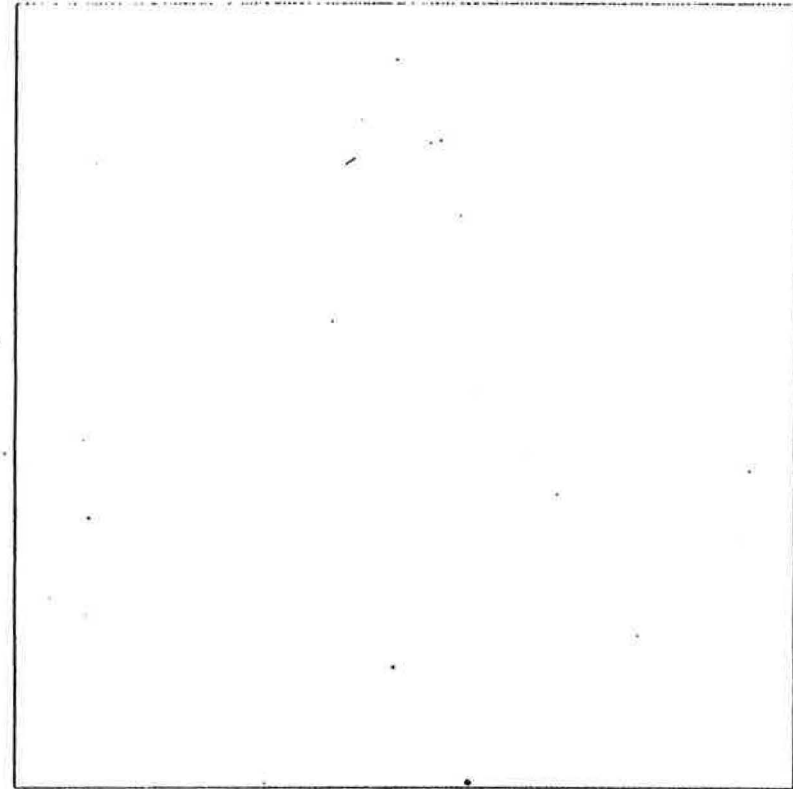
Mind Mapping™

This is a whole-brain approach that lets you fit an entire subject on one page. By using visual images and other graphic devices, Mind Mapping makes a deeper impression.

This technique of note-taking was developed in the early 1970s by Tony Buzan and is based on the previously mentioned research on how the brain actually works. Your brain often recalls information in the form of pictures, symbols, sounds, shapes, and feelings. A Mind Map uses these visual and sensory reminders in a pattern of connected ideas, like a road map to use for studying, organizing, and planning. It can generate original ideas and easy recall. It's easier than traditional methods of note-taking because it activates both sides of your brain (thus the term "whole-brain approach"). It's also relaxing, fun, and creative. Your mind will never balk at the thought of reviewing your notes when they're in the form of Mind Maps!

Take a moment and look at the page to the right. Close your eyes and picture an apple on that page. (Do this now.)

Mind Mapping is a whole-brain technique using visual images and other graphic devices to form impressions.



Close your eyes and imagine an apple on this page.

Where did you picture the apple on the page? In the upper right corner? Lower left? In the center? Was your picture black-and-white or color?

Most people will picture things in the center of the page and in color. That's how the brain stores information. Naturally, the best notes work *with* your brain rather than against it.

Now look at the Mind Map at the right. (It's a Mind Map of notes about Mind Mapping.) Study it for a minute.

Now, test yourself. Look away or cover it up and ask yourself the following questions:

- What are the titles of the four main branches?
- Where does the bottom arrow point to?
- What symbols are on the upper left branches?
- What are three tips for better Mind Maps?

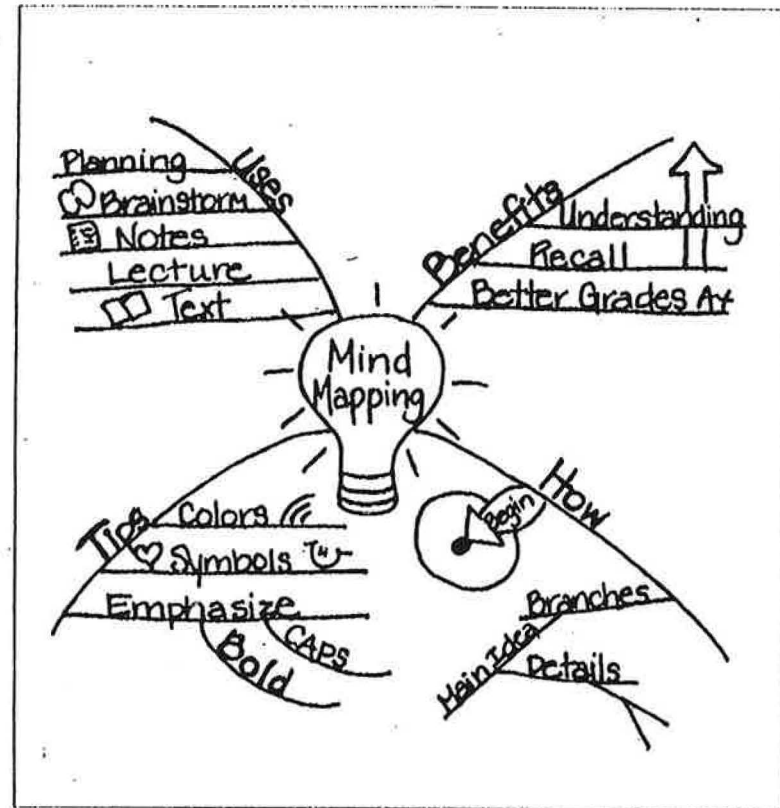
You may amaze yourself by remembering all or most of these things — even if you've always considered yourself poor at noticing details. It's easy to remember details from a Mind Map because it's written in a form that your brain naturally follows.

Mind Maps are particularly good for planning and organizing things. Remember the planning meeting we discussed at the beginning of this chapter? You could have made the entire meeting more effective if you had Mind Mapped the agenda *beforehand*, then used your Mind Map as a guide in following what everyone had to say. Details could have been filled in as the meeting went along — and you wouldn't have needed to scribble so furiously for three hours.

How to Make a Mind Map

To make a Mind Map, use colored pens and start in the middle of your paper. If it's convenient, turn the

Details from a Mind Map are easy to remember because they follow the brain's pattern of thought.



paper sideways to provide more space. Then follow these steps:

1. Print the main topic or idea in the middle of the paper and enclose it in a circle, square, or other shape. For instance, my Mind Map is enclosed in a light bulb.
2. Add a branch extending out from the center for each key point or main idea. The number of branches will vary with the number of ideas or segments. Use a different color for each branch. (In this book, we don't have the advantage of color, so just imagine it.)
3. Write a key word or phrase on each branch, building out to add details. Key words are those that convey the heart of an idea and trigger your memory. If you use abbreviations, be sure you're familiar with them so you'll instantly be able to identify what they stand for days or weeks later.
4. Add symbols and illustrations for better recall.

Here are some ways you can make your Mind Map notes more memorable.

- Write legibly, or print, using CAPITAL letters.
- Make important ideas larger so they will jump out at you when you read back over your notes.
- Personalize your Mind Map with things that relate to you. The symbol of a clock might mean this item has an important deadline. Some people use arrows to point to "action items," or things they must act on.
- Underline words. Use **bold** letters.
- Be creative and outrageous in your design, because the brain remembers the unusual more easily.
- Use random shapes to point out certain items or ideas



Tips to Make a Mind Map

- In the middle of the paper, enclose the main idea.
- Add a branch from the center for each key point — use colors.
- Write a key word/phrase on each branch, building out to add details.
- Add symbols and illustrations.
- Use legible CAPITAL letters.
- Make important ideas larger.
- Personalize your Mind Map.
- Underline words and use **bold** letters.
- Be creative and outrageous.
- Use random shapes to point out items or ideas.
- Construct Mind Maps horizontally.

- Construct your Mind Map horizontally to increase the amount of room you have for your work.

Additional Tips

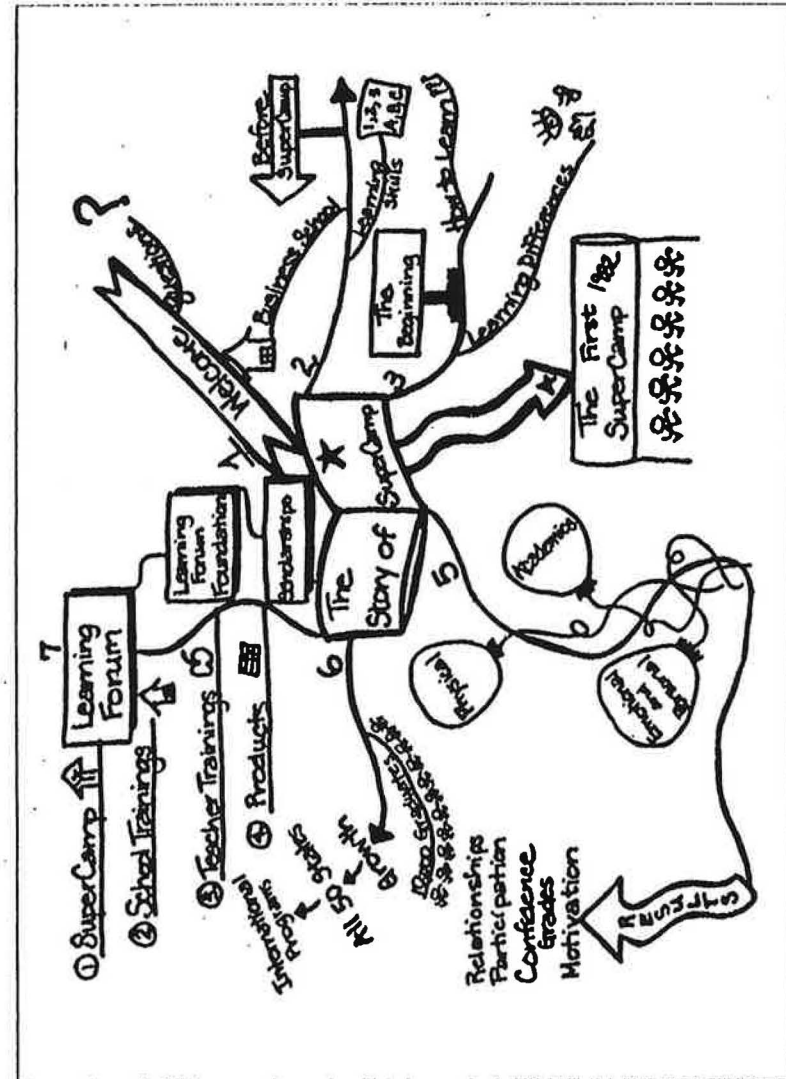
To summarize information from nonfiction books, branches can be given the same titles as the boldface print or chapter headings in the text. Subheadings throughout the chapters can also provide branches that are meaningful. If you're like me, you often read a book with hopes of learning some specific information. Take time to preview the book before you actually read it, and make a Mind Map of the points you hope to learn about. Then fill in the branches as you read.

If you're at a loss for a way to organize your notes for, let's say, that planning meeting we've been talking about, just put "Planning Meeting" in the center and label each branch with the name of a person who's giving a report at the meeting. Then each report can flow from an individual branch.

Some people like to redo their Mind Maps later as a review. Reviewing information within twenty-four hours of hearing it is an important key to retention. Other people like to take notes in a different form during a speech or lecture, then Mind Map them later. One man I know is a police officer who takes notes in Mind Map form when he's interviewing a witness, then uses those notes when filling out the linear, logical forms required by his department.

In addition to being an effective method of note-taking, Mind Mapping works well for other tasks. It's ideal for writing and remembering presentations you have to make, because you can fit an entire speech onto one page. Just a glance at your sheet of paper will remind you of your next topic of discussion, with key words provided to prompt your memory. It works equally well for reports or term papers, though you may need to use more than one map for topics with many

Creating Mind Maps horizontally increases the amount of room you have for your work, like the speech below.



details. I've even used Mind Maps for letter- and memo-writing and for telephone conversations, just to be sure I don't forget anything important.

For a more complete look at Mind Mapping and its uses for everything from note-taking to brainstorming and from project management to personal growth, see Joyce Wycoff's book *Mindmapping: Your Personal Guide to Exploring Creativity and Problem-Solving* (New York; Berkley Books, 1991). This book not only gives excellent background on understanding the brain and creativity, it also describes in detail the many applications of Mind Mapping.

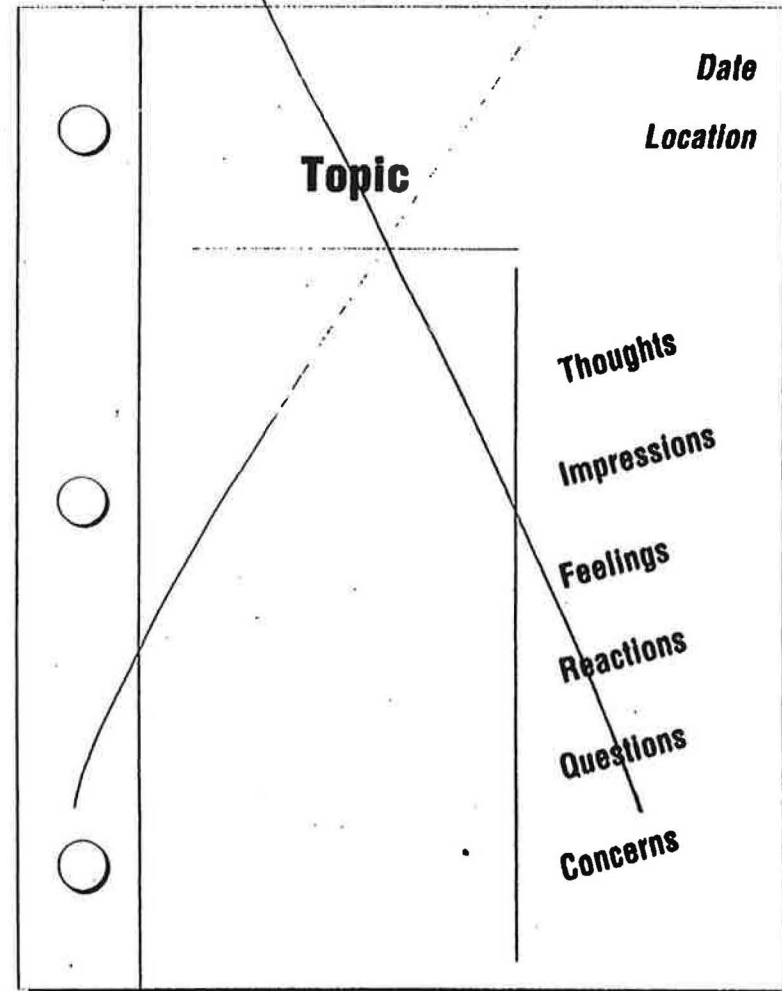
Notes:TM

Notes:TM is short for "Notes: Taking and Making." The most important feature of this system is that it allows you to record your personal thoughts and conclusions *along with* the key parts of a speech or reading material.

In order to learn *Notes:TM*, you'll want to understand the distinction between *Note-Taking* and *Note-Making*. *Note-Taking* involves listening to what a speaker or teacher is saying and writing down the key points as you go. *Note-Making* involves writing down your *own* thoughts and impressions as you listen to the material being presented. *Notes:TM* lets you do both things at once — record the information and keep track of your own thoughts.

Notes:TM is a way of applying both our conscious and subconscious minds to the same material *in a purposeful way*. Actually, both minds are at work no matter what note-taking method we use. While our conscious minds are intently focusing on the material and the process of getting it down on paper, our subconscious minds are reacting, forming impressions, making connections, and doing a whole host of things more or less automatically. *Notes:TM* coordinates both of these mental activities to achieve a more effective result.

Notes:TM applies both the conscious and subconscious minds to the material at hand.



MIND MAPPING

Do your comprehension and recall need a boost? Mind mapping may be just the thing. Here's what you need to know about this new way to take notes and organize your thoughts

BY BARBARA LAU

Credit-card-sized calculators, computers, word processors, portable copying machines. Every day, it seems, there are more and more devices that make business life easier and more efficient. Inventors, though, have yet to come up with a gadget that will take specific notes at meetings or organize thoughts for a speech or report. In fact, in this area, few people have advanced beyond the note-taking methods they learned in high school.

For many years, educators presumed that the human brain assimilated information in the same linear, step-by-step style that is used for virtually all written material. (The standard form of note taking and outlining conforms to this left-to-right, chronological format.) But new research on the brain indicates that it does not deal with words and concepts as separate entities, nor does it process data in a strictly chronological manner. This has led some people to speculate that the usual way of taking notes and outlining actually may dis-

rupt the thinking/learning process. One such person is Tony Buzan, founder and director of the Learning Methods Group in England, who has invented a new method of note taking called *mind mapping*.

Buzan claims that his approach dramatically improves comprehension and recall, and enhances both logical and creative thinking. He also contends that mind mapping is a much more efficient means of recording and processing information. In his book *Use Both Sides of Your Brain* (E.P. Dutton), Buzan writes that during a conversation a listener is not simply observing a long list of words like someone sucking up spaghetti. She is receiving each word in the context of those that surround it, analyzing, coding and criticizing throughout the process.

The typical way of note taking, though, undermines this process. For instance, an individual who tries to record a speaker's every word during a lecture or meeting may concentrate more on pushing the pen across the paper than on what the speaker is saying. Such copious note taking leaves little time to perceive

and evaluate information adequately.

And even though outlining requires less writing, its inflexible format causes problems, too. This becomes apparent when one considers how difficult it is to outline a lecture when the speaker's thoughts do not flow in the best chronological sequence. Or take, for example, a person who is plotting out ideas for her own speech. She progresses to numeral IV when suddenly she thinks of another point that should fall under numeral II. Or in the middle of the outline she decides that the information in numeral III would fit better in her introduction. She is faced with continually remaking the outline until, by trial and error—and much gnashing of teeth—she finally hits on the right order and combination of ideas.

STEP BY STEP

Preparing a mind map is relatively simple. To begin, a person will need several sheets of blank paper, such as standard-size typing paper, and at least five different colored pens or pencils. The first step is to print the main subject in the middle of the page and draw a geometric shape around it. All ideas plotted on a mind map should be expressed in just one or two key words (these should be printed in capital letters to make the map more legible and give it a graphic look). Key words should be concrete, meaningful and summon up the same image or idea each time they are used. They also should be strong nouns or verbs, rather than ambiguous words, to aid recall.

The next move is to think of subtopics that will represent all the data that are to be presented on a topic. Print these on lines connected to the main subject, spaced equally apart from each other (they also can be boxed in some geometric form). The end result will be a mind map that is similar to the one used in preparing this article—"MIND MAPPING" in the middle, surrounded by subtopics, such as "STRUCTURE," "ADVANTAGES," and "APPLICATIONS" (see illustration).

After subtopics come the supporting points. All the ideas the mind-mapper wants to mention should be added. It is best not to try to force thoughts into a particular order or hierarchy of importance. As each idea emerges, express it as a key word and connect it to the subtopic it most closely relates to. If a person wants to designate a chronological order after completing a map, she can number each section or use a color-coding method like the one used in the illustration.

For a splash of color on a mind map, all the key words grouped by one subtopic and their connecting lines are written in the same color. Another approach is to circle each cluster of key words in the same color. Like the color coding that is used in filing, this technique highlights the connection between similar ideas and creates a visual stimulus. Creative doodles, such as a dollar sign or a coin to indicate financial data, or an ear to depict communications, are other symbolic ways to note key points. Although this may seem gimmicky at first, "people doodle—drawing arrows to different points and circling main ones—when taking standard notes, so it really

o. mindmap Your Way To Innovation

If you don't know what mindmapping is, don't worry about it. Few people do.

Mindmapping is the art of getting all of your thoughts down on paper in a way that matches the way you think. A mindmap begins at the center of a piece of paper — the place your eye naturally wants to look. The central image or word (what's on your mind) is the focus of your mindmap.

From this central idea, you jot down lines, arrows and pictures that shoot off in many directions as you let your mind wander.

"Much of our thinking is associative:

One idea makes you think of another — no matter how logical the connection," said Roger von Oech, president of Menlo Park, Calif.-based Creative Think, an innovation think tank.

To make a mindmap, "Look at something, and make associations based on whatever you can think of: function, location, size, shape, sound, personal, opposite, weird, etc.," he said.

To get started on your mindmap, von Oech suggests asking yourself these questions:

- What things does your idea (or problem) remind you of?
- What do each of these remind you of?
- How can you use this cluster of associations to develop your idea and solve your problem?

Mindmapping is a great way to come up with new ideas, products and inventions, says Joyce Wycoff, founder of the Santa Barbara, Calif.-based Innovation Network.

It's also useful for planning a family reunion, preparing a speech, or organizing a class or presentation.

"We don't think in straight lines or columns," Wycoff said, "so it's harder to

come up with good ideas when we try to force our brains to do that." When we mindmap, she says, our ideas bounce around on the page the same way they naturally bounce around in our head.

As a result, all of our ideas — even the ones that seem unrelated or useless when we first look at them but prove later to be priceless — are captured on paper.

Mindmapping is a tool anyone can use to tap into dormant right-brain creativity. Mindmapping helps clear out the cobwebs and lets ideas emerge. "It starts us in the middle of the page, not on the top-left side," Wycoff said.

Fast thinking and free-associating

More On Mindmapping

Want to learn more about mindmapping and innovative thinking? Here are some books to guide you:

- "Mindmapping: Your Personal Guide to Exploring Creativity and Problem-Solving," by Joyce Wycoff
- "The Mind Map Book: How to Use Radiant Thinking to Maximize Your Brain's Untapped Potential," by Tony Buzan
- "What a Great Idea! The Key Steps Creative People Take," by Charles C. Thompson
- "Writing the Natural Way: Using Right Brain Techniques to Release Your Expressive Powers," by Gabriele Lusser Rico

are keys to successful mindmapping, Wycoff says. They help burn off the top layer of the mind, where cliché thoughts and internal filters reside. "You have to dump all this stuff to get to deeper creative thinking," she said.

Dave Gunby has witnessed the benefits of mindmapping firsthand. Nine years ago he learned the process. He liked it so much he trained up to 15,000 others to use it, too.

"When I first started using mindmapping, my job and my perception of myself were analytical," recalls Gunby, former senior training specialist at Electronic Data Systems Corp. and current president of MindDimensions, a Plano, Texas-based consulting firm.

Mindmapping, he says, helped EDS employees to boost creativity and use more of their brains.

"One division used mindmaps to generate ideas for new products and services," Gunby recalled. "The division became so successful it was sold off."

By Linda Stockman-Vines

The next innovation column will give tips on how to get your mindmap started.

8. You Can Learn To Be Innovative

Successful people do something new or different from others.

You must do the same. But of course you can't learn how to be innovative in school. Luckily, there are methods to help.

One way is called mindmapping. It's a great way to brainstorm new ideas, prepare notes for a speech or outline approaches to a project. The process lets you record your thoughts in a way that closely matches the way you think.

How do you create a mindmap? Here are some tips:

● **Lighten up.** Start mindmapping with an open attitude. You can get serious later. Innovation requires breaking with common thinking. So be open-minded to using new tools and methods.

● **Start with a large piece of paper.** Lay it down on the floor, and gather crayons, markers, colored pencils, pens and watercolor paints around you. Write or draw your central goal in the middle of the paper. The mind naturally focuses on the center of a page, so begin your mindmap there. From this central idea, draw lines, arrows and pictures off in dozens of different directions.

● **Think fast.** "Your brain works best in five- to seven-minute bursts," said Joyce Wycoff, chief executive of Innovation Network Inc. The Santa Barbara, Calif.-based firm's research on innovation is used by companies like Cox Communications Inc. and Lucent Technologies Inc.

Capture your explosion of ideas as rapidly as possible.

● **Don't Judge.** Write down everything that pops into your mind, even if it seems to have nothing to do with your original topic. "If you're brainstorming ideas for a report... and you suddenly remember you need to pick up your cleaning, put down 'cleaning,'" Wycoff said. "Otherwise, your

mind will get stuck like a record in that 'cleaning' groove, and you'll never generate those great ideas."

● **Break rules.** It's second nature to grab a piece of standard white paper and begin brainstorming ideas on the top, left-hand side of the page using black or blue ink. Instead, "Use ledger paper or easel paper or cover an entire wall with butcher paper," Wycoff said.

"The bigger the paper, the more ideas you'll have. And use wild colors; fat, colored markers; crayons; or skinny, felt-tipped pens," she said.

● **Think freely.** As ideas begin to flow, print one- or two-word descriptions of ideas on lines shooting off from your central word or image. Let the ideas grow into branches.

● **Keep moving.** If your ideas slow down or dry up, draw empty lines and watch your brain automatically find ideas to put on them. Jump-start your imagination by experimenting with different colors,

standing up or sitting down.

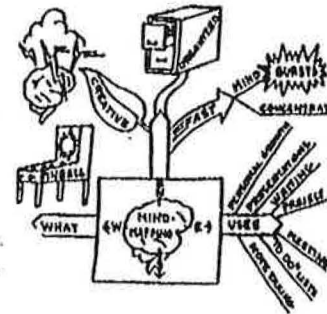
● **Allow organization.** If you see natural connections between ideas, group them together. But don't force organization. The goal of this exercise is to generate new and different ideas. Organization can come later.

If you've given up pens and pencils in favor of a keyboard, you can still use mindmapping to generate new ideas. Computer programs like Inspiration Software Inc.'s Inspiration and MindJet LLC's Mindman can help.

They let you mindmap using color, shapes, patterns, symbols and pictures. You can link entries to show relationships between ideas. The software also lets you turn mindmaps into a format to be used in a formal presentation.

Be Different

Brainstorm with a mindmap



Source: Joyce Wycoff