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**SKILLS FOR ACADEMIC IMPROVEMENT:
A GUIDE FOR HOW-TO-STUDY COUNSELORS
2nd Edition**

**DEPARTMENT OF BEHAVIORAL
SCIENCES AND LEADERSHIP
USAF ACADEMY, COLORADO 80840**

JUNE 1982



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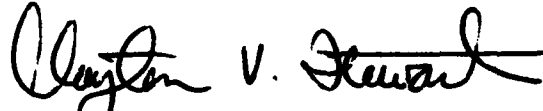
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Editorial Review by
Department of English
USAF Academy, Colorado 80840

This research report is presented as a competent treatment of the subject, worthy of publication. The United States Air Force Academy vouches for the quality of the research, without necessarily endorsing the opinions and conclusions of the authors.

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Director of Research and
Continuing Education

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How-To-Study	Study Techniques									
Study Skills	Learning Techniques									
Academic Time Management	Learning Disabilities									
Motivation	Problem Solving									
20. ABSTRACT (Continue on reverse side if necessary and identify by block number)										
<p>The Handbook provides general counseling tips as background information for How-To-Study counselors. Some information will help counselors identify students with possible learning disabilities. A series of sixteen session plans offers guidance for student counseling. Time management and awareness of time spent studying are two key areas of emphasis. Other sessions focus on more specific information such as note-taking skills and test-taking strategies. The Handbook also gives advice on determining when a student is self-sufficient and no longer needs the program.</p>										

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PREFACE

The authors acknowledge Colonel Dirk Prather who first established the How-to-Study Program in 1972 and Dr. John Bermudez who wrote the first How-to-Study Handbook.

The contents are adapted in part from Literature Review, Treatment Manuals, and Bibliography for Study Skills Counseling and Behavioral Self-Control Approaches to Improving Study Behavior by Alan M. Groveman, C. Steven Richards, and Richard B. Caple of the University of Missouri, Columbia, Missouri. This report is an update of Air Force Academy Technical Report USAFA-TR-81-6, June 1981.

The authors are grateful for the contributions of several individuals: Major Rayolyn McKelvy, Assistant Professor of Speech and English, wrote the lessons titled Listening and Memory; Major Alan Klayton, Tenure Associate Professor of Electrical Engineering, assisted with the lessons titled Problem Solving Techniques and Motivation; Dr. Jon M. Hasbrouck, Chief, Speech/Language Rehabilitation Section, Fitzsimons Army Medical Center, provided the section titled Impact of Auditory Perceptions on Learning Disabilities.

The authors are also indebted to Mrs. Helen Wilson and Mrs. Sharon Weatherson for their advice, suggestions, and timely administrative support in the preparation of this Handbook.

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INTRODUCTION

This Handbook has as its basis three premises about the study behavior of cadets:

1. Planning and scheduling efficient study behavior involves analytical or procedural skills and techniques which are not a part of the behavioral repertoire of some students. The counselor can lead the cadet to adopt useful time and work management habits, skills and techniques.

2. A sufficient number of these skills and techniques can be identified and taught to less experienced cadets by the counselor. Using appropriate techniques, the counselor can help the cadet to change ineffective study habits.

3. The ultimate objective of the counselor/cadet relationship is to help the cadet increase in self-awareness and self-reliance. The counselor must try to avoid overly dependent relationships which could deprive more needy students of counselor help.

Successful study improvement programs have at least three characteristics:

1. The programs require at least ten contact hours distributed over eight or more continuous weeks.

2. Program treatments include prescriptive techniques that involve self-monitoring techniques as well as study skills instruction and advice. These treatments are provided by a counselor who cares but does not overly emphasize friendship and companionship.

3. Ideally, both students and counselors are volunteers.

Simply joining the program will not increase the student's grades. The cadet must be committed to try new techniques, and the counselor must be committed to help the cadet overcome his or her ineffective study behaviors.

VISUAL LEARNING DISABILITIES

In addition to the auditory perception problems, cadets might have visual perception problems. We want to provide our study counselors with some very basic information to help them recognize cadets whose academic problems may be caused by some sort of visual learning disability.

There are three major parts in the visual processing system: the eye muscles, the eye, and the brain which acts as a visual processor.

Distinctions must be made between a) eye defects which involve seeing, b) eye defects which involve reading efficiency, and c) visual processing problems which involve reading deficits. Here then are some signs of reading deficit which could mean a visual learning disability exists.

Very slow reading, - usually, learning disabled students take more time to focus upon a visual object. There is a greater amount of effort involved in discriminating words which help to cue the student to remember and understand the material. Learning disabled students will complain of being very slow readers. They will also complain of having great difficulty in comprehending.

Learning disabled students are not able to attend to visual objects as well as the non-disabled students. They process visual information more slowly. They also make more errors in carrying out a task after they have carefully read the instructions. They may seem to act more impulsively in carrying out a task after they have read the instructions.

Learning disabled students spell and write poorly. They will reverse letters and numbers (e.g., "J" for "L," "P" for "9"). They also may reverse whole words (e.g., was-saw).

IMPACT OF AUDITORY PERCEPTION ON LEARNING DISABILITIES

The clinicians of the Speech Pathology Section of Fitzsimons Army Medical Center evaluate many children and adults with learning disabilities. Frequently, the evaluations indicate that the learning disability is due to an underlying auditory perception disorder. If that is the case, appropriate treatment procedures are undertaken and, in most cases, the learning disability is eliminated or markedly reduced.

It is possible that many USAFA cadets who are having difficulty academically may be suffering from some type of auditory perception disorder. Experience has shown that proper diagnosis and treatment of auditory perception problems in USAFA cadets will result both in improved academic performance for those cadets experiencing academic failure and in a greater number of cadets being retained by the Academy.

Auditory perception involves comprehension of the meaning of auditory stimuli. This is in contrast to auditory reception, which deals with whether or not the person can hear. In the case of auditory perception, we are usually dealing with a person who hears normally, but has some defect in the functioning of the auditory neurological system beyond the ear. Auditory perception consists of essentially eight components, which are:

1. Auditory attention -- recognizing and responding to the presence or absence of sound. Problems may be indicated by instructor observations that a cadet had difficulty "staying with" the flow of lecture material or difficulty attending to information or directions presented in face to face interactions. Cadet reports of frequent "daydreaming" or difficulty following lectures in different classes may be an indication of problems with auditory attention.
2. Sound localization -- determining the direction or source of sound. The greatest problem with sound

localization tends to be confusion resulting from inability to find a sound source. In a lecture class, confusion may occur as a cadet seeks to find another cadet asking a question. In the confusion of his search for the source of the question, the first cadet may miss the question and the answer and end up asking the same question later. This type of problem will be magnified in field, athletic, and/or training exercises where multiple or changing sound sources are present. The confusion generated by the search for the sound source may create problems for integration and comprehension of auditory messages.

3. Auditory discrimination -- detecting differences among sounds and recognizing the different speech sounds. Problems may be indicated in a number of ways. Cadets may appear to hear a message and comprehend it, but, in fact, they have completely misunderstood the message. Examples of such confusions might be "wear" for "tear," "he" for "she," "go" for "show," etc. Problems often occur in learning a foreign language. The cadet may not be able to learn the appropriate sounds that go with the letters of the sound/symbol system of the language. Problems become apparent when a cadet reads aloud and mispronounces words. Often, a sentence or short paragraph is presented verbally and a cadet is asked to repeat it verbatim. Problems become apparent when the cadet repeats the sentence(s), substituting words that sound like words in the sentence, but change the sentence meaning. Any form of reading disability may reflect a problem in auditory discrimination.
4. Auditory memory -- storing auditory experiences which allows for comparison of past and present auditory stimuli. Memory deficits can occur in either or both short term memory and long term memory functions. Cadets may demonstrate difficulty in remembering strings of numbers, difficulty in following directions for fine motor tasks, difficulty in following directions for gross motor tasks, and/or difficulty in hearing information and picking out and retaining the relevant ideas.
5. Auditory figure-ground -- selecting relevant auditory stimuli from irrelevant background sounds and noise. Problems are evident when a cadet describes or is observed to have difficulty understanding messages in background noise. For cadets with a figure-ground problem, such simple things as sitting near a hallway or window, hearing a pencil drop, hearing paper rustle, or hearing someone else talking or whispering, is enough to impair their ability to comprehend the primary message. Cadets with this problem will study with their hands over their ears or will describe having difficulty studying when radios are on or friends are talking.

6. Auditory closure -- filling in missing elements when an incomplete auditory stimulus is received, such as a sound missing in a word or a word missing in a sentence. This is a difficult area to diagnose without specific testing. Problems may be apparent when a noise or a visual distraction occurs during a lecture and the instructor happens to ask a cadet what was just said. If the cadet can't fill in what he missed during the distraction, he may have auditory closure problems.
7. Sequencing -- putting a series of sounds into correct order both spatially and temporally. Problems in spatial sequencing may be most apparent in cadets' spelling. They may reverse letters and sound groups because they don't have the ability to sequence properly what they have heard. This may be most apparent in writing in English and in a newly learned foreign language. Any reading disability may reflect problems of auditory sequencing. Problems in temporal sequencing appear as difficulty with inflection and intonation patterns in speaking English and/or a foreign language.
8. Synthesizing -- blending sounds together to form a word and/or breaking a word down into separate sound elements. Problems in this area may be apparent when a cadet has difficulty sounding out words. In other words, he exhibits difficulty in breaking a word down into its component sounds either to say it or to spell it. Again, any reading disability may reflect problems in synthesizing.

As already indicated, test batteries are available which allow clinicians to assess the components of auditory perception in depth. Once a problem area has been diagnosed, treatment procedures are available to either eliminate problems in component areas or to teach more effective compensatory skills.

With the information we have provided, we hope you will be able to identify cadets at risk for auditory or visual perceptual problems.

GENERAL COUNSELING TIPS

Effective counseling consists of a structured, but accepting relationship that enables the cadet to gain a better self-understanding and an understanding of his/her academic problems. This insight then enables the cadet to take positive steps to change ineffective behaviors.

TRAITS OF A GOOD COUNSELOR

Sincerity

The successful counselor must be sincerely interested in the cadet and his or her problems. The counselor cannot play a role just for the sake of the counseling situation. It is necessary to develop attitudes that will enable a sincere relationship with the cadet. Be sure that you do not make any promises you will not keep.

Acceptance

All of us have a rather strong tendency to judge one another. This is especially true of older persons when dealing with younger ones and of teachers when dealing with students. Counselors must withhold judgment and accept the cadet for what he or she is, not for what we would like the cadet to be. The counselor should accept the cadet's attitudes and values as having meaning for the cadet whether or not this meaning is clear to the counselor. Acceptance does not mean that the counselor approves of the cadet's attitudes and values, but, rather, that they are recognized as important to the individual. Try to avoid being overly influenced by one aspect of the person or his/her problem, and thereby "coloring" the rest of the information.

Be a Good Listener

All counseling sessions are for the benefit of the cadet. The

objectives of counseling can be achieved only if the counselor encourages the cadet to talk and then listens to what the cadet says. The counselor must listen not only attentively to what the cadet says, but must learn to listen perceptively for what the cadet really means. The counselor must listen from the viewpoint of the cadet. The counselor should ask the question: "How does the cadet view what he or she is saying?"

Honor Confidences

Many times in a counseling situation a cadet will disclose confidential information. Respect this confidence; don't be a gossip.

Use of Referral Services

Sometimes you may feel there are things with which the cadet cannot or will not cope. On these occasions, the best way that you can help the cadet is to make a referral to the HTS office. Check with the student or the HTS office to be sure the cadet followed through with the referral. People in the HTS office have many specific study aids available. They also have the ability to provide more intense help or diagnosis of particular problems. We encourage counselors to use these services more.

Test anxiety is one particular area the HTS office can help cadets. You should look for indications that the cadet does poorly on examinations even though the cadet has adequately prepared. Candid self-reports by the cadet in the course of conversation should give a clear indication of the extent of the problem. If you have a cadet who exhibits symptoms of "test anxiety", please refer him/her to the HTS office for further evaluation.

Discuss Worthwhile Topics

Remember that counseling is a conversation with a purpose. If you allow the interview to become a "bull" session, and you have the time and want to do this - fine, but remember this is not counseling.

Limitations

Keep in mind some limitations of the interview situation. Some of your limitations are your position, rank, age, time available for the cadet, and the nature of your training.

Closing the Interview

Don't allow the interview to come to a close like an automobile running out of gas. Close on a positive note and be sure the client feels welcome to come back.

After your client has left, make notes of your impressions of what happened. Some record should be kept on all interviews. We will ask you to evaluate your cadets at the Prog and at the end of the semester. The sample evaluation forms on pages 13-16 should help you decide what to include in your notes.

Follow-up

The counselor should follow up to see if the client has made any change as a result of the interview. If you refer a cadet to another agency you should also follow up with that agency.

SOME COMMON CAUSES OF COUNSELING FAILURES

1. Failure to listen.
2. Failure to observe the nonverbal communications of the cadet, such as actions, gestures, and tone of voice.
3. Failure to use nonverbal communication tools effectively.
4. Failure to allow for differentials in education, culture, and age.
5. Failure to keep technical or professional words out of the conversation.
6. Failure to give enough time for cadets to fully express themselves.
7. Failure to clarify the questions that you ask or try to answer.
8. Failure to think before you speak.
9. Failure to recognize the therapeutic value of conversations by the cadet.
10. Failure to allow the cadet to do most of the talking.

THE INTERVIEW

Rapport

The first thing you should do done in the interview is to establish rapport. This is an active form of communication between two persons based on an attitude of acceptance. If an attitude of acceptance is not present, rapport will never be established no matter how long you discuss significant topics nor how comfortable the cadet may become.

Establish Purpose

Before the cadet comes in, think about what you want to achieve during this interview. Determine the purpose or objective of the interview. You may want to use the "How-to-Study Counselor Record" as a guide (see page 17). Additional copies of the form can be obtained from the How-to-Study Office. If you do not use the form, the following questions might help you evaluate the cadet's problems:

- 1) Why did you enroll in the program?
- 2) What study techniques have previously been unsuccessful?
- 3) What do you expect out of the program?

Check the Student's Background

Find out all you can about the cadet, e.g., schools attended, test grades, family background, etc. This information will assist you in understanding what the cadet says during the interview.

Facilities

Consider your facilities for the interview. Ideally, they should be private, quiet, comfortable, and free from distractions and interruptions. If you must hold your interviews under less than these ideal conditions, make sure that you are using them to the best advantage.

CHECK LIST ON THE EFFECTIVENESS OF THE INTERVIEW:

- .. Did I prepare adequately for the interview?
- .. Did I make it possible and easy for the CADET to make full use of the counseling situation?
- .. Did I help to free the cadet from tensions or fears that might block clear understanding and constructive action?
- .. Did I help the cadet to grow in self-understanding?
- .. Was the real problem identified and examined?
- .. Was a possible and satisfying course of action planned?
- .. Were other resources identified and used?
- .. Was the plan of action carried out?
- .. Was the interview followed up?
- .. Was a record made of the interview?

HOW-TO-STUDY COUNSELOR RECORD

Date _____

Name _____ Sq _____ Ext _____

GPA Fall Prog _____ Spring Prog _____
 Fall EOS _____ Spring EOS _____
 Fall CUM _____ Spring CUM _____

Referral Source _____

Current Classes:

- | | | | |
|----|----|----|----|
| 1. | 3. | 5. | 7. |
| 2. | 4. | 6. | 8. |

Reason the cadet enrolled in the program:

Cadet's perceptions of his or her problems:

Study techniques that have previously been unsuccessful:

What the cadet expects to get out of the program:

Session plan(s)/materials discussed:

Assignments:

Comments:

Next Appointment _____

How-to-Study Program - Academic Material

USE OF PROVIDED SESSION PLANS

Outline plans for each of several types of sessions are provided. These outlines contain (a) one or more goals for each session and (b) the main points that should be covered during the session. Although these outlines appear in numerical sequence in this handbook, counselors naturally must tailor their assistance to the cadet's needs. Therefore, counselors must choose their own sequence of session plans depending on those needs. Counselors will select only those plans which they judge to be relevant. You may want to include some plans as a part of several sessions. You also may want to return to a plan after several intervening sessions. In most cases, completing the program requires eight weeks or ten contact hours. Initially you will want to meet your cadets for a full period, once a week. You will later want to see the cadets less frequently and for a shorter period of time.

RECOMMENDED SESSION ORGANIZATION

Each session with a student should be divided into three structural parts. This structure sets the tone for results-oriented sessions which can be very rewarding to both participants, giving both you and the cadet a sense of achievement.

1. The Opening & Review
2. The Discussion and/or Review
3. The Closing

1. Opening & Review (5-10 minutes)
 - a. This is a warm-up period. Share your goals for the session with the cadet.
 - b. Review the last session, and discuss any questions the cadet may have.
2. Discussion & Diagnosis (20-40 minutes)
 - a. Discuss or teach new material.
 - b. Discuss identified problems and solution techniques.
3. Closing (5-10 minutes)
 - a. Summarize main points covered, agreements reached, and answer questions.
 - b. Remind cadet of time and date for next session.
 - c. Praise and otherwise reinforce successful aspects of the cadet's behavior (e.g., smiles pat on back, etc.)

LOCATION OF FORMS

Throughout this handbook you will see a number of forms and worksheets. The How-to-Study Program Office maintains a supply of them. Any counselor or cadet is welcome to take the desired forms as needed. Please return any unused forms.

SESSION PLAN 1

Subject: Self-Evaluation.

- Goals:
1. To learn about time clock.
 2. To evaluate current use of time.

Main Points:

- A. Use of time clock.
 1. Make an inexpensive "stopwatch".
 - a. Buy an electric clock and an in-line switch.
 - b. Insert the switch close to the clock.
 2. Set the clock to 12.
 3. Turn on switch when you start to study.
 4. Turn off switch when you stop for any reason, e.g., get a drink of water or daydream.
 5. Record total time when you stop studying that subject. (See page 21)
 6. Set the clock to 12 before starting to study a different subject.
 7. A watch with a stopwatch function is very useful when the cadet is studying in the library or similar locations.
- B. Record current use of time.
 1. Record actual activities on Study and Free Time Schedule.
 2. Use the clock or a stopwatch to determine actual time spent studying.
- C. Evaluation.
 1. Total the time spent studying each subject.
 2. Total the combined time for all subjects.
- D. Supplemental Notes.
 1. Record the major activities in each time block.
 2. Don't "fudge" the results - show what really happened.

STUDY AND FREE TIME SCHEDULE

Month _____ Week: _____ to _____ No. of study hours planned _____

time/day							
0700 - 0745							
0755 - 0845							
0855 - 0945							
0955 - 1045							
1055 - 1145							
1200 - 1245							
1300 - 1350							
1400 - 1450							
1500 - 1550							
1600 - 1650							
1700 - 1750							
1800 - 1850							
1900 - 1930							
1935 - 1950							
2000 - 2050							
2100 - 2150							
2200 - 2250							

How To Study Program - Academic Material

SESSION PLAN 2

Subject: Efficient Scheduling of Study Time.

- Goals:
1. How to create and use the Study and Free Time Schedule. (See pages 24 & 25.)
 2. Why a schedule is important.

Main Points:

A. Factors involved.

1. Need for effective budgeting of time.
2. Need for free time and study time.

B. What is your most efficient study time?

1. Most people study more efficiently earlier in the day.
2. Efficiency decreases after about 45 minutes. At that point take a 5-10 minute break.

C. How much study time? (Make out a realistic schedule.)

- daily
- weekly

- Allow $2\frac{1}{2}$ x number of credit hrs/wk for the most difficult course (for a 3 credit course that is 7.5 hours when the course meets 3 times, or 5 hours when the course meets 2 times a week).

- Allow 1.5 x number of credit hrs/wk for the easiest course (for a 3 credit course that is 4.5 hours when the course meets 3 times, or 3 hours when the course meets 2 times a week).

D. First fill in classes and other mandatory activities (see example).

1. Have students review course outlines to identify course requirements/ assignments for that week.
 - a. List these assignments (readings, problems to work out, review exercises, etc.) by course or subject.
 - b. Include long term projects, i.e.: term papers, compositions, preparation for GRs, etc.
 - c. Include work not completed from the previous week.
2. Estimate the amount of time needed to complete each assignment. Consider speed of reading, levels of expertise in the subject matter, and other relevant factors.

3. Total up estimated hours needed to complete assignments for each course.
 4. Prioritize assignments by numbering each one; 1 being most important to accomplish first and so forth. Consider those assignments from previous weeks which remain to be completed. They should rank high on your list of priorities.
 5. Utilizing this information, go on to item E: Complete your schedule study and free time activities.
- E. Complete schedule with study and free time activities (see example).
- F. Supplemental notes.
1. If a cadet does not study in a block so designated have the cadet write the actual activity with a different color pen.
 2. Make sure the cadet plans some recreation on the weekends - and does the activity.
 3. Plans will not be followed exactly. It is important to understand why the plan was not followed.
 4. Many cadets benefit from completing the Study and Free Time Schedule in addition to any other forms.
 5. Have the cadet schedule more time than needed to account for wasted time.
 6. Make sure cadets schedule free time.
 7. Xerox a schedule for an M and a T week that lists only constant activities like classes, lunch, dinner. Use these sheets to indicate your planned use of free time.
 8. Suggest you have the cadet use this for the entire semester in addition to anything else you use.

STUDY AND FREE TIME SCHEDULE

Month Sep Week: 7 to 13 No. of study hours planned 28 hrs. 55 min.

time/day							
0700-0745	Mil Tng	Mil Tng	Mil Tng	Mil Tng	Mil Tng		
0755-0845	Mil Stu	Hist	Mil Stu	Hist	Mil Stu		
0855-0945	Mil Stu	Mil Tng 710	Mil Stu	Mil Tng 710	Mil Stu		
0955-1045	Math	Math	Math	Math	Math		
1055-1145							
1200-1245	Lunch	Lunch	Lunch	Lunch	Lunch		
1300-1350	French	Chem	French	Chem	French		
1400-1450	French	Chem	French	Chem	French		
1500-1550	Beh Sci		Beh Sci		Beh Sci		
1600-1650							
1700-1750		Intra-murals		Intra-murals			
1800-1850		↓		↓			
1900-1930	Dinner	Dinner	Dinner	Dinner	Dinner		
1935-1950							
2000-2050							
2100-2150							
2200-2250							

How To Study Program - Academic Material

STUDY AND FREE TIME SCHEDULE

Month Sep . Week: 7 to 13 . No. of study hours planned: 29 hrs. 40 min.

time/day	Mon	Tues	Wed	Thurs	Fri	Sat	Sun
0700-0745	Mil Tng	Mil Tng	Mil Tng	Mil Tng	Mil Tng	sleep	sleep
0755-0845	MilStu	Hist	MilStu	Hist	MilStu	Parade	
0855-0945	MilStu	MilTng 710	MilStu	MilTng 710	MilStu	and	and
0955-1045	Math	Math	Math	Math	Math	Sami	church
1055-1145	MathEI	Study French	MathEI	Study French	MathEI	↓	↓
1200-1245	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch
1300-1350	French	Chem	French	Chem	French	Nap	C. Springs
1400-1450	French	Chem	French	Chem	French	study Math	to
1500-1550	Beh Sci	Study Math	Beh Sci	ChemEI	Beh Sci	study Chem	shop
1600-1650	Study Math	goof off	Study History	Study MilStu	work on	Play	and
1700-1750	work on	Intra-murals	Study Math	Intra-murals	MilStu speech	Tennis	Movie
1800-1850	MilStu speech	↓	Study Chem	↓	Study Chem	Study BehSci	↓
1900-1930	Dinner	Dinner	Dinner	Dinner	Dinner	Dinner	Dinner
1935-1950	goof off	visit buddies	Nap	write letter	Shine shoes	Study BehSci	Study Beh Sci
2000-2050	Study Hist	Study BehSci	Study Math	Study BehSci	Study Hist	Go	Study Math
2100-2150	Study Math	study Math	Study Hist	Study French	work on	to	Study French
2200-2250	Study Chem	Study MilStu	Study Chem	Study Math	Room	Arnie's	Study Chem

SESSION PLAN 3

Subject: Self-Monitoring.

- Goals:
1. To learn about self-monitoring.
 2. To learn to self-monitor using any form on pages 29-32.

Main Points:

- A. What self-monitoring is.
- "The systematic observation and recording of one's own behavior."
- B. What self-monitoring does.
1. Provides a person with information for self-awareness, self-evaluation, and self-reinforcement.
 2. Provides students with information about progress, quantity, and quality of their study behavior.
- C. How self-monitoring works.
1. Daily records of two types of information must be kept.
 - a. Number of hours studied for each course.
 - b. Number of hours studied for all courses.
 2. THESE RECORDS MUST BE MARKED EVERY DAY AND SUMMED WEEKLY.
 3. The student must make a special effort to be accurate and to pay attention to the information recorded. The student must have a "total number of study hours goals" for each week. This goal should be increased gradually each week. The following study goal schedule is recommended:

STUDY TIME GOALS

<u>Weeks in Study Program</u>	<u>Hours of Study</u>
1	15
2	17
3	20
4	22
5	25
6	27
8	30

D. Getting Started.

1. Give cadet blank study time logs or self-monitoring sheets (see samples, pages 29-32).
2. Discuss proper use of sheets. Record all hours spent studying. (This does include time spent in EI.)
3. Emphasize regularly that the small amount of time spent in planning a schedule and in recording the results is paltry compared to the gain in time savings that will be realized. Most students actually find they have more time for relaxation than before they self-monitored.
4. Counselors should check these sheets at least every other session.

E. Supplemental Notes.

1. Cadets should probably start with either of the Study Time Logs.
2. The Self Monitoring Sheet is most effective for recording actual time spent if the cadet has a well established study routine.

3. The Study and Free Time Schedule should be continued.
4. Look at test scores relative to the amount of time studying only within each subject.
5. Use only one of the three time log sheets PLUS the Test/Quiz Log.

STUDY TIME LOG

NAME Amy Cadet

DATES 7 Sep - 4 Oct

PLANNED

ACTUAL

Course Title	Week	PLANNED							Planned Total	ACTUAL							Actual Total	
		M	T	W	Th	F	S	S		M	T	W	Th	F	S	S		
Math	1st	2½	2	2½	2			1	10	2	90	2	1hr 45min	50min	1			9 hrs 5 min
	2nd																	
	3rd																	
	4th																	
French	1st		1½		1½		1½		4½	1hr 10min		2		50min		2	6	
	2nd																	
	3rd																	
	4th																	
Chem	1st	1		1½		2		2	6½		1hr 40min		50min				3½ hrs	
	2nd																	
	3rd																	
	4th																	
Hist	1st	1		2		1			4	1hr 15min		1			45	3		
	2nd																	
	3rd																	
	4th																	
Beh Sci	1st		1		1		2	1	5		1		30min		1	30min	3	
	2nd																	
	3rd																	
	4th																	
Mid Sta	1st	1½		1	1		2		5½	90		1			1		3½	
	2nd																	
	3rd																	
	4th																	
	1st																	
	2nd																	
	3rd																	
	4th																	

Hourly Totals

1st Week	2nd Week	3rd Week	4th Week
P A	P A	P A	P A
35½	29 hrs, 5 min		

STUDY TIME LOG

NAME Amy Cadet

DATES 7 Sep - 4 Oct

Planned/Actual

Course Title	Week	Mon	Tues	Wed	Thurs	Fri	Sat	Sun	Totals	Test Scores		
										Max.	Mean	Score
Math	1st	2 $\frac{1}{2}$ 2	2 90	2 $\frac{1}{2}$ 2	2 1h 45min	50min	1	1	10 9h 5min			
	2nd											
	3rd											
	4th											
French	1st		1 $\frac{1}{2}$ 1h 10 min		1 $\frac{1}{2}$ 2		1 $\frac{1}{2}$ 50 min	2	4 $\frac{1}{2}$ 6	500	286	301
	2nd											
	3rd											
	4th											
Chem	1st	1 1		2 1h 40 min		1 $\frac{1}{2}$ 50 min		2 30 min	6 $\frac{1}{2}$ 7 $\frac{1}{2}$	100	82	64
	2nd											
	3rd											
	4th											
Hist	1st	1 1h 15 min		2 1		1		45 min	4 3			
	2nd											
	3rd											
	4th											
Beh Sci	1st		1 1		1 30 min		2 1	1 30 min	5 3			
	2nd											
	3rd											
	4th											
Mil Sta	1st	1 $\frac{1}{2}$ 90 min		1 1	1 1		2 1		5 $\frac{1}{2}$ 3 $\frac{1}{2}$			
	2nd											
	3rd											
	4th											

1st Week 2nd Week 3rd Week 4th Week
 P A P A P A P A
35h 20 min 5 min 5 min 5 min

SELF MONITORING SHEET

NAME Amy Cadet

DATES September

Course Title	Week	Mon	Tues	Wed	Thurs	Fri	Sat	Sun	TOTALS	TEST SCORES		
										Max.	Mean	Score
Math	1st	1 hr 25 min	65 min	60 min	25 min	1 hr 35 min		2 hrs	7 1/2 hrs			
	2nd											
	3rd											
	4th											
Chem	1st		1 hr 20 min		1 hr 35 min		70 min	2 hrs	6 hrs 5 min	500	286	301
	2nd											
	3rd											
	4th											
Beh Sci	1st	50 min	35 min	75 min		60 min	1 1/2 hrs		5 hrs 10 min			
	2nd											
	3rd											
	4th											
Hist	1st		25 min	1 hr 35 min			75 min		3, 15			
	2nd											
	3rd											
	4th											
French	1st	55 min		55 min	25 min	45 min			3 hrs	100	82	64
	2nd											
	3rd											
	4th											
Mil Sta	1st			35 min		1 hr		90 min	3, 5			
	2nd											
	3rd											
	4th											
	1st											
	2nd											
	3rd											
	4th											

1st Week

2nd Week

3rd Week

4th Week

Hourly Totals 28 hrs, 5 min _____

HOW to STUDY Program Academic Materials

SESSION PLAN 4

Subject: Self-Reinforcement

Goal: To learn and use self-reinforcement techniques.

Main Points:

- A. Self-reinforcement is rewarding oneself for good study behavior.
Self-reinforcement also means to obtain knowledge of results of one's behavior (e.g., recording time involved in study). Knowledge of results is also a form of reward. Rewards can be either covert (self-praise) or overt (watching TV, or getting a snack, or talking to friends).
- B. The basic procedure for self-reinforcement is STUDY → Self-record study behavior → evaluate study behavior → self-reinforce → strengthening of study habits.
- C. When to use self-reinforcement.
When student meets his or her study goals. Cadets can set "contracts" with themselves. Some cadets benefit from this awareness-raising exercise.
- D. Supplemental Notes.
1. Make the reinforcement fit the accomplishment, e.g., a glass of juice for completing a daily homework assignment vs. a new record album for completing a term paper on time.
 2. Only use the form to document activities over a long period of time, e.g., completion of a term paper.

SELF-REINFORCEMENT STUDY CONTRACT

Please fill out this page with the required information.

1. Study Goals: _____

2. Self-reinforcement (contracted in advance):

a. Overt self-reward - _____

3. Recorded Data: (time spent, pages read, time per course, exercises done, etc.) _____

4. Evaluation: (performance compared to goal, or previous performance)

SESSION PLAN 5

Subject: Motivation

- Goals:
1. Convince the cadet that it is important to do one's best in each course (i.e., to motivate the cadet).
 2. Help motivate the cadet by increasing awareness of the learning process through an examination of Bloom's six levels of learning.
 3. Help the cadet understand self-motivation techniques.
 4. Have the cadet establish one or more reasons to take each course.

Main Points:

- A. Motivation issues to think about:
1. The value of a course is often unrelated to the particular subject details of course content.
 2. Motivation can be described as having a reason for doing something.
 3. Many college students have problems because they don't know what it means to be a college student.
 4. One way to keep interested in something is to become good at it.
 5. Establish a purpose, a goal, or an objective for any course you take.
 6. Boredom with course material is a major reason for dropping out of college.
 7. There is more to good grades than knowledge of study skills.
 8. What is an educated person?
 9. What do you (or should you) expect to gain from your academic experience at the Academy?
 10. What "reward" justifies all the hours of study?
 11. Strive to do your best. As a patient, how would you feel if your surgeon "rode the curve" and got Cs in medical school?
 12. We often must do things we don't want to do in life. The mature, well adjusted person makes the best of a given situation.
 13. Realize that direct job application is not the only valid reason for taking a course.

14. Important jobs go to decision makers, i.e., to people who can think and who understand a broad range of issues.

15. Consider each course as a challenge - a mountain to be climbed.

B. Bloom's levels of learning:

1. Knowledge (Recall) - The ability to recall facts, laws, principles, etc. Examples: a) What is the mission of the Air Force Academy? b) What is the formula for determining the lift of an aircraft wing? c) What do we call the function that describes the overall behavior of a combinational logic network.
2. Comprehension - The ability to (at least) paraphrase information or use it in a simple but slightly new way thus exhibiting a basic level of understanding. Examples: a) Explain Newton's Second Law in your own words. b) What is the significance of having an aircraft with a thrust to weight ratio greater than one? c) If each codeword of a particular code contains four digits, how many unique items can be represented by the code if each digit can take on any of three different values?
3. Application - The ability to select and apply a learned procedure, perhaps to a new situation. Examples: a) Determine the standard deviation and mean of the following test scores. b) Determine the impact velocity of a 10 lb weight dropped from a height of six meters. c) Reduce a Boolean equation using a Karnaugh Map.
4. Analysis - The ability to breakdown (partition) a complicated problem into convenient parts so the structure of the problem is sufficiently revealed to permit a solution to be obtained. Examples: a) Given the interconnected structure of ropes, pulleys and levers shown, determine the force required on lever L to lift a 100 lb block suspended from rope R. b) Determine the volume of the irregularly shaped object in Figure 1. c) Given the interconnected logic network of flip-flops, selectors, decoders and gates shown below, determine the output of the AND gate.
5. Synthesis - The ability to put information together in an original way so as to create something new, i.e., the procedures required for accomplishing the task must be developed. Examples: a) Design a digital speedometer for an automobile. b) Prove the following Boolean Theorem (the theorem is unfamiliar to the student). c) Develop a Karnaugh Map technique which leads to an overall minimized circuit for a multiple output combinational logic network.

6. Evaluation - The ability to make judgments, perhaps requiring the development of suitable decision criteria. Examples:
 - a) What is the best air-to-air fighter in the U. S. inventory? Why?
 - b) Given the data below, should company X buy its raw materials from company Y or company Z?
 - c) Given the following requirements, which microcomputer would you use as the basis for an air-borne computer based weapons control system? Why?
- C. Write a series of specific goals for each course in each area:
1. Competency
 - a. types of knowledge to be learned at levels of learning information.
 - b. show how different levels of learning apply to different courses.
 2. Awareness
 - a. receptive to future potential use.
 - b. responsive to new ideas.
 3. Flexibility
 - a. improve specific skills e.g., reading, writing, attention to detail, thinking skills.
 - b. broadens future career options.
- D. Supplemental Notes
1. Review motivational goals several times during the semester.
 2. Increased cadet motivation to study can help reduce attrition.
 3. Recognize that the academic reasons for leaving USAFA are likely to also exist in some form at any school.
 4. Determine a reason to take every course.
 5. Relate the objectives of each course to Bloom's levels of learning.
 6. Periodically review the "Motivation issues to think about" with the cadet.

SESSION PLAN 6

Subject: Listening

Goal: To become aware of techniques to improve listening ability.

Main Points:

A. Importance of Good Listening Skills

1. Most of your classroom time will be spent in listening to lectures and discussions. In fact, up to 90% of the typical college student's time is spent listening.
2. Studies indicate that most people listen at about 25% efficiency. In other words, we recall only about $\frac{1}{4}$ th of what we hear.
3. Other basic skills depend upon good listening habits; note taking, memory, concentration, attention, all are linked directly to good listening.

B. Definition

1. Listening is more than hearing. It involves the processing of the aural stimuli received into some understandable message. Most theorists describe the process as having the steps of sensing, interpreting, evaluating and responding.
2. Listening is also an active process. It requires effort on the part of the listener. Passivity in listening results in breakdowns in the internal processing. To be active, the listener must attend to the information given both mentally and physically.

C. Preparing to Listen

1. Each listening situation is somewhat different depending upon the nature of the information, the type of course, the instructor and the environment.
2. The astute listener will prepare himself or herself for these variations mentally before each class period by "getting in step" with them.
3. If a student doesn't have a good idea of what to expect, he or she should spend the first few minutes of the hour trying to determine the instructor's purpose before starting to take notes. The instructor's purpose may be either to inform, to persuade or to entertain. If you aren't "with him" you won't be able to get from the lecture what he wants.

D. Barriers to Successful Listening

1. Distractions
 - a. Environmental

- 1) temperature
- 2) lighting
- 3) seating
- 4) classmates talking
- 5) instructor's style

b. Internal

- 1) Not interested in the subject
- 2) Being judgemental
- 3) Faking attention
- 4) Reacting to persons/emotions
- 5) Listening for only one type of information (e.g., facts)

2. Physical Condition

- a. Not enough sleep
- b. Slouching
- c. Worried about personal life

3. Note Taking Style

- a. Not adapting to situation
- b. Not listening while writing
- c. Not understanding information; only writing what you hear

4. Wasting the Differential Between Thought Speed and Speech Speed

- a. Speakers talk at 150 words per minute
- b. Listeners can absorb information at 400 words per minute
- c. With this differential listeners are tempted to allow their minds to wander
- d. Astute listeners use the time to review what the speaker has said, anticipate where he or she is going, and evaluate the types of support the speaker uses.

E. How to Improve

1. Most advice takes the form of admonitions: "Pay attention," "Don't be distracted," "Keep your mind open," etc.
2. Be aware of your own limitations. You can do this by keeping track of how you listen in different situations and evaluate why you listen better in some rather than others.

3. Adapt your note taking style to fit the instructor. Don't always try to outline each lecture. Some instructors may be terribly disorganized.
4. Listen for main ideas and try to subordinate facts to the main ideas.
5. Don't allow emotional words to interfere with your comprehension. Make a list of the words that "bug" you (e.g., smack, Yankee, abortion, etc.).
6. Don't waste the differential between thought and speech speed.
7. Be selfish. In every lecture ask yourself the question "What's in it for ME?" Avoid the question, "What will be on the tests?"

SESSION PLAN 7

Subject: Memory

Goals: To improve retention capability.

Main Points:

A. Definition

1. Memory is the ability to receive and store information mentally. There are two distinct types of memory: short term and long term.
2. Most people can remember only 50% of what is said immediately after a ten minute lecture. This retention falls off to 25% within 48 hours.

B. Steps to Improve Memory

1. Memory Devices

- a. LISTS - The most common form of memorization is to create simple lists based on random ordering of the elements of the list. It is not the most efficient means of memorizing, but for many people it works.
- b. EXAGGERATION - This method of memorization requires some ability to visualize the information. Instead of thinking of the object as normal, try to either make it unbelievably large or small.
- c. MNEMONIC "TRICKS" - This technique works quite well with lists. Put the list in order and then assign a word to represent the first letter of each item on the list. "George Enos' old grandfather rode a pig home yesterday" is one that might help when spelling Geography.
- d. VISUALIZE - If you can mentally picture the object or list, you have a better chance of remembering. When giving directions around the Academy, think of the entire reservation as resembling the letter "W" with the base toward the mountains and you have a picture of the geography of the land. Remember, a picture is worth a thousand words.
- e. REPEAT - This is the oldest method of memorizing and one you probably used during BCT. If you use it in conjunction with others, you'll remember even more.
- f. ASSOCIATE - Try to associate new information with information you already know and it'll be easier to recall. If you already know how to organize an essay, use the same steps to organize a party. Many people do this naturally, when they associate the shape of Italy with a boot.

- g. PICTURE-RHYME - This is a memory "game" to help remember lists. It involves associating numbers with words that rhyme with the number, then drawing mental pictures of items on the list and associating them with rhymed words. One - bun, two - glue, three - key, four - store, five - drive, six - mix, seven - oven, eight - bait, nine - dine, ten - hen. This technique requires a good bit of practice, but can be very useful.
- h. STACK AND LINK - This device requires association, exaggeration and visualization to create absurd pictures you can remember. First you visualize the first item and place it in an imaginary stack, on top of it you place the second picture and so on until you have a complete stack of absurd items you have associated with the real items. The technique requires some practice but is very useful in recalling entire speeches or long lists.
- i. ACRONYMS - Now that you're in the Air Force, you realize how much we depend on acronyms for just about everything - BMEWS, ASAP, BOR, CDB, IP, etc. Make your own to remember lists. HOMES might help you remember the five Great Lakes. CHEM could be your M-day academic schedule (Chemistry, History, English and Math).
- j. NUMBERS - We all have problems remembering numbers. One technique that works is to associate each of the cardinal numbers with one of the ten basic phonetic consonant sounds. Then to remember the number, you create a word of those phonetic sounds and then decode the number: one - the letter t, two - the letter n, three - m, four - r, five - l, six - j, seven - k, eight - f, nine - p and zero - the letter s. The phone number 472-3464 would translate into "Rockin Marcher" with each of the consonant sounds translating into one of the numbers. Of course this technique also requires practice.

MEMORIZATION IS HARD WORK. WHILE THESE TECHNIQUES MAY APPEAR DIFFICULT OR CUMBERSOME, ONCE YOU LEARN THEM IT'S SIMPLE TO REUSE THEM FOR NEW NUMBERS, LISTS, NAMES, ETC.

2. Listen Attentively

- a. Repetition
- b. Don't waste thought-speech speed differential
- c. Be creative

3. Practice

- a. Classroom
- b. Socially (remembering names)
- c. Make games

C. Additional Information Sources:

Lucas, Jerry and Lorraine, Harry. The Memory Book.

Montgomery, Robert L. Memory made Easy.

SESSION PLAN 8

Subject: Long range plans.

- Goals:
1. Identify the need to break tasks into sub-tasks.
 2. Need to plan completion dates for sub-tasks.

Main Points:

- A. Major requirements such as GRs and papers can and must be broken down to sub-tasks.
 1. A paper might be subdivided into topic selection, literature review, draft paper, final typing.
 2. A GR might be subdivided into general overview and intensive study.
- B. Completion of the Cadet Milestone Chart (see samples) will facilitate semester planning.
 1. Scratch out inappropriate semester and month headings.
 2. Schedule events as soon as the due dates are known.
 3. Use this form when planning each week's study schedule.
- C. Schedule conflicts will become readily apparent.
- D. Supplemental Notes.
 1. Cross out completed projects after they have been completed.
 2. If you see there is a week with many deadlines, shift some discretionary dates earlier or later to even out the workload across the semester.

CADET MILESTONE CHART

Fall Semester 19 80
~~Spring Semester 19~~

Paper, Exam, etc.	Month	Aug/Sept				Sep/Oct				Oct/Nov				Nov/Dec					
		Week	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
English Paper due 7 Oct	Choose Subject Card Catalog Read			18- 24	25- 27														
	Write Paper Show Teacher Write Final Type + ln					9-17													
History Paper due 26 Nov	Choose Subject Card Catalog Read																		
	Write Paper Show Teacher Write Final Type + ln																		
Exam GR 12 Sep	Review			23-29 29-31		5-11													
Math GR 17 Sep	Review					4-16													

CADET MILESTONE CHART Fall Semester 1920
~~Spring Semester 19~~

Paper, Exam, etc.	Month	Aug/2020				Sep/2020				Oct/2020				Nov/2020				Dec/2020			
		Week	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4			
English Paper due 7 Oct	Choose Subject Card Catalog Read																				
	Write Paper																				
	Show Teacher																				
	Write Final																				
	Type & In																				
History Paper due 26 Nov	Choose Subject Card Catalog Read																				
	Write Paper																				
	Show Teacher																				
	Write Final																				
	Type & In																				
Econ GR	Reviews																				
13 Sep	Reviews																				
Mech GR	Reviews																				
17 Sep	Reviews																				

How To Study Program - Academic Material

SESSION PLAN 9

Subject: Stimulus Control of Behavior.

Goals: To learn and use stimulus control techniques for improving study behavior.

Main Points:

A. What stimulus control is.

1. Behavior is influenced by the environment or stimuli around us (desks, tables, people, etc.).
2. If you change your environment, you can change your behavior as well.
3. For example, if a particular stimulus (the library, empty classroom, time log, etc.) is associated mentally with efficient studying, then the stimulus will influence the behavior (i.e., you tend to study efficiently when in the presence of these objects or events).

Evaluate your study places with the Study Locations Evaluations sheet. (See page 48)

4. There are three (3) key variables: time, place and distractions.
 - a. Time - Study at regular times each day and try to do nothing but study at these times. Take short breaks (5-10 minutes) at least every 45-60 minutes. Plan to increase study time a little each day until you reach an optimal goal.
 - b. Place - Only study at certain regular places (e.g., at the desk in your room or a particular place at the library, or elsewhere). This place should be quiet, comfortable, and well lit. If you start to daydream in this place, then leave it immediately and take a short break. Return to this study place ready to work.

- c. Distractions - Study where noises, disturbances, etc., are at a minimum. This may be the most crucial variable of the three.
- d. Have the cadet discuss time, place, and distractions with you. Review the completed Study Locations Evaluation. (Such discussions raise awareness levels.)

B. Supplemental Notes.

- 1. Sometimes a place must be used for study and other activities. During study time make the place different, e.g., take out an object that is only on the desk during study time.

STUDY LOCATIONS EVALUATION

List the three places where you usually study:

1. _____ 2. _____ 3. _____

Indicate whether each statement is true or false for each of your study places.

	PLACES					
	1		2		3	
1. Other people often interrupt me when I study here.	T	F	T	F	T	F
2. Much of what I see here reminds me of things that are not related to studying.	T	F	T	F	T	F
3. I can often hear music, TV, etc. when I study here.	T	F	T	F	T	F
4. I can often hear the phone ringing when I study here.	T	F	T	F	T	F
5. I can often hear other cadets "fooling around" when I study here.	T	F	T	F	T	F
6. I take too many breaks when I study here.	T	F	T	F	T	F
7. I am especially bothered by distractions when I study here.	T	F	T	F	T	F
8. I usually don't study here at a regular time each day.	T	F	T	F	T	F
9. My breaks tend to be long when I study here.	T	F	T	F	T	F
10. I start conversations with other cadets when I study here.	T	F	T	F	T	F
11. The temperature at this place is not very good for studying.	T	F	T	F	T	F
12. Chair, table, and lighting arrangements at this place are not very good for studying.	T	F	T	F	T	F
13. When I study at this place I am distracted by members of the opposite sex.	T	F	T	F	T	F
14. I don't enjoy studying at this place.	T	F	T	F	T	F

TOTALS

THE GREATEST NUMBER OF MOST "TRUE" RESPONSES IS YOUR PLACE WITH THE MOST DISTRACTIONS.

YOU SHOULD PLAN TO STUDY AT THE PLACE WITH THE MOST "FALSE" RESPONSES.

How-to-Study Program - Academic Material

SESSION PLAN 10

Subject: Self-Instruction (Self-Talk).

Goal: To help the cadet learn more appropriate self-instructions and how to apply them in studying.

Main Point:

A. What self-instructions are.

Self-instructions are self-statements or self-talk. People frequently make these covert "internal statements" to themselves. These statements usually involve a dimension of evaluation and a dimension of instruction. Sometimes these statements are functional (adaptive, positive). All too often they are negative and dysfunctional. In a sense, using such internal language "programs" the person to carry out his or her own instruction.

Examples:

(Sample of negative self-statements and positive self-statements.)

1. Negative self-statements:

- a. "I know that studying is useless because I'm going to fail anyway!"
- b. "Studying is just a waste of my time and I have more important things to do."
- c. "The teacher hates me; he or she will probably flunk me, so why should I study?"

2. Positive self-statements:

- a. "I know that if I study I will probably do better on my tests!"
- b. "Studying is not a waste of my time and I'd better get started with it now."

c. "The teacher may or may not like me, but I still have to take tests in the course and studying should help me do better."

B. How to raise awareness about self-instruction tendencies.

1. Ask your cadet to take a few minutes to imagine he or she is about to study or take a test, etc.

2. Have your student verbalize the self-statements he or she has thought of during the above event.

a. List self-statements.

b. Ask cadet to formulate more positive statements, then verbalize them.

c. Ask cadet to again imagine (picture) himself about to begin studying, testing, etc., and to now employ the new, positive statements.

d. Cadets who have difficulty with this exercise may be resisting efforts to change dysfunctional behavior. A very few students normally cannot form "mental pictures."

C. Supplemental Notes.

1. This is not just a silly exercise; it works.

2. The positive statements will foster a positive attitude which will help other activities in addition to studying.

3. These concepts are closely related to motivation (i.e., it is hard to stay motivated when you feed yourself a lot of negative self-statements).

SESSION PLAN 11

Subject: Textbook reading.

- Goals:
1. Know how to use reading time most efficiently.
 2. Learn the SQ3R method (Robinson, 1970).

Main Points:

- A. The SQ3R method should be used for every textbook assignment.
- B. Unless it is used all the time, it will not work.
- C. SQ3R Methods
 1. Survey
 - a. Skim over chapter headings and topic headings within each chapter.
 - b. Read summary paragraph at the end of each chapter, if there is one.
 - c. Notice core ideas of each chapter.
 - d. The goal is to help you organize ideas when chapter reading is done.
 2. Question
 - a. Create a question from the first heading.
 - b. This is done to increase curiosity about the chapter and to orient the student towards finding critical information in the chapter.
 - c. Key words to ask when reading are the basic interrogatives: Who? Why? Where? What? How? When?
 - d. What ideas does the author really want to make reader aware of?

3. Read

- a. Read each chapter to answer the questions that you have developed.
- b. Notice italicized words and phrases.
- c. Were all your questions answered?

4. Recite

- a. Try to answer the created questions without looking back at the book.
- b. Use your own words to express your thoughts.

5. Review

Review your notes.

D. Example of SQ3R

Have the cadet read the sample paragraph below using the SQ3R method. See pages 53 and 54 for examples.

Causes of the French Revolution

Although it has been argued that the reasons for the French Revolution were as numerous as the roots of a tree, there were probably three basic causes of the Revolution. The first cause centers around the emerging French middle class' desire to expand its influence within the government. The industrial revolution had created a potent middle class yearning for power. The intolerable conditions under which they were forced, by the nobility, to live made them ripe for revolution. The third reason had its source in events that happened 3,000 miles away. The recent revolution in the United States quickened within the French their own desires for democracy.

1. Survey - This paragraph is about the causes of the French Revolution.
2. Question - What are the causes of the French Revolution?
3. Read - There were three causes:
 - a. The middle class' desire for power.
 - b. Living conditions.
 - c. The example of the revolution in the United States.
4. Recite
 - a. Try to answer questions asked without looking at book (using own words).
 - b. Can students do this?
 - If they can, they know the chapter.
 - If they cannot, they don't know it; they should then go back over it.
 - c. Another method - use 3x5 cards.
 - questions on one side, answers on the other - provides basis for text studying.
5. REVIEW
 - a. Check over notes.
 - b. Cover up notes and recall major points.

1. Recite - the front of 3x5 card is used to write a question and the back of the card is used to write the answer.

a. Card #1

Front - First cause of the French Revolution?

Back - The middle class desire for power.

b. Card #2

Front - Second cause of the French Revolution?

Back - Living conditions.

c. Card #3

Front - Third cause of the French Revolution?

Back - The example of the revolution in the United States.

2. Review

a. Answer the questions without looking at the back of each 3x5 card.

E. Supplemental Notes.

1. The SQ3R will initially take more time than other methods such as underlining.

2. The added time is likely to reduce the time required to study for GRs.

3. DFSEA has a reading course the cadets can take.

SESSION PLAN 12

TITLE: Inductive and Deductive Problem Solving

GOAL: To improve the student's analytical abilities

MAIN POINTS:

A. All problems are exercises in logic

Mathematics and all derived sciences are fundamentally based upon the use of logic. In these disciplines problems represent the task of constructing valid logical discourses; errors are made when one statement does not follow from a preceding one. The general pattern one faces in constructing a logical discourse is:

- 1) Encountering a set of circumstances
- 2) Being faced with a set of unproved (goal) statements regarding the initial conditions
- 3) Having to define all variables (or terms) by the initial set of circumstances
- 4) Deducing all statements logically from the initial set of circumstances. The goal of this process is to establish a tautology, or a valid argument where the initial set of circumstances leads without question to the conclusion. The amount of successful use of this process determines the student's analytical abilities.

B. What kind of logic is used to solve problems?

There are two distinct types of formal logic: inductive and deductive. While logic can be broadly defined as a system or method of reasoning, the two types of logic vary greatly in process. Inductive logic (induction) is reasoning from the particular to the general; a shrewd guess of a theory or a principle based upon the observation of a few instances.

EXAMPLE. A student is given three isoscles triangles and induces that all triangles are therefore isoscles

While inductive reasoning may be used to uncover theorems or models, only deduction is used to prove them. Deductive logic is reasoning from the general to the specific; where a conclusion necessarily follows from a stated premise.

EXAMPLE: Today is Monday. Therefore, tomorrow will be Tuesday.

EXAMPLE: Sherlock Holmes is called in to investigate the murder of a librarian. The suspects for the murder are: Mrs. Jarvis, another librarian, Mr. Stickney a library patron, Mr. Utter a high school teacher and Miss Swift a junior librarian. The only clues to the murder are the letters QL 696.C9 and the word "Elsie" moaned by the victim before she died. Without hesitation Holmes indicated that he knew who the murderer was. "Elsie" was not a woman's name but the letters L.C. standing for Library of Congress. Thus Holmes deduced the number represented a catalog number (Q for science, QL for ornithology, QL600 for vertebrates, QL 696 for birds, QL 696.C9 for Cypseli Swifts. Thus the murderer was Miss Swift. (Moates and Schumacher, 1980)

The discovery of the path to the solution is the primary activity in deductive problem solving. Each student must find a path through the maze to be successful.

C. Difficulties in the use of logic in problem solving.

Rigidity of thinking when shifting from theoretical example (as presented in most textbooks) to practical example (as required in many quizzes and tests) is felt to account for many of the difficulties students encounter.

Many students have difficulty recognizing and applying the underlying principles to problems they are asked to solve. If a problem is stated in different words or if the syntax is rearranged, students may not recognize it, even if they have solved a half dozen similar problems successfully. Not only do students encounter problems in the application of logic, they also commit fallacies in the development of their argument. While there may be as many as 14 distinct types of fallacies in logic that may be committed ("Reasoning Guide," 1982) the three most commonly encountered are.

1) Fallacy of denying the antecedent

Example: If A is true then B is true

A is false

therefore B is false (invalid)

2) Fallacy of affirming the consequent

If A is true then B is true

B is true

therefore A is true (invalid)

3) Fallacy of the undistributed middle term

All A are B

All C are B

therefore all A are C (invalid)

or all C are A (invalid)

D. How to improve your student's analytic abilities

1) "No amount of discussion, reading, listening or other passive procedures will enable one to logically solve problems or prove theorems. The basic rule is to practice. Just as a concert pianist must spend hours at the piano each day--not merely looking at it or theorizing about it--so must the

sincere student actually logically prove theorems in order to acquire and retain this skill. Problem solving is not a spectator sport." (Dodge, 1975)

2) Have students solve problems in pairs. One student serves as a listener and the other as a problem solver who must solve the problem orally. The listener's role is to work actively with the problem solver and to check each step as the problem solver verbalizes it for accuracy and validity (logic). The listener and the problem solver alternate roles as they work through an exercise. When they agree that they have a solution to a problem, they may check the answer. If they have trouble with a problem, they can ask the teacher for help. Studies utilizing this approach have indicated that students who complete exercises in this manner show improvements on tests of scholastic aptitude as well as develop analytic (logical) thinking skills needed for studying mathematics and science.

References:

- 1) Maxwell, Martha Improving Student Learning Skills. Jossey-Bass Inc. Publishers, San Francisco, CA, 1979.
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- 3) Moates, D. R. and Schumacher, G. M. An Introduction to Cognitive Psychology. Wadsworth Publishing Co., Belmont, CA, 1980.
- 4) Philosophy 310, Ethics "Reasoning Guide", course handout Department of Philosophy and Fine Arts, United States Air Force Academy, Spring 1982.

SESSION PLAN 13

Subject: Problem Solving Techniques

- Goals:
1. Understand a problem solving model.
 2. Develop a facility to apply the model.
 3. Understand how to benefit from the problem solving experience (i.e., recognize that problems are a self-test of theoretical principles).

Main Points:

A. The Model.

1. Read the problem and write down the given information.
2. Establish exactly what the problem is asking and identify the related principles and theory.
3. From the given information, ascertain whether the problem can be solved directly or whether you will have to generate needed information.
4. If the problem can't be solved directly, determine what additional information you need to know to solve it.
5. Calculate the solution.
6. If solving the problem was difficult, carefully identify and record why (i.e., determine the principles, theories, etc., that you didn't understand, thereby making the problem difficult).

B. Supplemental Notes.

1. Verbalize the purpose for doing each problem (i.e., determine what concept is being tested).
2. Be able to write every step omitted from textbook sample problems (i.e., "read with a pencil").
3. When getting help the cadet should first explain how he or she arrived at each step in the attempted solution.
4. Do not become fixated on a particular solution technique. Look for alternative approaches.
5. Some problems can be worked backwards (e.g., proofs are often more easily derived by starting with the end statement and working towards the input statements).
6. Getting the correct answer is NOT the goal of homework problems. The goal is to give you a self-test of theoretical principles which could be applied to a variety of problems.

SESSION PLAN 14

Subject: Note-taking.

Goal: To become proficient in note-taking.

Main Points:

A. Myths.

1. Don't take notes, just listen in class.
(Can anyone remember everything?)
2. Take notes only on a few important points.
(Many cadets can't decide on what's important.)
3. Reflect a lot on lecture ideas.
(Problem - instructor can leave you behind.)
4. Complain that instructor is poor lecturer.
(He or she may be, but you still have to take the final exam.)

B. Steps to improve skills.

1. Good listening -
 - a. Listen to understand, not refute.
 - b. Stay alert.
2. Orderliness -
 - a. Keep separate loose-leaf section or separate book by course.
 - b. Write legibly.
 - c. Develop simple abbreviation system [i.e., & (and), ... (therefore), b (but)].
 - d. Note-taking format (there are several alternative formats which can be used). Discuss the three formats which are illustrated on pages 62-64.

C. Supplemental Note.

1. When you review your notes, add graphics in the margin to flag important points, e.g.:



These graphics can be very helpful for quick reviews.

2. Add color to your notes. Color coding diagrams helps to facilitate later recall. In addition, use color in subjects like chemistry to help track what is happening in various reactions.
3. Cross reference your notes. When your notes cover material that is contained in the textbook, indicate the text pages in the margin near the corresponding section of notes.
4. Use different formats for different classes.

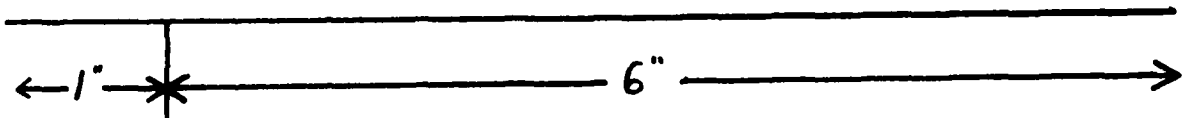
NOTE - TAKING FORMAT I



This is the typical "format", i.e., simply writing from left to right.

Formats II and III provide possible alternatives.

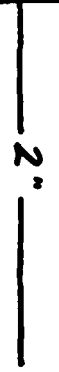
NOTE-TAKING FORMAT II



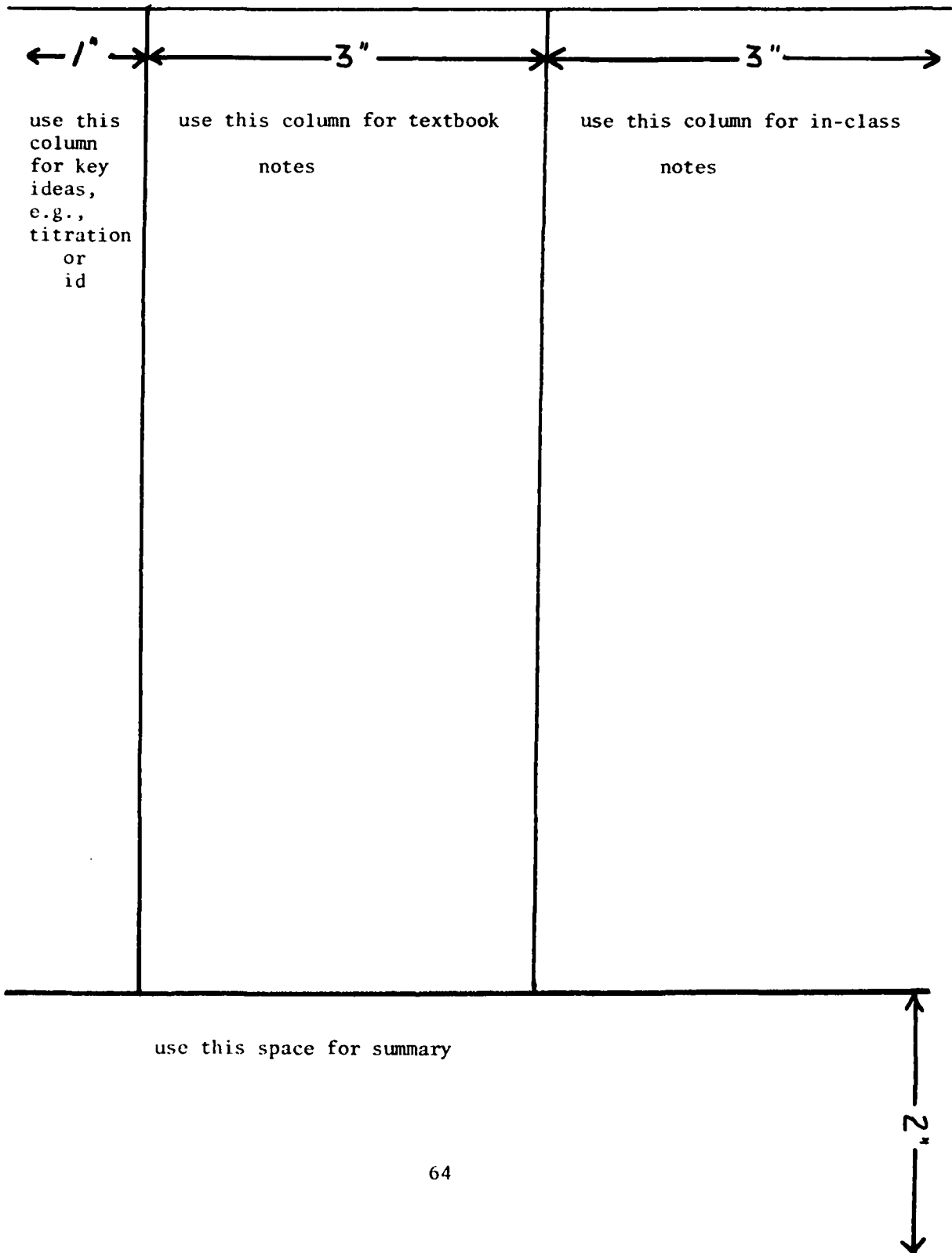
use this
column
for key
ideas,
e.g.,
titration
or
id

use this section for detailed notes

use this space for summary



NOTE-TAKING FORMAT III



SESSION PLAN 15

Subject: Flash cards.

- Goals:
1. How to make flash cards.
 2. How to use flash cards.

Main Points:

- A. How to make them.
 1. Write questions on one side, the answer on the other side.
 2. Use only one question per card.
 3. Keep both question and answer very short.
- B. How to use them.
 1. Have a frequent review of the cards you don't know.
 2. Shuffle the cards to avoid learning the order of answers.
 3. Start with small groups of cards and gradually add cards to them.
 4. Review them when you have even just a little time, e.g., 5-10 minutes.
- C. Supplemental Notes
 1. The act of deciding what to write on the cards is an excellent review.
 2. Flash cards are a very efficient way to LEARN specific information.
 3. Flash cards can be used in practically every course.

SESSION PLAN 16

Subject: Test-taking Strategies.

Goal: To learn test-taking strategies for both essay and objective examinations.

Main Points:

- A. General Rules for all exams.
 - 1. Make a review schedule - don't cram.
 - 2. Take outlines, lecture notes, textbook notes, and prepare summary of main topics (use 10-12 major subheadings).
 - 3. Take all the facts, details, laws, principles, etc., and organize them under the headings developed above.
 - 4. Go over prior quiz papers if appropriate.
- B. Rules for essay exams.
 - 1. Read all essay test directions with care!
 - 2. Jot down points you recall in relation to the question. (If there is time, attempt to outline.)
 - 3. Try to be persuasive. Keep your thesis in mind as you write.
- C. Rules for objective tests.
 - 1. Read the general directions with care!
 - 2. Don't spend too much time on any one item. Return to the item when you have completed the rest of the test.
 - 3. Attack each item, narrow down your choice (if possible, mark off wrong answers).
 - 4. Don't change answers unless you are sure that you know the correct answer.

D. Supplemental Notes.

1. Don't depend on the curve.
2. Be (really) prepared.
3. Make a test you think the instructor could give, and try to swap tests with another cadet.
 - a. List the major topic areas covered.
 - b. List the types of problems that could be asked.
 - c. Scratch off the problems that either take too long or for some other reason seem not suited for a 50-minute exam.
 - d. Make up possible problems and do them.
 - e. Take a careful look to see where you had difficulties and why you had trouble.

SESSION PLAN 17

Subject: Review.

Goal: To briefly review session topics and techniques discussed with student during the earlier sessions.

Main Points:

- A. Remind student of all techniques discussed, e.g.,
 - 1. Self-Evaluation
 - 2. Efficient Scheduling of Study Time
 - 3. Self-Monitoring
 - 4. Self-Reinforcement
 - 5. Motivation
 - 6. Listening
 - 7. Memory
 - 8. Long Range Plans
 - 9. Stimulus Control of Behavior
 - 10. Self-Instruction
 - 11. Textbook Reading
 - 12. Problem Solving
 - 13. Note Taking
 - 14. Flash Cards
 - 15. Test-Taking Strategies
- B. Closing
 - 1. Questions
 - 2. Goodbyes, so-longs
 - 3. Next appointment (if appropriate)
 - 4. Determine at this meeting whether student desires to continue or drop.
Mandatorily enrolled cadets should continue for one semester.

5. Stop by the How-to-Study Office if the cadet wants more forms after completing the program.
6. Remind cadets that goal is self-reliance.

PROGRAM COMPLETION

There are several guidelines you can use to determine if a cadet has "completed" the How-to-Study Program. They are as follows:

1. The cadet is studying a minimum of 22 clock hours per week, and
2. There is mutual agreement that there is no need for you and the cadet to meet more than once a month.

Additionally, if the person is a 4C cadet:

3. Try to keep the 4C cadet in the program for a full semester.

PLEASE BE SURE TO INFORM THE HOW-TO-STUDY OFFICE WHEN TO DROP A CADET.

REMEMBER THAT THE GOAL IS TO MAKE EACH CADET SELF-RELIANT.

ANY CADET IS WELCOME TO COME TO THE HOW-TO-STUDY OFFICE TO OBTAIN FORMS OR HELP EVEN AFTER COMPLETING THE PROGRAM.

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Lucas, Jerry and Lorraine, Harry. The Memory Book. New York: Ballantine, 1975.

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Robinson, F. P. Effective Study. 4th Ed, New York: Harper & Row, 1970.

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