Enterprise

Illinois State University

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Becoming a Self-directed Learner & Self-grower

Pacific Crest
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Enterprise

Revised First Edition

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Unit 1

Becoming a Self-directed Learner & Self-grower

The Role of a Master Student

Why Is This Chapter Important?

This chapter provides you with a model for high quality performance as a student that goes beyond simply a person with good study habits. Students who are successful in college take on positive performance behaviors that also make them successful in their careers/professions. You'll see your goals met and gain more from your college experience by: taking college seriously, taking responsibility for learning and performing at a high level in class, developing a life vision and educational plan, building strong self-management skills, and enjoying learning and the process of self-growth.

Learning Objectives

1. Develop an understanding for what it takes to be a quality, high-performing student and self-assess current performance against the Profile of a Quality Student.
2. Realize that college courses are about more than acquiring knowledge; they should also be used to develop a diversity of skills that will be required for the workplace.
3. Put into action a plan for effective time management for the semester.
4. Develop a plan for financing your college education.
5. Understand and effectively use the advising process.

Performance Expectations

1. Demonstrate continual effort in developing the multiple dimensions of a quality learner as illustrated in the Profile of a Quality Student.
2. Document in a journal the accessibility and value of at least three campus services.

Chapter Overview

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Preparing for a Career

According to the survey responses from more than 250,000 college freshman, the top two reasons students attend college are (1) to get a better job, and (2) to make more money.

These survey results support the fact that many students perceive college as a means to getting a better job with more pay than would be possible without a college education. However, while a college degree does open doors to new and exciting opportunities, it does not automatically guarantee a person a job upon graduation. Therefore, if you will be pursuing a career after college, a couple of key questions you should ask are:

- What specifically are employers looking for when interviewing and hiring potential employees?
- What can I do during my college years to put myself in the best position to get the job I want upon graduation?

A 1991 Report from the Department of Labor addressed the first question by asking employers, in all contexts, what they felt were the most important considerations with respect to the employees they were about to hire. Take a moment and think about how you would respond before turning ahead three pages to find a summary of the results.

Getting an Education

"Getting an education" was the third-most popular reason for attending college according to the survey. However, an education cannot be obtained like a car, a house, or a computer. Getting an education requires your active participation and involvement in a process that you control and for which you are responsible. In other words, you and only you are responsible for doing what it takes to earn a college degree. In a nutshell, this is what it means to be a student.

Your Role as a Student

Your time as a college student should provide you with many wonderful experiences and contribute to your goals and dreams. College should also be a time for growth and development; an opportunity to develop skills and acquire knowledge that you can use throughout your entire life.

However, making the most of your college experience depends on how you perform as a student. The focus of this chapter is to provide insights about the attitudes and behaviors that are common to quality students as well as to provide a model for how to perform as a student.

Profile of a Quality Student

The following discussion looks at common characteristics and behaviors of highly successful college students. Many of the areas mentioned are expanded upon either later in this chapter or in other parts of this book.

Highly successful students take college seriously.

Quality students realize the differences between high school and college.

They don't make the mistake of thinking the two educational environments are the same in terms of their requirements for student performance.

Quality students allocate an appropriate amount of time for academics.

They realize that even though nonacademic activities are a part of a well-rounded college experience, performing well in class is a much higher priority.

Quality students realize that they are part of an academic community which has certain rules, regulations, expectations, and responsibilities.

They make an effort to learn about their college and develop relationships with people at various levels in the community (e.g., peers, instructors, and administrators).

Quality students value academic honesty.

They have a deep sense of personal integrity as well as for the integrity of their school.

Highly successful students take responsibility for their learning and perform at a high level in class.

Quality students make it a point to attend and actively participate in all their classes.

If they are unable to attend class, they let the instructor know ahead of time and explain their reason for being absent. They understand that they are responsible for making arrangements to obtain notes, information, and assignments as well as make up any work that is missed. They make connections with peers who can help out in these situations.

Quality students come prepared for every class.

They do the required homework and readings, review their notes (from class and the assigned readings), develop questions to be clarified in class, know what will be covered in class, and relate new material to what was previously learned.

Quality students know where they stand in each class they take.

They effectively utilize the syllabus (identifying important dates for exams, projects, and papers) and plan their time accordingly. They are able to accurately predict their grade in a class at any point in the semester or term. They make use of tools such as the Course Record Keeper to collect data and stay organized.

Quality students make effective use of faculty office hours.

They realize that the purpose of faculty office hours is not for an instructor to do the work, but rather to guide or assist student learning.

Quality students understand that grades are earned rather than handed out by an instructor.

They avoid the misconception that an instructor gives them a grade on an exam or in a course, and take ownership and accountability for their preparation and performance.

Quality students are good at accepting both evaluation and assessment feedback.

They do not make excuses and become defensive about criticism of their work. They understand that evaluating and critiquing course work is part of an instructor's job. They realize that an instructor is not judging students, only their work product.

Quality students seek to develop positive relationships with their instructors.

They ask for details or examples when they don't understand feedback they have received. If a problem or conflict develops with an instructor, they set up a meeting to identify the problem and express their concerns clearly (which are the first steps toward negotiating an effective and acceptable solution).

Highly successful students have a life vision which includes an educational plan.

Quality students work with their advisor to develop an effective and efficient plan for earning a degree.

They use the college catalog to identify the general education requirements as well as the requirements for their major area of study. They are efficient at the registration process and know the associated policies (add/drop, electronic registration, etc.).

Quality students begin creating a life vision portfolio when they enter college.

They understand the importance of establishing a portfolio which can be used to document their progress and growth while at college.

Quality students set goals for college as well as other areas of their life.

They realize that goals do help to focus their efforts and achieve higher outcomes. Quality students have academic goals which include a target or desired grade point average.

Quality students have a plan for financing their college education.

They are fully aware of what options are available to them and make the best use of available resources in order to meet their financial needs and obligations.

Highly successful students have strong self-management skills.

Quality students have developed good study habits and skills.

They are good at note-taking, highlighting, preparing for exams, and test-taking strategies.

Quality students have strong time management skills.

They know how to schedule their time and stick to their plan. They overcome procrastination with action. They properly allocate their time between academics and extra curricular activities.

Quality students are able to manage their personal finances effectively.

They are able to manage day-to-day finances and avoid getting dangerously in debt (especially with credit cards).

Self-Management Skills

preparing

focusing

persisting

managing time

setting personal goals

setting priorities

planning individual action

managing personal finances

High performance students enjoy learning and work hard at developing their learning skills in all areas.

The table on the next page identifies characteristics associated with quality students. The remainder of this chapter goes into more detail about several of the topics mentioned in the table. These include the skills that employers want, academic honesty, academic advising, utilizing faculty office hours, calculating a grade point average, time management and financing a college education.

Table 1.1 ***Characteristics of Quality Students***

Quality students...

- work to improve their learning skills by utilizing tools such as methodologies.
- are information literate and have good study skills.
- are good readers and writers.
- use technology and tools to assist and enhance their learning.
- are focused on growth and personal development.
- work at developing communication and people skills.
- are good problem solvers in a variety of contexts.
- use their skills at assessment to keep improving their performance as students.

What Employers Look For When Hiring

The 1991 SCANS Report from the Department of Labor presented the findings from more than a year's worth of talking to employers (in all contexts) about what they desired most in their employees. An excerpt from this report is as follows:

> *Their message to us was the same across the country and in every kind of job: good jobs depend on people who can put knowledge to work. New workers must be creative and responsible problem solvers and have skills and attributes on which employers can build.*

The report highlighted five competencies and a three-part, set of foundation skills and qualities essential for students to develop. The results are presented in the tables below.

Table 1.2 ***Foundation Skills***

Basic Skills	**Thinking Skills**	**Personal Qualities**
reading	ability to learn	individual responsibility
writing	ability to reason	self-esteem
speaking	ability to think creatively	self-management
listening	ability to make decisions	sociability
mathematics	ability to solve problems	integrity

Note how the qualities desired by employers (for a quality worker) match up very closely with those of a quality learner. In both cases, responsibility and pride in performing at a high level are important. If you want to put yourself in the best possible position when seeking a career job, the challenge is to use your college experience to develop the skills and qualities mentioned in these tables.

Table 1.3 ***Competencies***

Effective individuals can productively use...	
resources	They know how to allocate time, money, materials, space, and staff.
interpersonal skills	They can work on teams, teaching others, serve customers, lead, negotiate, and work well with people from culturally diverse backgrounds.
information	They can acquire and evaluate data, organize and maintain files, interpret and communicate, and use computers to process information.
systems	They understand social, organizational, and technological systems; they can monitor and correct performance, and they can design or improve systems.
technology	They can select equipment and tools, apply technology to specific tasks, and maintain and troubleshoot equipment.

Academic Honesty

Most schools have academic honesty codes or policies which outlaw cheating, plagiarism, and other forms of dishonest behavior. Since a large part of the learning and writing done in college involves "processing" ideas and material originally conceived by others, it is important to understand the difference between using the work of others (in constructing your own knowledge) and reproducing other people's work as if it were your own. The adage "honesty is the best policy" goes a long way. Adherence to academic honesty and maintaining your reputation and integrity is always in your best interest.

The reputation of any school is the shared responsibility of its administration, faculty, and students. Students are expected to observe the same standards of scholastic integrity as their academic and professional counterparts.

Students who take shortcuts and cheat to get ahead can take no pride in their work and unearned accomplishments. By cheating, the learning process is bypassed and the quality of one's education suffers. For example, the use of commercially prepared essays in place of a student's own work essentially destroys the purpose of a university education. In the end, what has a student learned from this type of action?

Take a moment to look at cheating as a process. Students who opt for this method or approach usually spend extra time and effort in order to avoid getting caught. But what is the objective? The vast majority of cheating is done to get a good grade and save time and effort. If the subject matter is important, the student will have to go back again and learn it all anyway at some point. That's more than twice the effort it would have taken to do the work honestly.

Academic Advising

Advisors provide valuable guidance as you progress through your academic program. Guidance typically comes in four main areas: guidance about appropriate courses and a major, guidance about the academic institution and its policies, guidance about life issues that occur while in college, and guidance about opportunities after college.

Advisors have knowledge of the "big picture" and can offer advice that is not found in a college catalog. An advisor can help with sequencing of courses using his or her knowledge of course requirements, the difficulty of course content, and when courses are offered during the academic year. As you build an academic schedule that is right for you in your current situation, be sure to take advantage of the expertise of your advisor.

There are two types of undergraduate advisors, the professional academic advisor and the faculty advisor.

Professional academic advisors are either generalists or specialists. Generalists are knowledgeable about most or all of the majors available to students at the freshman-sophomore level. Specialists typically work within a particular department and are knowledgeable about all of the programs within a particular major or school within the university. Usually professional academic advisors are available to see students throughout the calendar year, even when classes are not in session.

Faculty advisors take on advising in addition to their teaching duties. They are knowledgeable about the majors within their department and are excellent guides for students who have decided on a major. They are usually available only a few hours each week during the academic year. Often faculty advisors are available via e-mail as well as during their office hours.

Advising Tips

From an advisor's point of view, a good advisee:

- takes time to read through program and course descriptions as well as the requirements in the college catalog before visiting with an advisor.
- visits the advisor before the registration period to discuss and clarify questions.
- understands that the responsibility for registering is that of the student, and that the role of the advisor is to give advice, not to mandate.
- checks the advice given by an advisor before taking final action; realizing that advisors can occasionally make mistakes, especially during hectic periods (e.g., your advisor suggests you register for a course that you've already taken because he or she doesn't have your transcript handy).
- takes responsibility for choosing his or her classes at registration time after consulting with an advisor regarding the advisability of those choices.
- lets his or her advisor know when something is going wrong or awry.

Faculty Office Hours

In addition to time in the classroom, your instructor sets aside time each week in the form of office hours to meet with students. Faculty office hours are usually listed in the course syllabus. Since this time is limited, it is important for both you and your instructor that this time be well utilized.

While your instructor is a resource you should not ignore, realize that the purpose of office hours is not for your instructor to do your work for you but rather to guide or assist you with your learning.

Below are some tips for making effective use of faculty office hours.

Don't wait until just before a test or exam to try and meet with your instructor. You should review and study on a regular basis and avoid last minute cramming. However, since many students do not heed this advice, you will find that other students will be competing for limited office hour time with your instructor just prior to an exam.

If you have missed a class, before asking questions of the instructor:

- make every effort to obtain notes and information from other class members,
- and be sure to have thoroughly read the required material.

If you are confused or "stuck" with a concept or certain information, before visiting your instructor write down the following:

- what you think you understand,
- where you are getting stuck and what you have done to try to get "unstuck,"
- what particular materials you find confusing and the reasons why you find them confusing, and
- what particular materials you find ambiguous and the various ways you could interpret the ambiguous materials.

Often by writing down this information, you will discover the solution to your problem. Even if you don't find the solution, your instructor will be aware of the effort and critical thought you are using while studying.

Calculating a Grade Point Average

Grade point average, or GPA, is a numerical calculation based on the letter grades given to students for the courses they take. A GPA is one of the most common measures that schools and potential employers use to evaluate academic success. An understanding of a GPA and how it is calculated helps you set academic goals and assess your progress through college.

The following illustrates one way to calculate a GPA. Create a five-column table with column headings that look similar to the example table below. Before doing any calculations, enter the appropriate course data in the first four columns. The table to the right shows the numerical equivalents for grades based on a four-point grading scale (the highest numerical equivalent being 4.0). Note that various grade equivalents are provided since different schools use different grading schemes. Note that you can calculate a GPA for courses you have taken for any given semester (or quarter), or for the entire time you have been in college.

Numerical Equivalents
A = 4.0
B = 3.0
C = 2.0
D = 1.0
F = 0.0
AB = 3.5
BC = 2.5
A– = 3.67
B+ = 3.33
B– = 2.67
C+ = 2.33
C –= 1.67
D+ = 1.33

Course	***Credit Hours***	***Letter Grade***	***Numerical Equivalent***	***Grade Points***
History	3	A	4.0	12.0
Biology	4	B	3.0	12.0
Economics	3	C	2.0	6.0
Foundations of Learning	3	A	4.0	12.0
Computer Appications	2	B	3.0	6.0
Total	15			48

Grade Point Average = total grade points divided by total credit hours

Calculations to obtain a GPA:

1. Multiply the number of credit hours by the corresponding numerical equivalent to obtain the "grade points." Place this value in the appropriate cell.
2. Sum the values in the "credit hours" and "grade points" columns.
3. Divide the total number of grade points by the total credit hours.

Final GPA calculation

Discussion Questions

1. What information is needed to begin calculating a GPA?
2. What are grade points and how are they calculated?
3. What is meant by *average* in a grade point average?
4. What is the significance of a numerical equivalent when calculating a GPA? Why is it necessary?
5. In which class will a letter grade of "A" more greatly affect a person's GPA, in a five-credit course, or a three-credit course? Why?

Time Management

Time management refers to how you plan, control, regulate and schedule your time. In the context of college, good time management skills help you to complete all your course work in a timely manner while maintaining balance in your life outside of academics.

Time management is an important factor in determining student success in college. High performing students tend to make a conscious effort to plan and manage their time. Perhaps the main reason more students don't focus on time management is that it's not trivial and takes effort.

The following ideas and guidelines will help you to manage your time more effectively.

Determine how you currently spend your time.

The first step in time management is to become aware of how you are currently spending your time. Once this determination is made, regardless of your current situation, you can take action to make improvements.

A good tool to monitor your time is a day-planner that breaks down each day into certain time increments. Day-planners are readily available in bookstores or you can easily create your own day-planner.

Be diligent in recording your activities throughout the period of a week. Break down how you spend your time into various categories (such as in-class time, studying, sleeping, eating, time with friends, recreation, e-mail and Internet, television, etc.). Don't be too general in your use of time category headings.

At the end of a week, sum the totals in the various time categories. Analyze the time data you collected. Assess your strengths and areas for improvement with respect to time management.

Develop a time management plan.

Begin with a blank weekly schedule that lists the days and hours during the day. Start by filling in your committed times or fixed commitments. These include items such as your scheduled classes, work commitments, meal times, travel time (for commuters), sleep, organized sports or activities. If your committed times change from week to week, it is important that you adjust your time management plan on a weekly basis.

Once you have accounted for the committed times, you should begin to see patterns or blocks of available free time. Your next consideration should be allocation of study time. *A general guideline for out-of-class study time is that for every hour spent in the classroom, you should spend two hours studying out of the classroom.* For more challenging courses, you should allocate three or more hours outside of class for every classroom hour. Another factor that influences study time in a course is your skill set compared to the demands of a particular course. For example, if you are a slow reader taking a history or literature course, you should adjust your study time accordingly. Keep track of the time you spend studying for each course. Record how long it takes you to complete problem sets, to read chapters in particular textbooks, etc. This information can be used to help you revise and adjust your time management plan.

When considering allocating or designating study times, consider times when you are physically and emotionally ready to study and perform at a high level. Try to match the times of the day when you are sharpest with times you can study. Also, realize that for many people, it is more effective to study in one-hour blocks of time than to study for three or four hours at a time. If you do study for longer periods of time, be sure to take breaks.

With your committed time and study time allocated, fill in the rest of your plan with other activities based on how you usually spend your time.

Organize your time for different time intervals.

On a monthly and semester basis

The Course Record Keeper presented on the next page is an ideal tool for staying organized in all of your courses. Use the Course Record Keeper along with a monthly calendar (you fill in) and the syllabus from each course to keep on top of important deadlines and dates associated with your courses. Refer to these tools on a regular basis and update the information accordingly.

On a weekly basis

Fill in a schedule for the week with committed times, study times, and other uses of your time.

On a daily basis

To-do lists are helpful for prioritizing tasks on a daily basis. Label or categorize the items in order of importance.

Table 1.4 **Course Recorder Keeper**

Course	Tests	Quizzes	Homework & Assignments
Course 1			
Course 2			
Course 3			
Course 4			
Course 5			

Financing a College Education

Every student must deal with meeting the financial obligations associated with college. For many students, the main source of funding for college comes from themselves and their families, with other possible sources being the federal government, state governments, colleges, private foundations, and employers. Unfortunately the processes for obtaining funds are not always easy, and they are complicated by the fact that college expenses are incurred for several years with typically higher costs each year. Knowing your financial options can save you money as well as give you more peace of mind as you plan for your remaining years at college.

Attending college requires planning from both an academic and financial perspective. What options do you have in paying for a college education? Financial resources to pay for college come from three main areas:

- a student's assets and income earnings,
- a student's parents and/or family member's assets and income earnings, and
- various forms of financial aid available from government, military, colleges, employers, and private foundations.

Financial aid accounts for less than half of the money students spend on their college education. In general terms, while students can obtain financial aid, the majority of the financial burden falls on the students and their families.

However, the more resourceful you are at obtaining financial aid, the smaller the personal and family burden will be. Financial need is the main factor used to determine the amount of financial aid offered to any particular student. Something called the "expected family contribution" may limit or exclude you from receiving certain types of need-based financial aid. The rules pertaining to calculating expected family contribution are fairly involved (your financial aid office can assist you with the details). A needs analysis form called the *Free Application for Federal Student Aid* is what the federal government requires in order to compute an expected family contribution.

Discuss with your school's financial aid officer what possible options you may have for financing your education. Options for students include:

- the **financial aid offerings at your school**. These could include low cost loans, installment programs, middle-income assistance programs, and work-study programs.
- **academic scholarships** which are given regardless of a student's financial need.
- money that the **military**, ROTC, and the National Guard have for college students.
- **state aid** that is available to students who stay in their home state.
- **athletic scholarships** given to those athletes who are not the superstars.
- **cooperative education** (co-ops) programs or internships which offer work experience before graduation

Inquiry Questions

1. Successful students have strong self-management skills. What are three examples of self-management skills?

2. What is the first step in implementing an effective time management plan?

3. What costs must you consider when planning for your college education and what options do you have for paying for these costs?

4. How would you describe your role as a college student and what three examples of taking responsibility for your own learning?

5. How can you make more effective use of the office hours posted by your instructors?

6. What is the formula used to calculate a grade point average ? Which grade will more greatly affect a person's GPA, an A or an F? Why?

7. How would you assess your performance as student against the profile of a quality student? What actions will you take to improve your performance as a student?

8. In what ways does the profile for a quality student match up with the foundation skills and competencies noted in the SCANS Report which describe a quality worker or employee?

Activity — Time Management

Why

Time management refers to how you plan, control, regulate and schedule your time. The ways in which you spend your time, and what you accomplish with it are a reflection of your current time management skills. Time management plays an important role in helping you reach your goals and accomplish more out of life. Good time management skills are an integral part of being successful in the time-pressured environment of college; helping you allocate time between classes, study, and all the other things you want to do.

Learning Objectives

1. Analyze your current effectiveness (at time management) by identifying where you spend your time.
2. Identify ways to improve your time management skills.

Performance Criteria

Criterion #1: quality of your planned weekly schedule

Measures:

a. degree of balance in time allocation
b. the display of an appropriate degree of commitment
c. the taking into account of personal wellness

Criterion #2: effectiveness in implementing your revised schedule

Measures:

a. adherence to the plan; number of hours actual time differs from the plan
b. accuracy of the class attendance and study times
c. the amount of sleep you get

Resources

- pen and paper
- computer with software for word processing and graphing

Project

1. The first step in time management is to inventory how you currently spend your time. Create a seven-column table with each day of the week listed in the column headings across the top of a page. List the hours of the day down the page as row labels. Individually inventory and block the times for each day of the week in the following manner.

   a. First, fill in your "committed" times. This includes things such as your classes, work commitments, meal times, sleep, travel time (for commuters), and organized sports or activities.

b. Next, block in the times you presently use for studying. *Note: A guideline for out of class study in college is that for every hour spent in the classroom, you should spend 2-3 hours studying out of the classroom. Do you feel you are currently allocating the appropriate amount of time for study?*

c. Fill in the rest of the schedule with how you usually spend your time. You may be specific or you may use general terms such as "social" or "recreation."

2. Analyze the information in your table in terms of weekly totals. Categorize or group your time spent into major areas, e.g., basic needs (sleeping and eating), mental, social, physical, and spiritual needs. Sum the hours you spend each day in these categories to arrive at a weekly total. *Optional: Use a computer with graphing software to construct a pie chart of this data.*

3. Create a new table which shows the hours per week you currently spend in the main areas common to most people's everyday lives.

4. Create a revised weekly schedule for how you plan to spend your time next week (after working through this activity). Include a prioritized daily task list with anticipated time requirements. What changes if any will you make to your study habits?

Assessment

1. How effective is the time you spend studying? Are you productive with this time? What are two strengths, two areas for improvement, and two insights about your effective use of study time?

2. What are the top three things you would change in your current schedule to make the greatest improvement in your performance as a college student?

Exercises

1. Monitor your performance for the next two weeks against the modified timetable you created for this activity. In a one or two-page paper, assess the accuracy of your estimations and your diligence at following the schedule. Discuss adjustments you need to make.

2. Use a blank monthly calendar to identify the dates associated with exams, important assignments and tasks for all of your classes. Another way to present this information, with more space for writing, is to allow several lines on a piece of paper for each week of the semester. This allows you to identify the due dates of assignments for each course you are presently taking.

3. Write a one or two-page paper discussing the relationship between procrastination and time management. Identify some ideas for overcoming procrastination.

Unit 2

Becoming a Self-directed Learner & Self-grower

Improving Your Learning Skills

Why Is This Chapter Important?

Being an independent learner who is able to grow his or her own skills will benefit you not only in college but your entire life. This chapter provides an explicit framework for learning called a methodology. The Learning Process Methodology and the Profile of Quality Leaner are two valuable tools presented in this chapter that will help you become a self-directed learner.

Learning Objectives

1. Know the steps in the Learning Process Methodology and how they can be used as a guide to improve your learning skills.
2. Appreciate the significance and of the *Classification of Learning Skills* and be able to describe its structure consisting of four domains, corresponding processes, and specific skills.
3. Learn about methodologies and appreciate their value as tools to help you grow and improve your skills.
4. Explain various types of learning styles and identify your most preferred style.

Performance Expectations

1. Self assess your performance as a learner using the Profile of a Quality Learner as an upper benchmark.
2. Document your use of the Learning Process Methodology, in a step-by-step manner, as it pertains to a particular learning situation in your life.
3. Describe and explain methodologies and their role in efficiently learning a new process.

Chapter Overview

Learning and Learning How to Learn
Profile of a Quality Learner
Levels of Learner Performance
Improving Your Learning Skills
Methodology – A Tool to Help You Get Better at a Process
The Most Efficient Way to Learn a New Process
The Learning Process Methodology (LPM)
Overview and Discussion of the Steps in the LPM
Beyond Knowledge to Skills
Classification of Learning Skills
Learning Styles
Bloom's Taxonomy
Gardner's Theory of Multiple Intelligences
What Does This Mean for You?
Inquiry Questions
Activity — The Learning Process Methodology

Key Terms and Concepts

learning

process

methodology

Learning Process Methodology

prerequisite

learning objective

performance criteria

Classification of Learning Skills

learning styles

Bloom’s Taxonomy

Gardner’s Theory of Multiple Intelligences

Learning and Learning How to Learn

If you stop and think about it, perhaps the most powerful and beneficial skills a person can possess are those associated with learning. Imagine the possibilities available to those who are not intimidated by new challenges because they have confidence in their learning skills. Good learners can adapt to different situations knowing they are capable of learning what it takes to be successful. Whether it's learning difficult concepts in a college classroom, using new software packages on the computer, utilizing market information to make investments, or developing new skiing techniques on the slopes — there is no limit!

What do you think of when you hear that someone is a "good" learner? Does it mean that he or she simply has the ability to quickly learn new information? Webster defines "learning" as the process of gaining knowledge or skill by study, experience, or instruction. The key words we wish to emphasize from this definition are *process* and *skill*.

Process

Learning is a process. A good learner is not only fast and efficient within the context of a single learning situation, but most importantly, a good learner is proficient at the process of learning. In other words, he or she can "learn how to learn." Later in this chapter you will be introduced to a tool called the Learning Process Methodology that can be used to better understand the *process* of learning.

Skills

Learning requires using existing skills to improve or build new skills. Another valuable tool is the *Classification of Learning Skills* which presents a comprehensive listing of an entire set of learning skills. This tool helps you identify key skills fundamental to learning and is a resource you can refer to as you develop, improve, and assess your learning skills.

Profile of a Quality Learner

Table 2.1 (on the next page) presents many of the attributes and characteristics that are associated with people who excel at learning.

Table 2.1 ***Profile of a Quality Learner***

	Quality learners...
Role of a Student	• focus their energy on the important task at hand. • exhibit learner ownership, taking responsibility for the learning process and their own learning.
Creating a Life Vision	• have a vision for their life and can articulate goals and objectives with measurable outcomes in various areas of their lives. • engage in learning experiences having clarified their own values and maintaining an appreciation for other people's values.
Learning Skills	• focus on improving and developing their learning skills by modeling the learning process itself. • use inquiry, questioning, and critical thinking to be more efficient with time and gain new insights about how concepts can be applied.
Information Literacy	• access information quickly and are able to distinguish relevant from irrelevant information.
Reading Skills	• engage all their senses to access information; with a special emphasis on listening and reading.
Writing Skills	• clarify, validate, and assess their understanding of a concept through verbal and written means.
Using Technology	• make regular use of appropriate tools and technology and invest in learning new ones.
Personal Development	• are willing to take risks and experiment; they are secure in their emotions and can accept failure as a frequent and productive event on the road to success. • utilize their self-esteem and self-confidence to successfully meet new and challenging learning situations, building upon successes to improve future performance.
Relating with Others	• demonstrate strong social skills, easily interact with other people, and are valued members of productive teams.
Problem Solving	• are strong problem solvers who are able to visualize, model, transfer, and synthesize concepts. • demonstrate interest, motivation, and desire to seek out new information, concepts, and challenges so they can apply them to new situations and problems.
Assessment	• are good at the process of assessment and seek to continually develop their self-assessment skills.

Levels of Learner Performance

Let's now look at a range of levels or abilities with respect to a person's performance as a learner. An examination of this kind allows you to assess where you are currently and provides a progressive path to follow. Five levels of learner performance are presented below beginning with *trained individuals* and progressing up to *self-growers*.

Trained individuals have developed a specific knowledge base, with specific skills for a specific context. Most college students want their college education to be much broader than simply being trained for a job.

Example characteristic: *must have explicitly defined rules, procedures, and policies.*

Learned individuals have acquired a broad base of general knowledge and can apply it to related contexts. Traditionally, colleges and universities have had mission statements that focused on producing "learned" individuals. Creating learned individuals can be viewed as a process where professors "fill" their students with knowledge, similar to filling a container with water.

Example characteristic: *are willing to accept challenges within their area of expertise.*

Lifelong learners have developed the skills and motivation to facilitate their ongoing learning (of knowledge) and are able to apply learning to a variety of contexts. It is common today for colleges to have missions that state a desire to develop lifelong learners thereby acknowledging that learning continues in both personal and professional contexts beyond college and throughout one's life.

Example characteristic: *seek out new challenges in related areas of knowledge.*

Enhanced learners have developed higher levels of learning skills in all areas including cognitive, social, affective, and psychomotor domains (see the *Classification of Learning Skills*). Enhanced learners are active learners who seek new knowledge and contexts for learning. In addition, they work to build greater proficiency with skills from several domains (cognitive, social, affective, and psychomotor) including assessment. Typically a mentor helps with the growth and development of an enhanced learner.

Example characteristic: *seek to push the boundaries of their performance.*

Self-growers represent the highest level of learning performance. In addition to having the skills of a quality enhanced learner, they possess especially strong self-assessment skills which enable them to continually grow and improve after each performance. Rather than requiring a mentor, self-growers typically serve as a mentor to others.

Example characteristic: *take control of their own destiny–there are no boundaries.*

Improving Your Learning Skills

How do you rate yourself in terms of the five levels of learner performance? Regardless of where you evaluate yourself, it is important to realize that everyone can improve his or her learning skills. Even self-growers can improve! In fact, it's in their nature to want to improve, drawing upon their self-assessment skills to learn from the past to improve performance in the future.

What can you do to improve your learning processes and skills, and how can you move closer toward becoming a self-grower? In a general sense, this book is devoted to helping you become a self-grower. In more specific terms, this book can help you:

Gain a better understanding of the learning process.

The Learning Process Methodology (LPM) presented on the next few pages is a tool that you can apply to learning situations in all contexts. It can be used to better understand what should take place (1) as you prepare to learn, (2) during a learning experience itself, and (3) after a learning experience.

Regularly assess your performance against the Learning Process Methodology when in learning situations.

Familiarize yourself with the steps in the Learning Process Methodology and regularly assess your performance against the methodology.

Identify specific skills you need to use for particular learning situations.

The *Classification of Learning Skills* helps you to identify general skill areas and specific skills for certain processes. As you familiarize yourself with this classification, you can select the most appropriate skills to focus on during a particular learning activity.

During learning activities, self-assess your performance with the skills you identified.

Assess against criteria established by you or a mentor.

Identify and learn about your preferred learning style.

Knowing more about learning styles allows you to make discoveries about your strengths and areas for improvement as a learner. If maximum performance is needed in a very challenging or difficult learning situation, you can use your preferred learning style. In other situations you can work to improve and build skills associated with other learning styles. A discussion of learning styles can be found later in this chapter.

Methodologies – Tools to Help You Get Better at a Process

Methodology

A methodology is an orderly arrangement of steps or procedures.

In the context of this book, a methodology is the key tool for helping a person learn how to perform a new process.

A process is a sequence of steps, events, or activities that result in a change or produces something over a period of time. Our everyday lives are filled with processes we perform, ranging from simple and mundane to very complex. Simple processes such as tying a shoelace or connecting to the Internet don't require much, if any, thought. They have become second nature to us. However, to a small child or a first-time computer user, these processes have not yet become so trivial.

Simple processes are not the issue here. The key issue is learning how to get better at the more challenging and difficult processes such as writing a research paper for a psychology class, or solving a set of word problems in a math or physics course, or preparing for a presentation in a speech communication class — in a broader sense, improving your writing, problem solving, and communication skills.

An excellent tool or resource to help with learning a process is a *methodology*, or an orderly arrangement of steps or procedures. A methodology serves as a model by listing a set of steps which describe how to best perform a process in an effective and efficient manner. In the case of this book, methodologies for important processes are presented for you. In other cases, you may need the help of an expert or someone who is good at the process to create a methodology for you to follow. Better yet, have the expert serve as a mentor or coach to give you feedback as you first learn the process.

Consider a methodology to be like a recipe. For example, if you are preparing a lasagna for the first time, the recipe serves as a guide that you constantly check to make sure you are doing things correctly. However, with each subsequent time you prepare the lasagna, you rely less and less on the recipe and become more free and spontaneous to make adjustments that suit your tastes (just like an expert chef might do).

The same is true when using a methodology to learn a process. The more unfamiliar you are with a process, the more closely you will want to follow the methodology in a step-by-step manner. Then as you become more proficient, you become less reliant and more flexible with respect to how you follow the methodology, in some cases skipping steps or making adjustments to suit your needs.

When using a methodology in a situation that is not complex or difficult, it is a good idea to think through all the steps even though you may choose to skip certain steps that are not necessary. By doing so, you will reinforce the methodology and become more familiar with it. The better you know and understand a methodology, the better you will be able to apply it in more challenging and difficult situations.

A methodology is like a recipe.

A beginning cook is well advised to follow the recipe closely for best results. With more experience, the cook may dare to vary the recipe, or even depart from it significantly.

The seasoned cook will pay little or no attention to the recipe, because the principles underlying it are by now second nature.

Nevertheless, the expert cook will always remain faithful to the spirit of the recipe, even while improving it.

Likewise, with experience, you will develop your own instincts to tell you how closely to follow any step-by-step process.

The Most Efficient Way to Learn a New Process

The table below describes the most efficient way to learn a new process.

Table 2.2 ***How to Learn a Process***

1. Obtain an effective methodology or set of procedures for the process.
2. Closely follow the steps to acquaint yourself with how the process works.
3. Practice the process on a regular basis.
4. Assess your use of the process after every performance or practice. Identify your strengths and acknowledge your progress. Look for areas for improvement and determine what you can do the next time to get better.
5. Find a mentor who has expertise with the process who can help you. Have your mentor give you feedback as you do steps 1- 4.

How might you describe the five steps mentioned above? They are a methodology! In this case, the methodology above is a procedure to help you effectively learn any new process.

In this book you will find many valuable methodologies. However, the value of a methodology comes not from knowing it but *applying* it. You will gain the most from this book if you follow the steps in the table "How to Learn a Process" with new processes that you want to learn, and processes that you want to improve upon.

The Learning Process Methodology

Let's look at the process of learning — a process used continually as a student and one you will use throughout your entire life. While learning is not a new process, it is a process that has its complexities and is not easily understood.

The Learning Process Methodology has components that cover three main areas: (1) preparing to learn, (2) performing a learning activity, and (3) assessing and building new knowledge. Each area can then be broken down further as follows:

Overview of the LPM

Preparing to learn

- set the stage for learning,
- set goals and criteria for learning, and
- obtain relevant information for learning.

Performing a learning activity

- implement action for learning and
- apply what has been learned.

Assessing and building new knowledge

- assess performance at learning, and
- construct new knowledge.

The Learning Process Methodology (LPM) can be used as a resource to gain insights into your current learning process. Realize that everyone's learning process can be improved, and the LPM is a useful tool for this purpose.

As you increase your ability to learn, your self-esteem and confidence will grow, and you will become a person with broader horizons. You will also increase your opportunities for personal growth, leading to life experiences that become more rewarding and enjoyable.

Overview of The Learning Process Methodology

Preparing to Learn

Set the stage for learning: *Why, Orientation, and Prerequisites*

A person will perform better at the beginning of the learning process if the following occurs. The learner:

- feels that what is to be learned is important and worthwhile,
- sees how what is to be learned fits into a "big picture" or builds on what he or she already knows, and
- has the necessary prerequisite skills and knowledge to start the process.

In general, the learner should have some motivation to learn, some understanding of what is being learned and the basis to determine if he or she has the appropriate knowledge and skills for learning the new material.

Table 2.3

LPM	*The Learning Process Methodology*
Preparing to Learn	
1. Why	Identify and explain your reasons for learning.
2. Orientation	Develop a systematic overview of what is to be learned.
3. Prerequisites	Identify necessary skills and background knowledge needed to perform the learning.
4. Learning Objectives	Set appropriate goals and objectives for the learning activity.
5. Performance Criteria	Determine specific desired outcomes used to measure and gauge performance.
6. Vocabulary	Identify and learn key terminology.
7. Information	Collect, read, and study appropriate resources.
Performing a Learning Activity	
8. Plan	Develop a plan of action to meet the performance criteria.
9. Model	Study and review examples that assist meeting the learning objectives and performance criteria.
10. Thinking	Pose and answer questions that stimulate thought and promote understanding.
11. Transfer/Application	Transfer knowledge to different contexts; apply knowledge in new situations.
12. Problem Solving	Use knowledge in problem solving situations.
Assessing and Building New Knowledge	
13. Self-assessment	Assess use of the learning process and mastery of the material learned.
14. Research	Create and develop knowledge that is new and unique.

Set goals and criteria for learning: *Learning Objectives and Performance Criteria*

The next two steps of the LPM provide a clear statement about what is to be learned (learning objectives) and what is expected of the learner at the end of the process (performance criteria). By determining learning objectives, the learner clarifies the general purpose of the learning activity. The performance criteria provide specifics as to what is expected of the learner in terms of outcomes or performance.

Obtain relevant information for learning: *Vocabulary and Information*

These two steps provide the learner with the terminology and background information necessary to begin the process of learning something new.

Performing a Learning Activity

Implement action for learning: *Plan, Models,* and *Thinking*

The process of building new knowledge (learning something new) involves constructing and following a plan with a set of tasks which results in meeting the learning objectives and established performance criteria. The plan should include the use of the obtained information, models, and questions which require critical thought. Models and examples help the learner to explore and build understanding about what is being learned. New knowledge is constructed by thinking critically which involves asking and answering key questions.

Apply what you have learned: *Transfer/Application & Problem Solving*

A measure of true understanding and learning is exhibited when a learner is able to transfer what has been learned to new contexts and apply knowledge in new and different ways to solve problems.

Assessing and Building New Knowledge

Assess the learning process: *Self-Assessment*

The learning process can be improved if a learner becomes good at self-assessing his or her performance while he or she is learning. By focusing on strengths and areas for improvement, a person can use this information to improve his or her performance in the next learning situation. At the very least, a learner should be able to determine (self-assess) the quality of his or her performance.

Construct new knowledge: *Research*

A learner becomes a "self-learner" when he or she continues the learning process to conduct research and construct new knowledge which builds upon prior knowledge. This includes applying knowledge in new contexts, creating new methodologies, and making new interpretations or understanding things in a new way.

Discussion of the Steps in the Learning Process Methodology

Why

The process of learning begins with identifying the need or motive for learning (acquiring knowledge). The reasons for learning vary based upon the context, whether it be getting more enjoyment from life, obtaining a college degree, performing a job better, or learning about something to solve a problem. Also, when the objectives are clear and the motivation for learning is strong, the learning process becomes more enjoyable and productive.

Table 2.4

The Learning Process Methodology — A Simple Example	
Scenario: You just received a new digital watch as a birthday gift. The watch is not currently set with the correct time and date. You want to start wearing your new watch and need to know how to set the time and date.	
1. Why	You want to start wearing and using your new digital watch.
2. Orientation	Look over the contents of the package, the watch, and printed materials.
3. Prerequisites	Includes reading skills, ability to tell time, and fine motor skills.
4. Learning Objectives	You want to learn how to set the watch to the correct time and date.
5. Performance Criteria	Set the watch to the correct time and date within five minutes.
6. Vocabulary	Terms to know: LCD screen, functions.
7. Information	The operating instructions booklet.
8. Plan	Read instructions for three minutes. Refer to the watch while reading instructions. Set the time and date according to the instructions — within two minutes.
9. Model	The diagram of the watch included with the instructions.
10. Thinking	Which buttons control which functions? What is the correct time and date? Does the watch need to be set according to A.M. and P.M.? Does a button need to be pressed more than once?
11. Transfer/Application	You should be able to adjust and change the time correctly when changing time zones.
12. Problem solving	The watch needs to be used as a stopwatch and as an alarm.
13. Self-assessment	Is the time and date set correctly? Did you meet the criteria?
14. Research	Look at improving the design of digital watches.

However, unless there is some justification that learning will be personally beneficial, most individuals are not willing to invest their time and effort. When it comes to learning something new, people tend to choose how they spend their time based on personal needs and goals. It is common for people to ask, "is this worth my time and is this relevant to meeting my personal, educational, career or life goals?"

Orientation

The orientation provides a systematic overview of what is to be learned. This information helps you to prepare for a learning activity by showing how the new knowledge fits into a larger picture, similar to knowing how a single chapter fits within the context of an entire textbook. Your ability to see the "big picture" helps you to stay focused and improve your learning effectiveness. An orientation involves first reviewing all the parts, and then looking to see how the parts are connected and work together as a whole.

Prerequisites

A prerequisite is defined as something required beforehand; a necessary condition for something to follow. As it pertains to the LPM, prerequisites identify the skills and/or knowledge required at the start of the learning process. In other words, the learner needs to identify necessary background information or prerequisite skills before going any further in the activity or learning process. Taking personal responsibility for preparing yourself for a new learning experience increases your confidence and self-esteem as a learner.

Learning Objectives

Learning objectives help you focus your efforts to be more productive by providing a clear statement about what is to be learned and accomplished during the activity (learning process). Learning objectives are typically action-oriented statements written to support one's reasons for learning. Effective objectives are personal, relevant, valuable, motivating and support your overall learning objectives.

Performance Criteria

Performance criteria provide a standard to measure your performance during a learning activity. Criteria should be measurable, observable, fair, and reflect high expectations. These criteria help you focus on what is important and allow you to gauge the quality of your performance. The assessment process relies on set criteria. Furthermore, self-assessment is key to improving any process you perform.

Vocabulary

Learning can be very language dependent. The process of learning something new often involves being introduced to new and unfamiliar terminology. Without an understanding of new terminology (near the beginning of the learning process), you can easily become lost and frustrated. It is important to take time to identify and define new and important terms used during the learning activity. This is best accomplished by using a variety of sources such as glossaries, dictionaries, textbooks, and the Internet to write a brief description of how each key word fits within the context of the learning activity.

Information

The learning process uses prerequisite knowledge (third step of the LPM) and introduces new information. It is important to have a solid base of information when learning or acquiring knowledge. Certain factors affect the quality and usefulness of information. Learning is most productive when the information used is comprehensive, drawing from various sources such as textbooks, lectures, discussions, libraries and the Internet. Information should also be relevant and appropriate, accurate, accessible, and cost and time effective.

Plan

The first seven steps of the LPM are preparing you for the learning activity. In this step, you implement a plan of action for learning. The Plan is a sequence of steps or tasks you follow in order to accomplish the objectives and criteria. A good plan defines necessary tasks and puts them in a sequence. It also allocates time and other resources and serves as a management tool to guide and assess your performance.

Models

Models are tools to assist you in the learning process. Depending on the learning situation, different types of models are used to explore, identify, understand, and build relationships among information. For example, when learning about a concept or topic, using diagrams, graphs, simulations and mathematical and physical models are beneficial. When learning a process, using a methodology or sequence of steps is an extremely useful model.

Contextual learning uses analogies, experiences of others, and role playing as models. Learning to use tools is best modeled by simulations, demonstrations, tutorials, and instruction booklets. Models should be flexible, easy to use, comprehensive, and accurate.

Thinking

The process of learning and acquiring knowledge requires *critical thinking*—the use of a quality thought process. Thinking critically involves both asking and answering "key" questions that stimulate thought, and promote greater understanding of what is to be learned. The (critical thinking) questions you answer should be logically sequenced whereby information is clarified. Questions should provide links which produce new understanding and require you to expand, extend, and generalize your thinking. The answers to these questions should make use of models, methodologies, relevant information, and prior knowledge. Strong critical thinking skills significantly enhance your learning process, particularly the rate of learning and the level of understanding.

Transfer/Application

An outcome of learning is the ability to apply or transfer what you have learned to new situations and different contexts. Doing homework exercises is an example of transfer and application. Your ability to transfer, generalize, and apply what you've learned to different contexts will take you to higher levels of thinking, learning and problem solving.

Problem Solving

Problem Solving requires you to combine your ability to use new knowledge with a (problem solving) methodology to develop or create a useful solution to a problem. Being able to generalize the solution to one problem so that it can be used in other contexts greatly enhances your performance when problem solving. An intended outcome of learning is the ability to apply what you have learned to solve actual problems.

Self-assessment

The ability to self-assess is key to knowing when you have accomplished objectives and met the criteria for a learning activity. Being able to self-assess allows you to distinguish between "thinking you know" (needing someone else to tell you) and "knowing you know" (knowing for yourself). Good self-assessment skills are essential for you to become a self-grower.

A *learning assessment journal* is a resource you can use to assist with the process of self-assessment. This type of journal allows you to document information during the learning process that you can later review, analyze, and use for assessment purposes.

Research

The learning process does not stop with current knowledge. You are encouraged to become a researcher, one who discovers or constructs "new" knowledge. This includes applying your expertise to come up with new ideas, create new methodologies, make new interpretations, and see things in a completely different way—to stretch your mind to new heights.

Beyond Knowledge to Skills

It shouldn't surprise you to know that you will need to continue learning after college. With a lifetime of learning ahead of you, doesn't it make sense to spend time in college working to improve your ability to learn to learn? Yet some students come to college with the expectation of being "spoon-fed" knowledge from a professor in the belief that knowledge or information is the key to preparing for a future career or life after college.

In the process of meeting requirements to earn a degree, you will gain a great deal of knowledge. However, you cannot expect to retain all that you have learned. Even if you could retain all the information you learn, it still would not be enough. Today's employers are looking for individuals who are able to think critically, solve problems, work in teams, communicate effectively, utilize technology, and effectively process information.

Classification of Learning Skills

How does one go about developing the skills that are essential for learning and are desired by employers? The first step is to identify what skills we are talking about. In other words, classify or list the skills that encompass learning in all contexts. The *Classification of Learning Skills* was created to be a resource that both students and faculty can use to identify key processes and skills fundamental to learning. It also provides a framework for making quality assessments of performance.

The *Classification of Learning Skills* consists of a listing of skills in four main areas or domains.

- The skills associated with the **cognitive** domain deal primarily with the intellect and with attaining knowledge.
- The skills within the **social** domain involve interactions among people.
- The **affective** domain contains skills that deal with emotions and feelings.
- The skills in the **psychomotor** domain deal with one's physical development and well-being.

Each domain has certain key processes associated with it. The table below shows the processes within each domain in order of increasing complexity.

Table 2.5

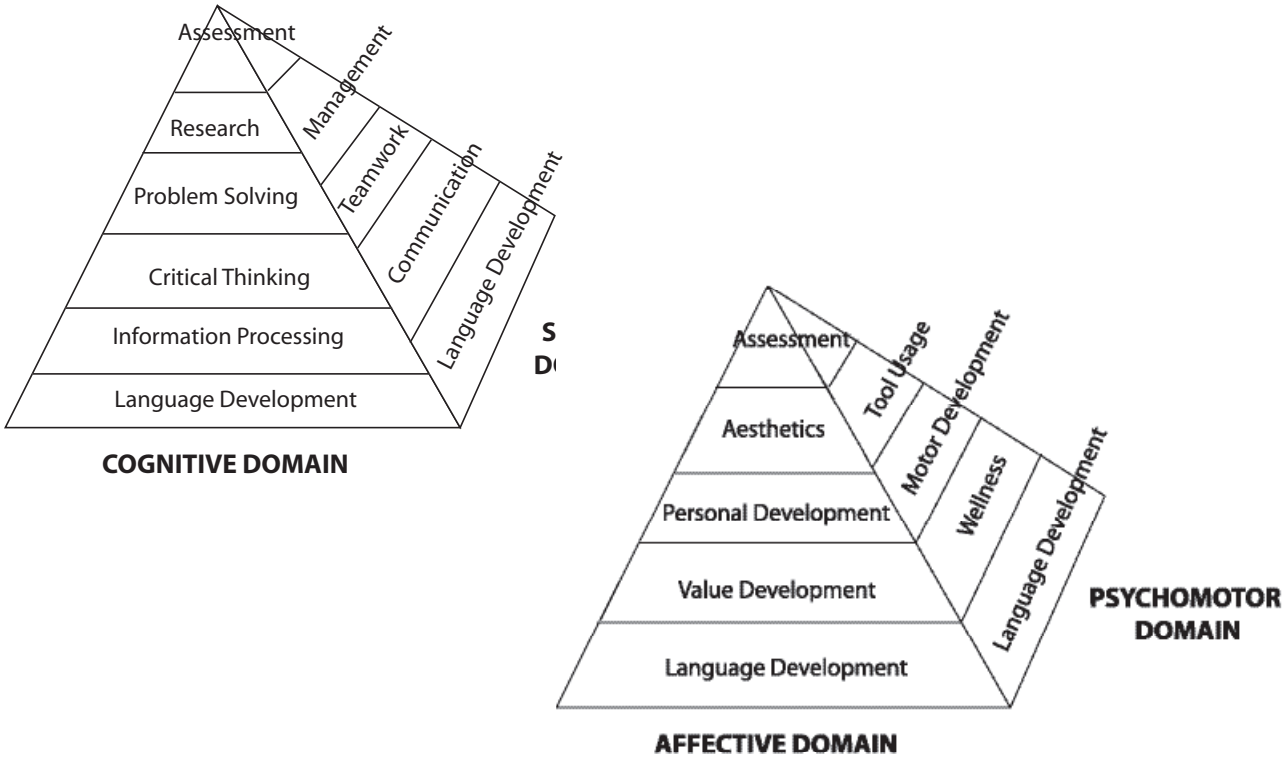
Domains and their Associated Processes			
Cognitive	**Social**	**Affective**	**Psychomotor**
Information processing	Communication	Value development	Wellness
Critical thinking	Teamwork	Personal development	Motor development
Problem solving	Management	Esthetic development	Tool Usage
Research			

Each process, such as information processing, consists of general skill areas which can be broken down into specific skills.

Language development and assessment are two processes that are common to all domains. Language development, in the broad sense, is the foundation from which skills in all domains are built. Assessment is the most complex process requiring skills from the other domains. The four-sided pyramid shown below illustrates the domains and their processes. Note that language development forms the base of the pyramid and that assessment is the capstone process located at the top of each domain.

Figure 2.1

Classification of Learning Skills
Domains and Processes



Learning Styles

All people have preferred methods of approaching a learning situation and processing information. There are numerous theories and models concerning learning styles which describe a preferred manner in which a person learns. Learning styles can take into account both personal and environmental factors in describing how people are most comfortable and capable when performing in learning situations.

Some models emphasize **personality dimensions** that influence the way we acquire and integrate information. The Meyers-Briggs Type Indicator is a well-known tool which has scales measuring extroversion versus introversion, sensing versus intuition, thinking versus feeling, and judging versus perception.

Other models, such as Kolb's, focus specifically on the way in which we **process information**. Still other models look at the way in which we interact with others. Anthony Grasha and Sheryl Riechmann developed a **social interaction** model which identifies learners who are either independent, dependent, collaborative, competitive, participant, and avoidant. Finally, other models stress the importance of identifying and addressing a person's **individual preferred environment** for learning.

Bloom's Taxonomy

In 1956, Benjamin Bloom classified types of learning, ranging from basic to complex, into six levels known as Bloom's Taxonomy. The six levels are as follows: recall, comprehension, application, analysis, synthesis, and evaluation. The table below summarizes Bloom's Taxonomy.

The table below can be used to determine an instructor's expectations for individual assignments or tests. Many times true-false, multiple choice and matching tests are written with expectations for student learning at the recall or comprehension level. Short answer, essay and problem-based tests usually require learning at the application level or problem solving level. Larger projects, typically given in higher-level and graduate courses require learning at highest levels in Bloom's Taxonomy.

Table 2.6

Bloom's Taxonomy		
Levels		*Requires skills from:*
Recall	Learning pieces of information such as facts and definitions enough so that you are able to repeat them.	Information processing
Comprehension	Understanding enough about a topic so that you are able to explain it to someone else.	Critical Thinking
Application	Putting what has been learned into practice; applying what you know.	Higher order critical thinking
Analysis	Breaking a topic into specific parts and studying the interaction of the parts.	Problem solving
Synthesis	Integrating prior knowledge and creativity to gain insights into a topic.	Research
Evaluation	Knowing a topic so well that you can judge its quality according to established criteria.	Assessment

Bloom, B. 1956. Taxonomy of Educational Objectives, McKay, New York

Gardner's Theory of Multiple Intelligences

Another theory associated with learning styles is Gardner's Theory of Multiple Intelligences. In 1983, Harvard Professor Howard Gardner hypothesized that there are seven independent ways in which we process information for learning. They are summarized in the table below.

Table 2.7

Gardner's Multiple Intelligences		
Intelligence type	*Descriptive words*	*Typified by a person who...*
Verbal-linguistic	reading, writing, and speaking	is good with language and words
Logical-mathematical	numbers and problem solving	likes to ask questions, think, experiment and explore
Spatial	art and architecture	enjoys drawing and designing; using pictures
Musical	sounds, harmonics, and tones	enjoys music, sounds, and melodies; has rhythm
Intra-personal	feelings and a sense of self	enjoys working alone; follows instincts about himself/herself
Interpersonal	relationships, interacting with others	enjoys socializing and trying to understand people
Kinesthetic	physical action and body movement	enjoys being active and in motion; uses the body to express ideas

Gardner, H. 1983. Frames of Mind: The Theory of Multiple Intelligences. Basic Books, New York

What Does This Mean for You?

Everyone has a preferred learning style(s). An advantage to knowing your learning style is that in certain situations you may be able to choose the style that best suits you. You can use information about how you learn to more efficiently manage your time, study for tests, complete your reading and communicate with peers and instructors.

While accommodating your preferred learning style can make you feel more comfortable in learning situations and increase your productivity and creativity, does this mean you should always try to learn in your preferred style? Most educators would say no, preferring not to teach each student according to his or her preference but instead using a variety of methods. The result is that students are taught partly in their preferred manner and partly in a manner where they must practice skills that need improvement.

In an article titled, Matters of Style, Richard Felder wrote…

> If professors teach exclusively in a manner that favors their students' less preferred learning style modes, the students' discomfort level may be great enough to interfere with their learning. On the other hand, if professors teach exclusively in their students' preferred modes, the students may not develop the mental dexterity they need to reach their potential for achievement in school and as professionals.
>
> An objective of education should thus be to help students build their skills in both their preferred and less preferred modes of learning. Learning style models that categorize these modes provide good frameworks for designing instruction with the desired breadth. The goal is to make sure that the learning needs of students in each model category are met at least part of the time. (ASEE Prism, 6(4), 18-23 December 1996)

It should be noted that having a learning preference does not always mean that you are good at it or that you are necessarily weak at doing something you prefer not to do. However, it is important to realize that when you are learning or working outside the comfort of your preferred learning style, you have the greatest opportunity for personal growth and skill development. It has been argued that a sign of maturity is being able to perform outside of your learning style preference.

In summary, set your sights high as a learner. Strive to become a self-grower. With practice, assessment, and persistence you will grow and improve as a learner regardless of current abilities. Challenge yourself to keep growing, for as Will Rogers put it, "Even if you are on the right track, you'll get run over if you just sit there."

Inquiry Questions

1. What are the five levels of learner performance a what distinguishes a particular level from another?

2. How would you describe a person who is a self-grower?

3. Why are methodologies so useful when learning a new process? Give an example.

4. What is the Classification of Learning Skills and how can use it to become a better student?

5. How could you use your knowledge of Bloom's Taxonomy to help in preparing for tests and exams?

6. How might you use knowledge of your learning style to become a better learner?

Activity —The Learning Process Methodology

Why

The Learning Process Methodology (LPM) provides an ideal model for analyzing the process by which learning occurs in various situations. The process of learning is the focal point of this course and essential for success in college and beyond (*life-long learning*). Assessing your performance using the LPM in learning situations will help you become a better learner.

Learning Objectives

1. Gain a greater understanding about learning through the study and application of the Learning Process Methodology.
2. Apply and document the use of the Learning Process Methodology in a step-by-step manner.
3. Practice self-assessing your own performance when learning in order to improve future performance.

Performance Criteria

Criterion #1: documented performance of the Learning Process Methodology in a learning situation

Measures:

a. thinking demonstrated in each step
b. comprehensive; includes all steps
c. includes supporting evidence

Criterion #2: assessments of past and future learning performance

Measures:

a. strengths and reasons why they are strengths
b. include areas for improvement and an action plan for improving
c. insights lead to improved learning

Plan

1. Reread the section in this chapter about the Learning Process Methodology. Answer the Critical Thinking Questions on the next page as you do your reading.
2. Review a past learning experience using the LPM form (step-by-step) provided in this activity.
3. Choose a future learning situation to examine your learning performance using the LPM form. Document your performance step-by-step (what happened, what it means, time it took, and what should be done to do this step in the future).

   Optional: Work with another person in the class to assess each other's performance when learning. Offer feedback on a step-by-step basis. This will help you understand how each step of the LPM contributes to improved learning performance.

Exercise

Perform a self-assessment of specific learning situations every other day for three weeks. Take appropriate action to improve your performance based on the self-assessment data or information you collect. Also identify ten issues that you find challenging with respect to your own learning performance.

Critical Thinking Questions

1. Which steps of the LPM should be done in preparation for learning and why?

2. Which steps of the LPM are best done before class, during class, and as follow-up after class time?

   before:

   during:

   after:

3. How can you keep focused using which specific steps in the LPM to make sure you don't "spin your wheels" during a complex learning situation?

4. What is the importance of the Vocabulary step (of the LPM) and how does language support the processing of information?

5. Which step(s) of the LPM is (are) critical to improving your learning performance in the future? Why?

6. How would you explain (in simple terms) the LPM to others?

Learning Process Methodology Form

LPM Step	Performance Notes	Assessment
Why		Strength: Improvement: Insight:
Orientation		Strength: Improvement: Insight:
Prerequisites		Strength: Improvement: Insight:
Learning Objectives		Strength: Improvement: Insight:
Performance Criteria		Strength: Improvement: Insight:
Vocabulary		Strength: Improvement: Insight:
Information		Strength: Improvement: Insight:

Learning Process Methodology Form

LPM Step	Performance Notes	Assessment
Plan		Strength: Improvement: Insight:
Models		Strength: Improvement: Insight:
Thinking		Strength: Improvement: Insight:
Transfer/ Application		Strength: Improvement: Insight:
Problem Solving		Strength: Improvement: Insight:
Self-Assessment		Strength: Improvement: Insight:
Research		Strength: Improvement: Insight:

Unit 3

Becoming a Self-directed Learner & Self-grower

Information Literacy & Reading Skills

Why Is This Chapter Important?

Today's technology makes vasts amount of information available to us all. How one is able to apply methods for collecting, retrieving, evaluating, organizing and storing all this information is what will distinguish you from other students in college and professionals in the workplace. This chapter addresses the reading process (which is critical to your success in college) and the skills associated with information processing. The more proficient you are at applying skills in this chapter, the better able you will be to obtain *knowledge* and not get overwhelmed by *information*.

Learning Objectives

1. Know the steps in the Information Processing Methodology and how they can be used as a guide to improve your skills at information processing.
2. Know the steps in the Reading Methodology and how they can be used as a guide to improve your reading skills.
3. Articulate the general skill areas (and some specific skills) associated with information processing and language development.
4. Better understand the following four skills related to information processing: listening, brainstorming, memorizing, and skimming.

Performance Expectations

1. Document your use of the Reading Methodology, in a step-by-step, as it pertains to a particular problem/situation in your life.
2. Self assess your performance with respect to information literacy using the Profile of an Information Literate Person as an upper benchmark.

Chapter Overview

Living in the Information Age
Information Literacy
Information and Knowledge
Profile of an Information Literate Person
Skills Associated with Information Processing
  Listening, Brainstorming, Memorizing, Skimming
Information Processing Methodology
Discussion of the Steps in the Information Processing Methodology
Connection between Reading and Writing Processes
Improving Your Reading Skills
Reading Methodology
Discussion of the Steps in the Reading Methodology
Example of the Reading Process
SQ3R Reading Method
Inquiry Questions
Activity — Using a Textbook Effectively

Key Terms and Concepts

information

knowledge

information literacy

brainstorming

needs analysis

understanding syntax

reading critically

SQ3R

Living in the Information Age

We live in an "age of information" where satellites, personal computers and computer networks such as the Internet provide us with convenient access to staggering amounts of information. Consider a few examples of what we have come to accept as common place:

- viewing near-instantaneous media reports of events as they happen from around the world,
- buying personal computers with hard drives containing "gigabytes" of space,
- using CD's that contain the equivalent of entire volumes of books on a single disk, and
- browsing and purchasing an ever-increasing array of products and services over the Internet.

With all the changes and benefits of the information age come a new set of challenges and problems. This includes "information overload" which represents the gap between the volume of information we encounter and our ability to handle it or make sense of it. The following paragraph from the Information Literacy Project of Tri-County Technical College (South Carolina) summarizes the situation nicely:

> Virtually no change in American society has presented greater challenges than the emergence of the "Information Age." Dealing with the overabundance of information now routinely available seems at best overwhelming and, at worst, unmanageable and uncontainable. Futurists estimate that the amount of information in the sciences doubles approximately every five years. Academic curricula cannot be revised often enough, or expanded enough, to keep current with that rate of change. For students to be able to cope with this rising volume and to be able to maintain a knowledgeable control over any significant portion of the information necessary to their personal and professional success, they must gain special skills and understanding, the acquisition of which is called Information Literacy.

The focus of this chapter is to address the issues associated with becoming an information literate person and the building of skills associated with information processing.

Information Literacy

Information literacy refers to the ability to apply methods for collecting, retrieving, evaluating, organizing, and storing information. Being information literate involves knowing:

- what information is available,
- when the information is needed,
- where to find relevant information,
- how to gain access to information,
- which information is useful and should be kept, and
- what to do with the information once you've got it.

An information literate person processes information, thinks critically, solves problems, and performs research. These are the four key processes associated with the cognitive domain (from the *Classification of Learning Skills* found in the Appendix). Note that these processes build

upon each other. Information processing skills are a foundation for critical thinking skills, which are important for problem solving. Finally, there is research which is the most demanding and complex of the four processes.

The more you understand and use information processing, the less overwhelmed you will be by the vast amount of information available to you, and the more effective you will be at using information to your benefit. By working to become information literate and a skillful information processor, you become empowered with greater confidence to apply and use information for problem solving and decision-making purposes.

Information and Knowledge

Information can include any of the following: facts, data (words, numbers and symbols), lore, news, intelligence, and something told or read.

Knowing, understanding, and deriving meaning from information requires critical thought. James Billington, from the Library of Congress, recently commented about the difference between *information* (what is made so abundant by digital technology), and *knowledge* (the insights gained when you have a chance to sort through things and figure them out). His advice for attaining knowledge when there's too much information, "Turn off the computer. Even shut the book on occasion. And let your mind flourish and work."

Let's now look at the specific skills that are associated with information processing and a profile of an information literate person.

Skills Associated with Information Processing

The basis for being information literate starts with building the skills associated with information processing. The general skill areas associated with information processing along with their specific skills are presented in the table below.

Table 3.1

Information Processing Skills			
Collecting Data	**Generating Data**	**Organizing Data**	**Retrieving Data**
sensing	predicting	outlining	reading
listening	experimenting	categorizing	remembering
memorizing	estimating	translating	reviewing
recording	surveying	systematizing	utilizing informational systems
skimming	brainstorming	sorting	
observing/recognizing			

Profile of an Information Literate Person

Christina Doyle, in a national Delphi study, defines *information literacy* and creates a list of characteristics of an information literate person. An adaptation of her list is presented below.

Table 3.2

Profile of an Information Literate Person

An information literate person accesses information:

- recognizes the need for information,
- recognizes that accurate and complete information is the basis for intelligent decision making,
- formulates questions based on information needs,
- identifies potential sources of information,
- develops successful search strategies,
- accesses print and technology-based sources of information, and
- is a competent reader.

An information literate person evaluates information:

- establishes authority,
- determines accuracy and relevance,
- recognizes opinion from factual knowledge,
- rejects inaccurate and misleading information, and
- creates new information to replace inaccurate or missing information as needed.

An information literate person uses information:

- organizes information for practical application,
- integrates new information into an existing body of knowledge, and
- applies information in critical thinking and problem solving.

Other characteristics include:

- being a resourceful and independent learner,
- being confident in his or her ability to solve problems,
- being able to function independently and work equally well in groups, and
- being creative and able to adapt to change.

Highlighted Information Processing Skills

The following information processing skills will be discussed or presented in more detail listening, brainstorming, memorizing, and skimming.

Listening

Listening is not the same as hearing. You may hear a conversation but that doesn't necessarily mean that you were listening. Without making this distinction, it's easy to take the skill of listening for granted and assume that we are all at the same level of skill. However, as with any skill, some are better at listening than others. Why is this so and what can you do to improve your listening ability?

Listening is the receiving and decoding of messages from others. Listening includes hearing words and sounds and noticing non-verbal cues to ascertain the meaning that others are trying to convey. Listening also involves the recall of what has been presented. A listener identifies his or her purpose and tries to understand the sender's purpose. Good listening results in effective feedback to the sender.

The table below contains ten criteria that provide some insight into what distinguishes different levels of listening ability. Five levels of listener performance are: novice listener, survival listener, maintenance listener, effective listener, and quality listener.

Table 3.3

Criteria that Affect the Quality of Listening	
concentration	focusing on the message
comprehension	interpreting meaning accurately
perception	understanding the sender's nonverbal cues and hidden meaning
motivation	wanting to learn new material/knowledge
background knowledge	relating prior information/theories to the current context
classifying	organizing current information into an existing framework
targeting	sampling key words and phrases
empathy	willingness to understand underlying issues & values of others
paying attention to details	inventorying important specifics
compare and contrast	using prior knowledge to evaluate and differentiate ideas

Brainstorming

Brainstorming is a group process which involves generating ideas or solutions (to a problem) in a rapid manner without judgment or criticism. The premise is that the more ideas that are generated, the greater the likelihood of finding a good solution or idea. Brainstorming has three phases, (1) generating ideas, (2) discussion and evaluation, and (3) planning for future action.

During the **idea generation** phase there are some common rules to consider.

- Define the problem or task; typically stated in the form of a question.
- Set a time limit.
- Identify a recorder to write down the ideas/solutions; recording can be in the form of lists or sentences, or by drawing a map or "tree."
- Write so that all can easily see what's being recorded. Use a flipchart, overhead projector, whiteboard or blackboard.
- Generate and collect as many ideas as possible; all ideas are welcome.
- Be creative; no idea is too silly or wild.
- Build upon other's ideas.
- Don't criticize or judge; all ideas are equally valuable at this point.
- Don't spend time discussing individual ideas.
- Don't spend time wordsmithing ideas.

There is no *right way* to do the **evaluation** phase. The following are some general guidelines:

- Determine criteria to be used for selecting the "best" ideas or solutions.
- Modify the list by combining, consolidating, amending, and deleting ideas; allow for open discussion at this time.
- Reduce the list further to include no more than one third of the total ideas; each person votes or ranks the ideas.
- Once again, vote or rank (on a scale of 1-5) the ideas to determine the best idea(s). Note that there may not be one best solution or idea.

Finally, the **planning** phase involves taking the chosen idea(s) and creating an action or implementation plan. Outline the steps to be taken and identify factors which may effect the implementation of the plan.

Memorizing

Memorizing involves both putting information into memory and getting it out again at some point later in time. As a student, having a good memory can be very helpful when taking certain types of quizzes and exams.

However, memorizing is not the same as learning. For example, you could memorize the quadratic formula for a math class. However, knowing the formula doesn't necessarily mean that you have "learned" the formula well enough to use it and apply it in different situations. Also, learning is a complex process with many steps in the Learning Process Methodology. Memorizing, on the other hand, has three main components.

Encoding

Encoding is making information meaningful. Be aware of encoding errors. These include misreading, misinterpreting (what you see, hear, or read), and not understanding information correctly.

Storing

Storing involves organizing and placing information in short-term and long-term memory. The goal is to move information into long-term memory for easier retrieval.

Retrieving

Retrieving involves getting back information so that it can be used in some way. *Mnemonics* are methods, devices, or even mental tricks or games that help with improving memory; especially aiding the retrieval component of memory.

Skimming

Skimming involves looking at printed material or written work without reading every word; passing over the text lightly and quickly to pull out the main ideas. Unlike scanning, with skimming you don't know exactly what you're looking for and don't have a specific goal in mind. Skim when you want to get the gist of things without taking the time to read the material in full. You can skim both to preview new material as well as rapid review of long text assignments you have already read. Some tips for skimming include:

- Familiarize yourself with the reading (author, title, subtitle, headings, and source) before you start skimming.
- Read the first sentence (topic sentence) of each paragraph to get the main idea. Then glance through the rest of the paragraph looking for bold type, italics, digits, or capitalized words.
- Key into the main idea and a few facts such as names of people, dates, places, things, and numbers.
- Ignore extra words, articles, prepositions, and conjunctions.
- Read the last paragraph in more detail as it contains a summary or conclusion.
- Move quickly.
- At the end, you should have a grasp of the main ideas.

Information Processing Methodology

The Information Processing Methodology is a key tool in helping you become better at collecting, organizing, and retrieving information. Everyday you must make decisions that require information processing—which mail to read, what radio station to listen to, what magazine articles or newspaper sections to read, or what to watch on television. This includes information presented to you and that which you must seek out.

The ability to use the Information Processing Methodology reduces the anxiety associated with "information overload" and gives you confidence about finding important information when you need it. It is important to note that every other methodology in this book includes a step that requires information to be processed.

Table 3.4

 *Information Processing Methodology*	
1. Perform a needs analysis.	Analyze who needs the information, why it is needed, when it is needed, what the user will do with the information once it is received.
2. Create a collection plan.	Create a plan to collect the information from various sources.
3. Assess the resources.	Create a method to assess the quality of the information.
4. Organize the information.	Develop a plan for storing and organizing the information that is collected.
5. Retrieve the information.	Search and collect the information. Provide it where and when it is needed.
6. Assess and review.	Assess the process and the outcomes. Determine if the needs have been met. If not, determine what more is needed and repeat the process starting at Step 2.

Discussion of the Information Processing Methodology

Needs Analysis — Identify the Need for Information

As you begin any process, it is important to first identify the purpose for the process and understand why it is necessary. In your work as a student, the need for information often comes from an assignment or an engaging problem. In this context, you need to know what the parameters of the assignment are and how the process and the product will be evaluated.

One of the most challenging aspects of the research process is the analysis of the problem and the related need for information. In the case of information processing, you should analyze who needs the information, why it is needed, where and when it is needed, and what the user will do with the information once it is received. By asking these questions, you can clarify the type of information needed and what you will do to obtain the appropriate information.

Collection Plan

Having a plan for gathering and obtaining information before you start searching makes the information retrieval step of the methodology far more efficient. A collection plan should identify what information is needed, when it is needed, and identify possible options for finding it.

A common question is “where can I find the information I need?” Knowing which sources are available and where to find them is a key part of a good collection plan. Main sources of information available to you are textbooks, the library and the Internet.

Libraries

Libraries are sources of detailed global information, available in minutes. To a beginner, it may be confusing. The “mother” of all libraries is the Library of Congress. It carries listings of all the books, magazines, and journals published in the United States. Other libraries carry

Table 3.5

Information Processing Methodology — A Simple Example	
Scenario: You have three young children who enjoy cereal for breakfast. You are at the grocery store looking at breakfast cereals which are high in fiber and low in sugar. You need to process the information printed on the cereal boxes to determine which ones to buy.	
1. Needs Analysis	You need information about the grams of fiber and sugar per serving. This information is the primary basis for choosing a cereal.
2. Collection Plan	Look at the nutritional information printed on at least ten different boxes of cereal known to be not high in sugar content. Write down this information.
3. Resource Assessment	Look at the size of the serving to determine if it is reasonable, based on what the children normally eat. If too small, increase the fiber and sugar values.
4. Information Organization Plan	Create a three-column table which includes the name of the cereal, number of grams of fiber per serving, and the number of grams of sugar per serving.
5. Information Retrieval	After looking at the boxes and recording the information, sort the cereals in order of low to high sugar content. You determine that you will only buy cereals in the top third of the sorted list.
6. Assessment and Review	Keep track of those cereals in the top third of your list that your children enjoy. Eliminate those cereals that they won't eat.

only the materials that best meet the needs and wants of their patrons. Public libraries serve a diversified clientele, where most colleges have a more extensive library to meet the specific classroom and research needs of the students and faculty.

There are special purpose libraries specific to an industry or business such as law, business, or engineering libraries. Any collection of books becomes a library (through its definition) by being organized. A collection of information resources cannot be considered a "library" unless it is organized in a manner such that information can be retrieved. Most libraries use either the Dewey Decimal or the Library of Congress system for cataloging their holdings.

The Internet

The Internet is also a source of detailed global information, available in seconds. To a newcomer, it may also be confusing. The Internet is a collection of information resources but cannot be considered a library. Even though information can be retrieved, there is no organization system for information on the Internet.

Instead of classification systems through which information can be retrieved, search engines have been designed to assist in the retrieval of information. But there are no guarantees of finding information on the Internet. In many cases, information is not classified and if it is classified, it may not be in a manner that you know how to ask for it. For example, information may be

classified, indexed and even cross-indexed, but you don't know what these classifications are and they are not universal for all informational searches on the Internet. Also, the unregulated nature of the Internet raises issues concerning the quality of the information you find (this is dealt with in the next step of the methodology).

Other sources

Everyone has had experiences with a broad range of resources that are of potential use in exploring information or solving problems. Think about the information resources you have used in the past for personal or educational or business-related projects.

Other information sources include dictionaries, almanacs, encyclopedias, newspapers, magazines, maps, movies, videos, television, radio, books, and friends. This is not a complete list but rather just some examples, there are many more!

Finally, if information is to have meaning, you must make connections between new information and previous experiences or knowledge. The first step in orienting yourself to an unfamiliar subject is to find one or more existing connections that give the subject meaning.

Resource Assessment

The information you collect (later in the methodology) is not of equal value based on your needs analysis. The credibility and reliability of the sources also varies. For these reasons, it is important to develop a set of standards or criteria for evaluating and assessing the quality of the information you obtain. These standards serve as the basis for determining which information you choose to use and how to use it.

As you locate potentially useful bits of information, a screening process takes place. First, the information must pass the test of relevance and then it can be scrutinized in terms of how current, objective, thorough, consistent, and clearly understood it is. The level of understanding depends on your personal learning style and familiarity with the subject.

A piece of information that is useful to one person may be of limited value to another working on the same question. There can be no understanding of information that does not relate to what is already known. As you progress, you gain skills in applying these and other tests of usefulness.

Every source needs your personal assessment as to its value and its validity. In many cases, you make assessments just in the physical handling of the source. For example, the following give you a sense of validity for a source: a familiar author is noted, the publisher is well-known to you, the source was reviewed in *The New York Times*, or a work is in its 5th printing.

There are other times when great care is needed to insure that an assessment is made of the information. For example, an Internet source may be here today, gone tomorrow; where did the brochure in your mailbox, or the e-mail message, or the bulletin board posting come from? Verify your sources.

Develop a Plan for Organizing Information

After you determine which information meets the criteria set in the previous step, you must develop a plan for storing and organizing this information. It is important to know what information you already have and where to find the information you need. Refer to the needs analysis for insights which might influence how you choose to organize the information.

Information sources are rarely organized in ways that exactly match your end use of the content. As notes are created, they are classified in a way that meets your original need. This classification scheme may evolve during the quest and probably will closely approximate the final structure or outline. While the original questions led to the desired information, they might also lead to much repetition if used in a presentation of the findings. In some cases, it may be advantageous to create a new structure or outline.

You can benefit from a variety of experiences in applying information; written reports are only one of them. You need to reach conclusions and to prepare for activities that are the outcomes of your quests for information. Presentation formats can include papers, dramatizations, panel discussions, multimedia presentations, models, demonstrations, or school-wide projects. Each application has its own set of skills required for success. Interpersonal skills are as important as language skills; visual skills are as important as verbal ones.

Retrieve Information

Gather and obtain the needed information while at the same time make evaluations as to the usefulness of the information you collect. Interpretation skills are important as you retrieve information.

Interpretation skills start, but do not end, with reading. A good reader makes use of context clues, discerns the structure of a piece of writing, draws inferences, and perceives relationships. Such skills are also essential to such diverse activities as reading maps, interpreting tables of statistical data, reading schematics, studying photographs, and viewing films or videos. During any information quest, you must have the interpretation skills required by each format to retrieve the useful pieces of information or else the whole process becomes meaningless.

Organize and integrate the fragments of information into a comprehensible whole to create personal meaning. With practice and assessment of your performance, your knowledge of sources will grow, the plans you create will improve, as will your searching and organization skills.

Assess and Review

Assess what you have done up to this point to determine if you have adequately met the needs analysis stated in Step 1. Determine if more or different (useful) information is needed. If so, repeat the steps of the methodology starting with Step 2. Incorporate the new useful information with the information found the first time through the process.

Connection between Reading and Writing Processes

The next two chapters are devoted to two key processes that are an integral part of your college experience—reading and writing. In fact, these two processes are closely linked. Reading is crucial to strong writing and writing is crucial to effective reading. This cyclical reading/writing process is a key to successful academic performance.

While the connection between good reading and writing skills and success in college is quite obvious, it is important to realize that the ability to apply and use these two processes significantly influences your performance in other areas, especially when it comes to communicating. In fact, most all the methodologies presented in this book draw upon or require proficiency with reading and writing in some way. For example, good reading and writing skills are essential for creating definitions (of missions, problems, or purposes), collecting information, developing plans, and making assessments.

You learn to write well by reading other people's writing and assessing what works and what does not work for them. Also, you can think of most academic writing as participation in an on-going conversation with published sources on a particular topic. Thus, most of the academic writing you will be asked to do, will be in response to material you have read. When you have an assignment that asks you to write in response to a reading assignment, the *reading process* might also be the prewriting stage of the *writing process*.

Your reading process will vary depending on your task. Each of the following involves using a different approach to reading:

- reading a novel for a literature course,
- reading a novel on the beach for entertainment,
- reading an article as a source for a research paper,
- reading the newspaper at the breakfast table, and
- reading a textbook for a course.

Improving Your Reading Skills

How strong are your reading skills? Since many students believe they are already good readers, a better question to ask is, would you like to improve your reading skills, regardless of your current reading ability?

While being able to read faster may improve your reading performance, building speed is not the main concern of this chapter. More important is that you are able to comprehend, retain, and apply what you read. For many students, the bottom line is that they would benefit greatly from simply retaining more of what they read.

Improving your effectiveness as a reader requires that you read *actively*. This means your eyes are not simply passing over words on a page but that you are *thinking* while processing the information you read. In order to get the most benefit from your study and reading time, you must be *critically engaged* without distractions. This applies to any reading where comprehension is important such as reading a textbook, your own notes, research sources, or laboratory data.

Language development skills are the foundation from which a person's reading process can be improved. Table 14.6 lists the skills from the *Classification of Learning Skills* that are associated with language development. The table includes general skills (e.g., building vocabulary) as well as specific skills (e.g., defining).

Table 3.6

Language Development Skills				
Building Vocabulary	**Decoding Communication**	**Understanding Syntax**	**Identifying Semantics**	**Identifying Context**
defining	pattern recognition	word recognition	recognizing meaning	identifying cultural background
practice and usage	assigning meaning	proper use of grammar	recognizing connotations	identifying historical background
using contextual cues	recognizing symbols	proper use of sentence structure	using rhetoric	

As proficiency with language development skills increases, so will a person's reading skills. Specifically, reading skills improve by:

- *building vocabulary*, being able to define and apply words;
- *decoding communication*, putting meaning to words and symbols (so that you understand and not just recognize);
- *understanding syntax*, properly using and grouping words in sentences;
- *identifying semantics*, recognizing the meaning of speech forms and grouping of words; and
- *identifying context*, understanding that words have different meanings in different contexts.

Reading Methodology

The Reading Methodology presented in this chapter is a valuable tool that you can use to improve reading comprehension. In addition, there are some general guidelines that you can adapt to various reading situations. If you are to see improvement in your reading, you should be prepared to practice using the Reading Methodology often enough to get proficient with it. Don't let the fact that reading can sometimes be an unpleasant chore stop you from benefiting from this tool.

The Reading Methodology is a general methodology for reading. Realize that not every step is required for all reading contexts. Trying to use all the steps in the methodology in *all* contexts can lead to frustration and discourage you from using the methodology.

Initially focus on using the Reading Methodology in academic reading situations where it is an especially useful and appropriate guide to follow.

Table 3.7

Reading Methodology	
1. Establish purpose.	Determine why you are reading the material.
2. Set objectives and criteria.	Determine what you want or need to get from the reading.
3. Estimate the time involved.	Browse the reading to determine the level of difficulty and how long it will take you to do the reading.
4. Read critically. 	Carefully read and ask questions which involve: • understanding vocabulary by keeping a dictionary nearby to look up unfamiliar words. Write down the definitions so you can refer back to them. • determining the author's purpose, intended audience, and the genre or type of writing as you read. • writing by taking notes and highlighting important passages, annotating in the margins and marking difficult passages. • asking questions and forming opinions by jotting down questions you have, as well as the opinions you form as you read.
5. Assess and reread.	Assess your progress. Reread to clarify questions and ensure that objectives are met.
6. Synthesize information.	Integrate new information with your existing knowledge base.

Discussion of the Steps in the Reading Methodology

Establish Purpose

Before you begin reading, identify why you are reading, what you want to get out of the material, and how thoroughly you need to understand it. Determine if you are reading for a general idea or for details. The purpose will vary depending on the context, whether you are reading for a test, to complete an assignment, or for pleasure. By carefully defining your purpose, you can set your reading strategy to accomplish this purpose. For example, if you are reading for details, your reading speed will be slower than if reading for just a general idea or for pleasure. However, if you are reading only to get some idea of the main points, then skimming alone may be sufficient.

Table 3.8

Reading Methodology — A Simple Example	
Scenario: You subscribe to the daily newspaper. You pick up the morning newspaper and want to read the paper during breakfast.	
1. Establish purpose.	Gain information about local, national, and world events.
2. Set objectives & criteria.	Read one article completely.
3. Estimate time.	You only have fifteen minutes for breakfast. Skim the main section of the paper to select which articles are of most interest to you.
4. Read critically.	Begin reading an article on health care legislation. • Look up unfamiliar words as you read. • Is the author's purpose to provide information, or is it to argue for or against proposed laws? How does this influence the presentation of the material? • As you read, formulate questions regarding your own health coverage, and write these down.
5. Assess and reread.	Glance back over the article to reacquaint yourself with some of the facts.
6. Synthesize information.	You plan to read more about your own health care coverage and decide to discuss some points from another article with a friend.

Set Objectives and Criteria

Based on the purpose, set objectives and criteria which specify your expected outcome of the reading, i.e., what you want to accomplish. How the Reading Methodology is used will depend a great deal on the specific purpose and objectives. For example, if you are reading for leisure, your only objective may be to enjoy the reading. In this case, many of the steps of the methodology are not applicable. On the other hand, if you are studying for an exam, the purpose and use of the methodology are very different. All the steps of the methodology become important in this situation.

Estimate Time

Consider the total amount of time you have available for the reading and compare it to the estimated time to complete the reading. Skim the reading to estimate the difficulty of the material and your familiarity with the material. Be sure to consider the level of difficulty as you budget your time. Remember, when reading for academic (rather than leisure) purposes, you will usually need to read through the text more than once. Make sure you schedule adequate time to allow you to do this.

Read Critically

Mark the parts of the reading that are difficult, complex, or confusing. After reading through the material, refer back to the areas you've marked. Spend additional time working to build comprehension. The following will help you to read more critically.

Build your vocabulary.

Identify terminology in the reading that is unfamiliar to you. Write down these words and obtain the definitions. In effect, build your own glossary. You may also want to write notes and definitions to "key" words in the margins of your outline, your notes, and if allowed, in the reading itself.

Get the big picture about what you are reading.

As best you can, as you read, try to determine the author's purpose, intended audience, and the type of writing style. These factors influence what is being said and how it is being said. Different kinds of writing (e.g., a novel, play, poem, personal essay, lab report, newspaper article, or scholarly article) have different requirements that determine the form in which the material is presented. Similarly, the intended audience will determine the level of difficulty of the reading and how formal or informal the writing is. Take note of the author's purpose in writing, point of view or attitude toward the subject matter, and expertise.

Write to help process what you read.

Writing is a good way to process what you have read and to make it a lasting part of what you know (rather than something you forget right after a test or quiz). There are a variety of possibilities appropriate in different contexts. For example,

- take notes in a notebook,
- annotate the text by writing comments and notes in the margin of the text itself,
- summarize by condensing and recording the subject matter, without including your own questions and opinions, and
- write a response in a reading journal; summarize what you read but include your own thoughts, questions, and opinions.

Summarize and read your responses. This works well when you are reading sources for a research project. It is also helpful for courses based on class discussions of reading assignments. In these cases, you will have to represent what your source said as well as offer your own commentary on the source.

Summarize, annotate and take notes when reading textbook material that you will be tested on later. In these situations your personal opinion is usually less relevant than showing that you know the material. Many of you will find using a combination of these options will work best for you. There is more information about note-taking in Chapter Six.

Ask questions and form opinions as you read.

Ask and jot down questions you would like answered about the material. This increases your concentration and keeps you actively engaged in the reading. Critically engaged reading may mean that at times you are willing to disagree with or challenge the author. Write down these opinions too.

Assess and Reread

Assess what you have read. Make modifications to your notes as needed. Summarize what you have gained from the reading. Determine if there are errors, inconsistencies, and pieces of information which are still unclear or missing. Reread what is needed to enhance understanding, clarify and answer questions that remain unanswered, and make sure that objectives for the reading are met.

Synthesize Information

Make connections between what you are reading and other materials you have read. Also, make connections with other courses you have taken or are currently taking as well as connections with personal experience in other contexts in your life (e.g., at work or at home). Ask yourself, what questions does the reading raise for you that will require further reading and learning to answer? And how can I best make use of what I read?

Example of the Reading Process

Scenario: Your political science instructor assigns two articles to read about the Vietnam War.

1. The purpose is to learn the basic history of the United States during the Vietnam War era and to understand why the war was controversial.
2. The objectives you establish are:
   - to read both articles completely, and
   - to retain most of what you read so you can participate intelligently in class discussion.

   The criteria you set for your performance are:
   - how your instructor and classmates respond to your comments in class the next day, and
   - your performance on a quiz covering the reading given at the beginning of class.
3. You skim the articles and estimate it will take you an hour to read each one. The reading level of each is somewhat difficult. You decide to read one this morning and the other later tonight.
4. As you read the articles, you highlight important points, put brackets around difficult passages, underline unfamiliar terms, and write your questions and comments in the margins. For each article, you look up unfamiliar vocabulary in a dictionary. You write the definitions in the margins near the word in question.

   You realize as you are reading that purpose, audience and type of writing are important factors in this reading. The essays are from the same book but are written by different authors. The book is a collection of essays written by different experts on the Vietnam War who have very different opinions. Both essays offer historical information, and each subtly argues a different position on the war. The audience is a general, educated audience. In addition to your notes in the margins, you write a brief summary of each article in a notebook. You also note specific points where the authors disagree with one another.
5. After reviewing definitions for new vocabulary, you reread difficult passages. When you have finished reading the second article, you go back to review an opposing argument offered by the first article.

6. After completing both articles, you find yourself agreeing with one author more than the other. Following the summaries of the articles you entered in your notebook, you write down the opinion you are forming in response to the reading and briefly explain why you feel as you do. A week later, you decide to watch a documentary on the Vietnam War on television to gain another perspective.

SQ3R Reading Method

SQ3R is a well-known system for reading developed by psychologist Francis Robinson in 1941 as a tool for training World War II army recruits. SQ3R stands for **S**urvey, **Q**uestion, **R**ead, **R**ecite, and **R**eview.

Survey

Before you begin reading, glance over the material. Focus on the title, subtitles, and headings to see the main points that will be developed. Also note any pictures, charts and graphs. Read the summary or last paragraph. This step should not take more than a couple of minutes (depending on the length of the reading) and should identify three to six "core" ideas. This orientation step should help you to organize the ideas as you read them later.

Question

Turn the headings you read into questions (and then read to find the answers). The process of asking and writing down questions stimulates interest and increases comprehension. Draw upon and integrate prior knowledge as you read. If reading a textbook, anticipate possible test questions.

Read

Read the material looking for answers to the questions you posed in the previous step. Actively read and search. Be aggressive rather than plodding along. Try to create meaning as you read.

Recite

After reading and searching for answers to your questions, recite or record your answers. Use your own words rather than copying what you have read. Try to synthesize information. If necessary, refer back to the reading to gain clarity and understanding. Jot down cue phrases as you read to help jog your memory.

Continue the process of questioning, reading, and reciting as you work your way through the entire reading.

Review

After completing the reading, review your notes and reinforce the main points. Reinforce the big picture and the relationships between the main points and major subpoints. Identify areas you need to spend more time with. You can test your memory by covering up your notes and trying to recall the main points.

Inquiry Questions

1. How is *information* different from *knowledge*?

2. What does it mean to be an *information literate* person?

3. What does it mean to perform a needs analysis (as it pertains to the Information Processing Methodology)?

4. What can you do to become a better listener?

5. What are the main processes associated with language development and how do they pertain to reading?

6. What does it mean to read critically?

Activity — Using a Textbook Effectively

Why

Most college courses have assigned textbooks which provide an information base and explain material that has been organized around a subject or knowledge area. A quality learner knows how to make use of these resources to enhance his or her learning. Your knowledge of how textbooks are organized and how to effectively use them reduces the amount of time you spend processing information while increasing your comprehension of the content.

Learning Objectives

1. Understand the organization of textbooks and their value as an information resource to support learning content in a subject area.
2. More effectively utilize your textbooks in your courses.

Performance Criteria

Criterion #1: synopsis and comparison of textbooks

Measures:

a. complete listing of all components with annotations
b. five similarities are discussed
c. three main design differences between textbooks in different disciplines are discussed

Criterion #2: the ideas you develop for using textbooks more effectively

Measures:

a. produce a list of at least five useful ideas
b. implement at least three of the ideas the next time you use a textbook

Plan

1. With other individuals in your class collect at least seven textbooks from courses and discipline areas.
2. Inventory a list of all the different components, sections, or general areas that you find in the collection of textbooks. Include a brief explanation or justification for each component.
3. Identify ten features from the textbooks that help readers better understand the material.
4. Answer the Critical Thinking Questions.

Critical Thinking Questions

1. What are five main similarities among the collection of textbooks you looked at?
2. What are five variations among the textbooks you reviewed?
3. How are textbooks from different disciplines used differently?
4. What are five ways to improve comprehension when using a textbook without adding more reading time?

Unit 4

Becoming a Self-directed Learner & Self-grower

Problem Solving Skills

Why Is This Chapter Important?

This chapter focuses on the process of problem solving and provides a methodology that can be applied to all forms of problems you encounter. The "rent problem" later in the chapter is an excellent example of a quality application of the problem solving process. Getting in the habit of approaching problems in a structured manner will enhance your skills and lead to better outcomes and solutions, especially when encountering complex, real-world problems. As you might expect, problem solving skill are highly valued in the business world. Typically, compensation levels are highly correlated to the complexity of problems a person is able to solve.

Learning Objectives

1. Know the steps in the Problem Solving Methodology and how they can be used as a guide to improve your problem solving skills.
2. Identify and articulate skills related to critical thinking and problem solving.
3. Apply and use the Methodology for Solving Word Problems.

Performance Expectations

1. Document your use of the Problem Solving Methodology, in a step-by-step manner, as it pertains to a particular problem/situation in your life.
2. Self assess your performance at problem solving using the Profile of a Good Problem Solver as an upper benchmark.
3. Work through the steps of the Problem Solving Methodology to articulate the detailed solution to the "rent problem".

Chapter Overview

Problems and Problem Solving

Profile of a Good Problem Solver

Critical Thinking Skills

Problem Solving Skills

Defining Terms Related to Problem Solving

Problem Solving Methodology

Discussion of the Steps in the Problem Solving Methodology

Problem Solving Example — The Rent Problem

Solving Word Problems

Inquiry Questions

Activity — Problem Solving Methodology

Key Terms and Concepts

problem

critical thinking

analyzing

assumption

generalization

integration

key issues

sub-problem

validation

setting up the problem

Problems and Problem Solving

A problem is a question, matter, situation, issue, or person that is perplexing, thought provoking, or difficult to deal with. While we all face and deal with problems of varying scope, magnitude, and complexity on a daily basis, some of us are better problem solvers than others. Why is this so?

Several factors influence how effectively people are able to solve problems. First, there is the issue of motivation on the part of the problem solver. You will be much more motivated to put forth effort and perform if the problem to be solved is *relevant* and if you are in a situation that you find interesting or important. In other words, the key question asked by the problem solver is, *how important is it to me that the problem gets solved*? If you don't care about the problem itself, you tend to have little motivation to put forth your best effort.

Another issue that effects the quality of the problem solving process is the complexity and scope of the problem compared to the *knowledge base* of the problem solver. For example, if you were taking an algebra course, regardless of your level of motivation, you would have a great deal of difficulty solving a calculus problem. Also, if you have some familiarity and experience with a problem, that can be a definite advantage over someone who is completely new to the situation. However, this may not always be the case if you did not learn from your first experience.

A person's *self-confidence* at problem solving is an important factor that influences the quality of problem solving. Confidence is gained through past successes which come from the skillful use of a process that can be applied to any problem (situation). This is where a methodology comes in.

Those who are good problem solvers follow and *apply a methodology* to every problem. Whether it's done consciously or not, the approach (or process) to solving the problem is consistent.

Using a methodology is especially important for solving real-world problems. Real-world problems do not come with all the necessary information neatly packaged or with an example problem to follow or with a "right" answer to look up in the back of a book. In fact, there may be many possible solutions. Also, the appropriateness of the solutions will vary dramatically if an important issue is overlooked or a wrong assumption is made.

Profile of a Good Problem Solver

The table below describes the characteristics and traits associated with good problem solvers.

Table 4.1

Profile of a Good Problem Solver	
A good problem solver...	
Affective issues	• enters into problem solving situations with confidence in his/her abilities. • is able to effectively manage frustration so he/she is able to take on more challenging problems. • enjoys the problem solving process as much as obtaining a solution. • enjoys participating in activities that produce opportunities to solve intellectual problems.
Strong and Varied Skill Set	• is able to appropriately identify and define the current problems confronting a process, system, person, or group. • logically identifies key issues by utilizing previous problem solutions or outside expertise. • selects relevant available information and determines what additional critical information is worthwhile to obtain. • partitions a problem into a clear set of manageable sub-problem types which have been previously solved. • learns from past experience and effectively applies prior knowledge. • effectively integrates sub-solutions into a cohesive solution. • documents every problem solution so that others are able to use both the solution and the documentation.
Quality Solutions	• improves the quality of problem solutions through the selection and use of analytical modeling tools. • produces multiple problem solutions to test and give depth and richness to the problem solution. • makes sure that every solution is tested for both reliability and robustness.
Technology	• seeks out, learns, and uses technological tools to improve both the problem solving process and the presentation of problem solutions. • adapts to changing technological environments by identifying, analyzing, or discovering what needs to change.
Assessment and Feedback	• assesses and validates the problem solution to make sure that every underlying assumption has been identified, tested, and documented. • desires assessment of his/her problem solving process and uses the feedback to strengthen his/her problem solving skills.

Critical Thinking Skills

The best problem solvers tend to have very strong critical thinking skills. There is a connection or linkage between these two processes. Table 4.2 presents the general skill areas and specific skills associated with critical thinking. All the general skill areas contribute to being a strong problem solver. These include applying prior knowledge, modeling the current situation, reasoning, synthesizing and analyzing, and creativity. The skills associated with problem solving are presented in Table 4.3.

Table 4.2

Critical Thinking Skills			
Applying Knowledge	**Modeling**	**Reasoning**	**Synthesizing**
transferring	visualizing	evaluating	combining
generalizing	abstracting	using induction	summarizing
contextualizing	exemplifying	identifying consequences	recognizing contradictions
using metaphors	building analogies	logical thinking	making connections
	simplifying	inferring	integrating prior knowledge
			defining roles
			designing systems
Analyzing		**Creativity**	
interpreting	using deduction	being open minded	lateral thinking
identifying similarities	parallel processing	inquiring/ questioning	divergent thinking
identifying differences	making assumptions	challenging	making assumptions
identifying learning needs	evaluating appropriateness	questioning assumptions	ignoring assumptions
identifying function	deconstructing		
identifying rules	determining the quality of data		

Problem Solving Skills

The table below presents a listing of the general skill areas and specific skills associated with problem solving.

Table 4.3

Problem Solving Skills			
Setting up the Problem	**Structuring the Problem**	**Solving the Problem**	**Assessing the Problem Solution(s)**
identifying the problem	partitioning	reusing problem solutions	understanding context
defining the problem	sequencing	integrating solutions	validating
identifying key issues	defining knowns	applying prior knowledge	ensuring solution robustness
identifying assumptions	defining unknowns	systematizing	documenting
			generalizing problem solution(s)

Defining Terms Related to Problem Solving

Assumption Supposition (of something) to be a fact, whether proven or not.

Generalization In the context of the Problem Solving Methodology, the process of making a solution usable in a range of situations or circumstances.

Integration The process of putting parts together into a whole.

Key Issues In the context of the Problem Solving Methodology, important points, matters, or questions to be considered about the problem situation.

Problem A question, matter, situation, issue, or person that is perplexing, thought provoking, or difficult to deal with.

Sub-problem One part of a problem resulting from subdividing.

Validation In the context of the Problem Solving Methodology, the process of testing assumptions and solutions to assess that they are correct, relevant, and cogent.

Problem Solving Methodology

The process of problem solving is the focus of this chapter and the Problem Solving Methodology is an important tool you can use to improve your use of this process in all contexts.

While problems that are easier may not require you to use every step, you are strongly encouraged to get into the habit of thinking through the entire methodology with every problem, regardless of whether or not you use every step. This strengthens your capabilities with the methodology, making it easier to solve the complex problems you encounter.

Table 4.4

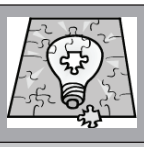
 ***Problem Solving Methodology***	
1. Define the problem.	Identify and clearly state the problem..
2. Identify key issues.	Determine important issues associated with the problem.
3. Collect and assess information.	Collect and assess available information relevant to the problem; determine what information is missing.
4. Identify assumptions.	Clarify what assumptions are being made concerning the problem.
5. Break apart the problem.	Separate the problem into smaller sub-problems.
6. Model sub-problems.	Generate solutions for each sub-problem.
7. Integrate solutions.	Integrate the solutions from sub-problems into the main problem.
8. Test and validate.	Validate the solution; assess the quality of the solution.
9. Generalize the solution.	Determine how to generalize the problem solution for use in other situations.
10. Communicate the solution.	Present the solution in oral and/or written form along with documentation of the process.

Table 4.5

Problem Solving Methodology — A Simple Example	
Scenario: You have completed your first semester at college and are returning home for the Christmas holidays. Since you will be home for five or six weeks, you want to get a short-term job to keep you busy and earn spending money for when you return to school.	
1. Define the problem.	Finding and choosing a job during the Christmas break.
2. Identify key issues.	Must be a short-term job, maximum money, and within commuting distance from home.
3. Collect and assess information.	Obtain a list of temporary agencies from the phone book, names of stores in nearby malls, and the “”jobs”” section from a local newspaper.
4. Identify assumptions.	Retail businesses need short-term, full-time employees in December, and employers reward initiative.
5. Break apart the problem.	Determine who is hiring for the most money, the most hours per week, and how many weeks the employment will last.
6. Model sub-problems.	Amount of money = number of hours/week times hourly wage times the number of weeks worked.
7. Integrate solutions.	The temporary agency can get you work for 5 weeks at 40 hours/week for $7/hour, a possible total of $1,400. That is if they are satisfied with your work evaluations. If they are not satisfied with your work evaluations, you may get no other job offers from the agency. You have found two jobs on your own. The best paying job is for $10/hour for 15 hours/week for 3 weeks, a possible total of $450. The other job is for 6 weeks at 40 hours/week at $5.50/hour, a possible total of $1,320. You choose the job offered by the temporary agency.
8. Test and validate.	You call possible employers to verify your information.
9. Generalize the solution.	You generalize that the temporary agency is a good solution because you can use the agency to seek summer employment also.
10. Communicate the solution.	You write a letter to the agency accepting a job offer. You explain the process used to make your decision to your parents.

Discussion of the Problem Solving Methodology

Define the Problem

The first step in the problem solving process is to correctly identify and clearly define the problem. The ability to assess situations and interpret information properly contributes to correct problem definitions. It is important to define the problem clearly and correctly so that time and effort are not expended in an activity that leads to a solution of the wrong problem. Sometimes it is helpful to get the opinion of others who may perceive and see problem situations differently than you. Their input may improve your original problem statement.

Identify Key Issues

By asking critical questions, you can identify and clarify important issues (surrounding the problem) which should be considered as you work through the problem solving process. Diagrams associated with the problem situation can also help to identify key issues. When key issues are identified, it often leads to stronger and more comprehensive (problem) solutions. Sometimes, the key issues may cause you to reformulate the problem definition.

Collect and Assess Information

Once you have defined the problem and understand what the key issues are, you have a better idea as to what information is most relevant and necessary to solve the problem. Assess the quality of the information you collect based on criteria such as accuracy, reliability, appropriateness, and accessibility. Strong information processing and assessment skills produce better quality information resources that contribute to clearer insights and more creative solutions.

Identify Assumptions

Before proceeding any further in the methodology, you should identify and write down the assumptions you are making concerning the problem situation. Be sure to test the validity of the assumptions you make. The problem definition, the scope of the issues raised, and the quantity and quality of the information you collect all influence the assumptions you make. For example, if you have less available information, you may have to make more assumptions. In some cases, you want to make (valid) assumptions to help simplify the process of solving the problem. Finally, realize that when you change, alter, or make additional assumptions, it can lead to completely new and different solutions. If the assumption is false, it can lead to wrong or poor quality solutions.

Break Problem Apart

In general, the problem solving process is made more effective and efficient by dividing the problem into manageable, logical pieces (sub-problems) dealt with one at a time. Subdividing or breaking apart the problem makes it easier to begin developing and formulating possible solutions. With complex problems, breaking apart the problem is a necessity.

Model Sub-problems

Once the problem has been broken apart, you must generate possible solutions to the sub-problems. Building models that replicate the principles and relationships at work in a given problem can be a great help with the sub-problems. Examples of models include diagrams, equations, graphs, tables, and computer programs. Models should make use of available and

appropriate resources, including the information and assumptions from Steps 3 and 4, and your own knowledge, experiences, and creativity. Realize that many times, there is not just one right answer. Therefore, you should generate several possible solutions which you can later evaluate.

Integrate Solutions

The solutions to the sub-problems generated in the previous step must be put together, in many cases, with modifications. This involves evaluating possible solutions and determining how the parts will best work as a whole. The result is often a set of larger models which serve as possible solutions or means to a solution for the defined problem. The next step of the methodology requires you to examine and assess these solutions.

Test and Validate

Since the outcome of the previous step in the methodology typically results in more than one solution, criteria need to be established to assess these solutions. Testing and validating involves using these criteria to determine how well each solution measures up. The strength of the assumptions should also be tested because the choice and ranking of solutions may vary based on the assumptions made.

Generalize the Solution

A solution to a problem becomes much more valuable and useful when it can be generalized and applied to many different situations rather than being limited to one unique situation. By making modifications and adaptations to the solution, you can make it such that the solution will work for other people as well as for yourself. You can save yourself a great deal of time and effort in the future by using (previously solved) generalized problem solutions in applicable situations.

Communicate the Solution

In many situations, you must communicate your solution(s) and the processes used to arrive at the solution(s) to an audience. It is important that solutions to problems be effectively and persuasively communicated. Otherwise, the value of the solution and all the work associated with it are diminished or even dismissed. You want your oral and/or written communication to include the significance of the problem, the fact that assumptions have been made and tested, that you have examined possible solutions, and the rationale for your final recommendations and conclusions.

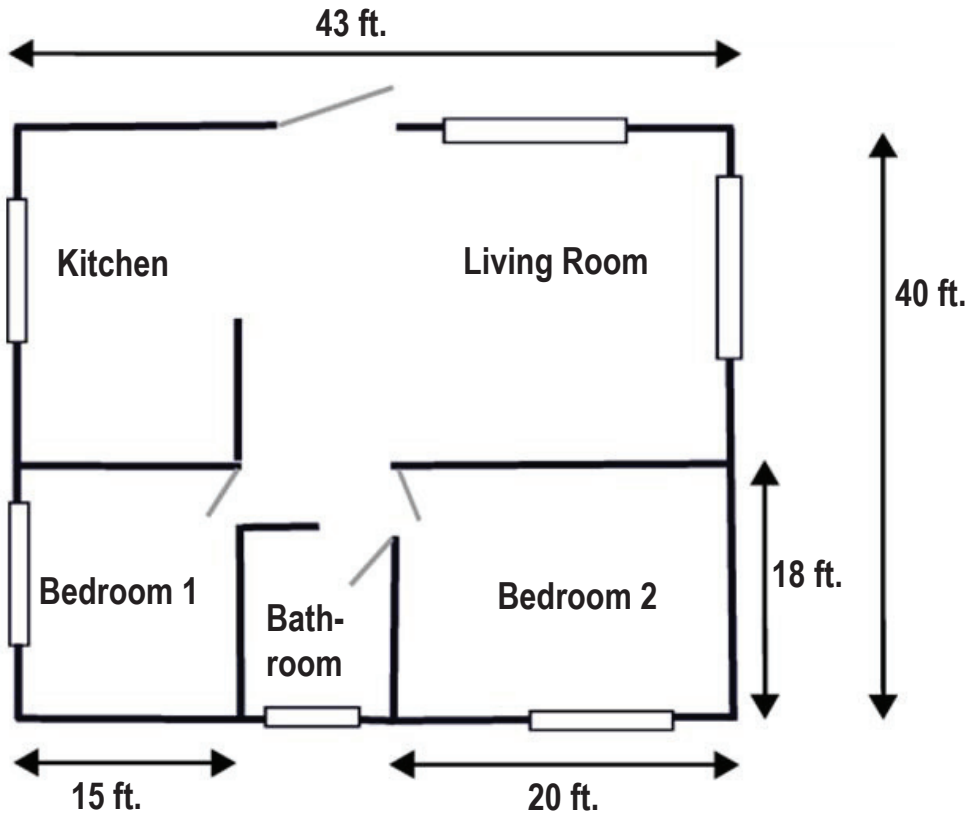
Problem Solving Example — The Rent Problem

Scenario: Three students are going to share a two-bedroom apartment for the school year. The rent is $700 per month, and the size of the apartment is 1,720 square feet. The students need to figure out an equitable way to choose rooms and then assign rent for each person.

Problem statement

Determine who gets which bedroom and how much each person should pay toward the total rent of $700.

Figure 4.1



Key Issues

The following are issues that should be considered:

- Does each student need or want his or her own room?
- Can another room be converted to a bedroom?
- Are some rooms better (worth more) than others?
- What characteristics should be used to place a value on each room?
- What is the value of a private room?
- What is the value of the common area (the non-bedroom space)?
- Is it a mixed gender group of students?
- How much rent can each student afford?
- Do two people want to share a room?
- How should the order for choosing rooms be decided?

Information

Summarize the information that is known.

- The two bedrooms are 270 square feet and 360 square feet.
- The total area of the apartment is 1,720 square feet (40 ft × 43 ft).
- Total house area = common area + large bedroom + small bedroom
- $1{,}720\ ft^2 = 1{,}090\ ft^2 + 360\ ft^2 + 270\ ft^2$
- The monthly rent is $700.

Assumptions

- Every square foot of space has the same value.
- Students have an equal share and financial responsibility for the common area.
- A private room is worth $50 more per month.
- Only two rooms can be used as bedrooms.
- Two students will share the larger bedroom.
- Room assignments will be made first by choice, then by a random drawing.
- Any two students could share a room.

Sub-problems

1. What is the cost of each room per month?
2. How should rooms be chosen?

Model

Model of the cost of each room using the stated information and assumptions:

The one student with a private room will pay $50/month premium for that room. This leaves $650 per month in rent to be paid for the remaining area of the house by all three students.

Since every one of the 1,720 square feet of the house has equal value, the cost per square foot will be $650 divided by 1,720 square feet = $.3779 per square foot (this figure can be used to calculate the financial worth of the square footage of each bedroom as well as the common area).

Each person will be responsible for one third of the cost of the common area. The two people who share the larger bedroom will each be responsible for half of the cost of this bedroom. The person who has the private room will be responsible for the value of the entire bedroom and pay a $50 premium for the privacy.

Model for Choosing

Students choose the room they want in writing. A person who chooses a room that is not chosen by the other students gets that room. When there is competition for the same room, a random drawing selects the student who will get the room. Those students not assigned will choose again and go through the steps until all the room positions are assigned.

Integration

Calculate the cost of each bedroom plus the common area.

Small bedroom with an area of 270 ft^2

cost/month = 270 ft^2 × .3779 dollars per ft^2 = **$102.03**

Large bedroom with an area of 360 ft^2

cost/month = 360 ft^2 × .3779 dollars per ft^2 = $136.04

cost/month per student for the large bedroom = $136.04 divided by 2 = **$68.02**

Common area = total house area minus total bedroom area

common area = 1,720 ft^2 – 270 ft^2 – 360 ft^2 = 1090 ft^2

Cost of the common area = common area times cost per square foot

cost/month = 1090 ft^2 × .3779 dollars per ft^2 = $411.92

cost/month per student for the common area = $411.92 divided by 3 = **$137.31**

Monthly cost per room

The two persons sharing the larger bedroom each pay the following amount each month:

$137.31 (common area) + $68.02 (share of the large bedroom) = **$205.33**

The person with the small bedroom pays the following amount each month:

$137.31 (common area) + $102.03 (small bedroom) + $50.00 (private room) = **$289.34**

All three students choose the single room. A random drawing is held and a name is drawn. This person takes the small bedroom leaving the two other students to share the larger bedroom.

Validation

Does the sum of the rents equal $700?

$205.33 + $205.33 + $289.34 = $700
(*yes, the sum of the individual rents are validated*)

Are the rents equitable? The person with the small bedroom feels that the private room is not worth the extra cost of nearly $100 per month. All three feel that they would have lowered the premium if they had considered that the person in the private room would be paying a premium for privacy AND for the additional cost for more space. However, since both students in the large bedroom would gladly pay the extra money for the private room, the person in the small bedroom decides not to give up the room even under the current cost arrangements. All agree to keep things as they are.

Were the assumptions valid? All three students agree that the assumptions were valid. However, they were surprised at how long the process took.

Generalization

All three students realize that they could generalize this method for any number of students and any number of rooms. After subtracting the monthly "privacy premiums" from the rent, the cost per area can be figured. Then the cost per bedroom and the cost for the common area can be calculated. The cost of the common area is evenly divided by the number of tenants (unless agreed upon otherwise). The cost of each bedroom is evenly divided by the number of roommates.

Communication

The students share the generalized solution and its effectiveness with their friends.

Solving Word Problems

Mathematical story or word problems require you to take real-life situations and find solutions by translating the given information into equations with unknowns. Since very few problems in life are clear cut with simple steps and easily defined numbers, knowing how to set up and solve (word) problems is very beneficial.

Although you may be anxious when you see a word problem, once you understand the process for analyzing, setting up, and solving word problems, your confidence will grow and you will find that they are not as difficult as you once thought.

Table 4.6 ***Methodology for Solving Word Problems***

1. Read and define the problem.
2. Identify the given information.
3. Decide what information is relevant.
4. Decide what is (are) the key unknown value(s).
5. Model the problem. Begin with an equation containing the most important unknown value (from Step 4). Then write additional equations for any unknown variables. Continue writing equations until the number of unknowns equals the number of equations.
6. Evaluate the model (solve the equations from Step 5).
7. Validate the solution.

Inquiry Questions

1. Why is it suggested that you use a methodology when solving problems?

2. What are some of the most important characteristics that distinguish a person who is good at problem solving?

3. What is involved when a person “thinks critically”?

4. What is meant by “setting up the problem” and why is this so important?

5. In the Rent Problem example, is there more than one way to solve this problem? Explain your answer.

6. When solving word problems, how do you know if the information given in the problem is relevant or not?

7. Using the Problem Solving Methodology as a guide, what actions can you take to become a better problem solver?

Activity — The Problem Solving Methodology

Why

The Problem Solving Methodology is a tool to help you improve your proficiency at the process of problem solving. Without a methodology, most people are more easily lost and ineffective when it comes to solving difficult problems. Having a common methodology to use in problem solving contexts increases your confidence and the quality of solutions and decisions you make.

Learning Objectives

1. Gain a better understanding of the Problem Solving Methodology and how it can be used to develop proficiency with the process of problem solving.
2. Learn to apply the Problem Solving Methodology by analyzing it in the context of the given example.

Performance Criteria

Criterion #1: your team's discoveries about the Problem Solving Methodology

Measures:

a. demonstrate an application (are more than statements of a fact)
b. unique from other teams' discoveries

Criterion #2: the connections made between the case study and the Problem Solving Methodology

Measures:

a. answers to the Critical Thinking Questions are complete
b. you can provide a justification for your answers to the Critical Thinking Questions

Plan

1. Read about the Problem Solving Methodology in Chapter Twelve of *Foundations of Learning*.
2. Study the case study about problem solving presented in this activity.
3. Answer the Critical Thinking Questions.
4. Document three discoveries or insights about problem solving your team makes during the activity.

Problem Solving Methodology Case Study

Charlie Molter, a senior in college, needs a car to use to drive to job interviews. He has $500 in the bank. He knows he wants a basic compact car.

Define the Problem

The problem stated in the form of a question is, should Charlie buy a new or used car, or lease a new car?

Identify Key Issues

The following key issues have been identified:

- Charlie has $500 in the bank.
- Charlie's job record through college is good, but he has never had a permanent full-time job.
- Charlie's parents are willing to co-sign a loan for him.
- Charlie's parents are willing to lend him up to $5000 with an interest rate at the prime rate at the time of the loan. He must pay them back within three years.
- Charlie needs the car for short trips only.
- Charlie would like to be able to take long trips in his car.
- Charlie's student loans will have to be paid by installment in one year.

Collect and Assess Information

Charlie's options for a compact car include the following:

1. *Lease new car:* down payment of $700 with monthly payments of $195/month for three years
2. *Buy a used car:* a car with 70,000 miles in reasonable condition for a price of $6,000
3. *Buy a new car:* price of $11,000 with a down payment of $500

Financing Information

A bank near Charlie's home will make up to a $10,000, three-year loan to Charlie if his parents co-sign. The loan can be used for either a new or used car and the interest rate will be 2% above the prime rate. The present prime rate is 8.25%.

Identify Assumptions

- Charlie will have to borrow money from either the bank or his parents. He will borrow from his parents up to $5000 and the rest from the bank with a co-signed loan.
- Charlie will get a job so he can pay for the car on a monthly basis.
- For the remainder of Charlie's life, he will need a car — it is NOT a short-term need.
- Charlie will be making more money in five years than he will be making next year.
- A new car could last for ten years, and after the first three years have an average repair rate of $700 per year.
- A used car could last for five years with $1,000 per year repair each year.
- Charlie will use his $500 savings toward the car's cost.
- Charlie can make monthly payments for a car up to $250 per month for the next three years (including repair costs).

Break Problem Apart

The problem can be broken into the following components:

- Which car is the most affordable in the next three years as far as total cost/three years?
- Which car is the cheapest per year as far as cost/year for Charlie's possession of the car?
- Does the amount of money saved in the first three years for the cheapest car warrant the extra expense he will have after the first three years?

Model Sub-problems

Charlie needs to use an amortization table to determine the monthly cost of paying back a certain amount of money over a certain period of time at a certain percentage. To find the cost of the car for three years and for the lifetime of the car, the following information is used.

Information needed for LEASING A CAR:

P1 = amount borrowed from parents
B1 = amount borrowed from bank
8.25% = prime interest rate borrowing
3 years = length of the loan
DP = down payment
MP = monthly payment
PDP = monthly payment to parents when (DP – $500) for three years at 8.25%

Cost for leasing a car for three years is found by using:

L3 = $500 + (PDP × 36 months) + (MP × 36 months)

L3 ÷ 3 = LL = cost per year to lease while in Charlie's possession

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Information needed for BUYING A CAR:

C = cost of car
DP = down payment
B1 = amount borrowed from bank
P1 = amount borrowed from parents
PP = monthly payment to parents when borrowing
8.25% = prime interest rate P1 for 3 years at 8.25%
BP = monthly payment to bank when borrowing
3 years = length of the loan
(C – P1 – $500) for 3 years at 10.25% (or 2% above prime rate)

Cost for purchasing a car for three years is found by using:

B3 = $500 + (PP × 36 months) + (BP × 36 months) + cost of repairs

(B3 + repair costs after first three years) ÷ (number of years) = cost/year (while in Charlie's possession)

Integrate Solutions

For a leased car

DP = $700

MP = $195

PDP = $6.29

L3 = $700 + ($195/month × 36 months) + ($6.29 × 36 months) = **$7,946**

LL = $7,946 ÷ 3 years = **$2,649 per year**

For a new car

C = $11,000

P1 = $5,000

DP = $500

B1 = 11,000 – $5,000 – $500 = $5,500

PP = $157.26 per month *(borrowing $5,000 for 3 years at 8.25%)*

BP = $178.12 per month *(borrowing $5,500 for 3 years at 10.25%)*

cost for repairs for first three years = 0

cost of repairs for last seven years = $700/year × 7 years = **$4,900**

B3new = $500 + ($157.26/month × 36 months) + ($178.12/month × 36 months) = **$12,574**

BLnew = ($12,574 + $4,900) ÷ 10 years = **$1,747 per year**

For a used car

C = $6,000

P1 = $5,000

PP = $157.26/month *(borrowing $5000 for 3 years at 8.25%)*

BP = $16.19/month *(borrowing $500 for 3 years at 10.25%)*

cost for repairs for first three years = $1,000/year × 3 years = $3,000

cost for repair for last two years = $1,000/year × 2 years = $2,000

B1 = $6,000 – $5,000 – $500 = $500

B3used = $500 + ($157.26/month × 36 months) + ($16.19/month × 36 months) + $3000 = **$9,744**

BLused = ($9,744 + $2,000) ÷ 5 years = **$2,349 per year**

The following table summarizes the financial information for the options for obtaining an automobile.

Payment Method	*Cost for Three Years*	*Cost per Year for Possession Car*
Lease for three years	$7,946	$2,649
Buy new car — keep for 10 years	$12,574	$1,747
Buy used car — keep for 5 years	$9,744	$2,349

Charlie could see by looking at the cost per year that the new car is the best buy. However, by looking at the total cost for the first three years, Charlie noted that the leased car is the least expensive over the first three years. The used car would be a compromise, but since Charlie knows he will be strapped for money the next three years, the $1,800 he can save during these critical years in leasing rather than buying a used car will come in handy. He feels that this warrants the extra expense he will incur after the next three years. He also really likes being able to obtain a car with only a small amount of help from his parents.

Test and Validate

Charlie checks with his friends and relatives concerning the cost of maintenance of an owned car. He finds that the cost varies, but that the numbers he assumed are typical. He also rechecks his calculations and collected information. He finds that since he initially worked on the problem, the prime interest rate has gone up ¼ percent, making the leased car an even better deal over the next three years.

Generalize the Solution

Charlie generalizes that leased cars are a good way to have a car if you have no means of borrowing money to buy one. He also generalizes that, in general an owned car will always be a better deal than a leased car if you are willing to maintain and keep it for its lifetime.

Communicate the Solution

Charlie explains his decision to his parents. They are happy to hear that he only needs to borrow $200 in order to meet the down payment.

Critical Thinking Questions

1. Why does Charlie have to make assumptions rather than finding out the information?

2. How did Charlie determine the values for each of the following? Where was the information obtained?

   Cost of new car:
   Repair cost of new car:
   Monthly payment to parents:
   Number of years Charlie will own car:
   Number of years Charlie will lease car:
   Monthly payment to bank:

3. What assumptions made by Charlie do you question? Why? What assumptions were never used in solving the problem?

4. Why is it important to build and use models when problem solving? Do you agree with the models Charlie created? Why or why not?

5. What are some other key issues that Charlie could have considered for this problem? Which key issues were never used in solving the problem?

6. Do you feel Charlie made the correct decision? Why or why not?

Unit 5

Becoming a Self-directed Learner & Self-grower

Assessment and Evaluation Skills

Why Is This Chapter Important?

Assessment and evaluation are two processes that are of great importance to you as a student. Throughout your schooling, you have been evaluated and given scores on exams and grades in courses. This chapter will focus on the less familiar process of assessment—which in simple terms can be viewed as a state of mind that asks questions and seeks answers for the purpose of improving performance. In the context of college, good students typically use assessment (and self-assessment) skills so that upon receiving an evaluation they can figure out how to improve the next time. In the business world, strong assessments skills will allow you to better improve your job-related performances.

Learning Objectives

1. Gain an appreciation for the value of assessment and be able to identify and articulate skills pertaining to assessment.
2. Understand and articulate the differences between assessment and evaluation.
3. Know the steps in the Assessment Methodology and how they can be used to improve your ability to assess and self-assess.

Performance Expectations

1. Use the SII method of assessment in many different contexts.
2. Self assess your performance as assessing using the Profile of a Quality Assessor as an upper benchmark.
3. Set up an assessment design using criterion, factors, and scales.

Chapter Overview

Familiarity with Evaluation and Assessment

Why Improve Your Assessment Skills?

Defining Important Terms

Measurement, Evaluation, and Assessment

Assessment and Self-Assessment

Profile of a Quality Assessor

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Key Terms and Concepts

assessment

evaluation

measurement

self-assessment

criterion

factor

scale

developing an assessment

conducting an assessment

reporting an assessment

SII Method

insight

Familiarity with Evaluation and Assessment

For most of you, evaluation is a far more common process than assessment. As a student you are accustomed to being evaluated. In fact, you *expect* to receive a grade when you take a quiz or exam, or turn in a paper, lab report, or some other academic work product. Many of you were evaluated when you went through the college admissions process. Admission officers evaluated you on factors that included class rank in high school and scores on the SAT or ACT exam.

Evaluations in the workplace are common also. Employees expect to receive periodic evaluations from managers and supervisors. In fact, despite being a bit nerve-racking at times, many people want to be evaluated in order to receive a reward for good performance. As a worker who has been doing an excellent job, you want to be evaluated so you can receive a raise or a bonus. As a student who has done an excellent job of preparing, you want to take the exam to show what you know and earn a high grade or score.

Assessment on the other hand is a process that most people are less familiar with but is just as important. In fact, if you are interested in improving the quality of your work or your performance, the assessment process is essential. While evaluation is used to judge the quality of a product or performance against a stated standard, the main purpose of assessment is to provide feedback that helps a person to improve the quality of a product or performance.

We have all received some form of assessment in the past. What makes assessment more difficult to distinguish is that for most people their past assessment experiences have been much less formal than the structured evaluation they have gone through. The assessment may have come from a parent, teacher, coach, or friend who offered feedback, pointing out things that you were doing well and offering advice on how to improve the next time. You may not have known it at the time but you were receiving an informal and unstructured assessment.

Why Improve Your Assessment Skills?

Both evaluation and assessment are important. However, if assessment is not used along with evaluation, then a great deal of potential benefit (in the form of feedback to improve) is lost. Without assessment, it is possible, and quite likely, that a process that is repeated over and over will result in little or no change to the quality of the performance or outcome.

Good students typically have developed strong assessment (and self-assessment) skills so that upon receiving an evaluation they can figure out how to improve the next time. Students without these skills, however, know how well they did, but not *how* to change to improve, or *why* the level of performance was at the level it was.

In this chapter, you will learn more about assessment so that you can perform a quality assessment in a structured manner; including establishing guidelines for what is to be assessed, knowing how the information is to be collected and how the feedback is to be reported. You will also learn about the differences between assessment and self-assessment, and between evaluation and assessment.

Defining Important Terms

Before going any further, let's define what we mean when using certain terms in this chapter. Note that the definitions below are the author's definitions. They apply in the context of this book. Uses of these words in other contexts may vary to some extent. The four main processes for this chapter are:

Assessment giving feedback that documents progress (*strengths*) and provides ways to improve future performance (*areas for improvement*). The feedback is given after measuring the quality of a performance, a work product, or a learning skill.

Evaluation using measurements to make a judgment (about the quality of a performance, work product, or learning skill) against a standard.

Measurement collecting data and information about the quality of a performance, work product, or use of a skill using a measuring system.

Self-assessment the process of assessing yourself, whether it is your performance, work product, or use of a specific skill.

The names for the people involved in the above processes are:

Assessee the person whose performance, work product, or learning skill is being assessed with regard to specific criteria he or she has set for the assessor.

Assessor the person who performs the assessment process on behalf of the assessee.

Evaluatee the person whose performance or work product is measured against a set of standards established outside of the person's control.

Evaluator the person who renders or reports a judgement (conclusion) concerning the performance or work product of an evaluatee against a set of prescribed standards; the evaluator may or may not be in a position to reward or punish the evaluatee.

The following are important components in the design of an assessment:

Criterion a focus area of quality; a characteristic or standard by which something (product) or someone (performance) can be measured.

Factor a characteristic of a criterion that can be measured using a single scale.

Scale a standard against which measurements are made.

Measurement, Evaluation and Assessment

Consider the following scenario to help you distinguish between measurement, evaluation, and assessment. Assume you took a 20-question multiple choice exam. You receive your exam back and see that you answered 17 out of the 20 questions correctly. Your instructor has marked the letter grade "B" next to your score of 85%.

By determining the score of 85%, your instructor needed to come to a decision, or **measurement** of whether each individual answer was right or wrong. After determining which answers were correct, your overall performance on the exam was graded or **evaluated** against a set standard

or grading scale used by your instructor. In other words, the instructor used the results of the measurement to make an evaluation (give you a grade) of your performance on the exam.

Note: some evaluations are scored against a standard that is set in advance such as in the example in the preceding paragraphs. Some are scored against a standard that is statistically created from all results. An example of this would be "curved grades," where the grade ranges are determined only after the measurements of all the students have been made.

However, simply receiving a score of 85% and a letter grade of "B" does not help you understand *why* you knew the answers to 17 of the questions or *why* you got the answers correct! Nor would it help you know how to study to get more answers correct the next time. This is where assessment comes in. By **assessing** your performance on the exam, strengths would be identified along with areas for improvement. When discussing areas for improvement, suggestions for *how* to improve future performance would be included.

Suppose when grading your exam, the instructor wrote comments such as, "you listened well in class" next to a correct answer, or "read the long-worded questions more carefully, slow down the next time" next to a wrong answer. These would be examples of receiving feedback to help improve future performance. Actually, in this case, the instructor is both assessing *and* evaluating your work.

Let's summarize our discussion up to this point.

Measurements are data, information, decisions, observations, or opinions that are collected or obtained during a performance. Measurements represent the information that is used to make both assessments and evaluations.

For example, a manager could be asked to both assess and evaluate an employee. The manager would need to first make some measurements by collecting information about the employee (first-hand observations, review work-product, etc.). Then the manager could give assessment feedback by providing strengths and areas for improvement. An evaluation could be made about whether to give a bonus based on whether the employee's performance meets or exceeds certain pre-established criteria.

Evaluation uses a measurement for the purpose of categorizing or judging. Examples include a boxer who is weighed prior to a fight to make sure he is within the proper weight class, or a person who wants to be an airline pilot who has his or her eyesight evaluated to determine eligibility into a pilot program.

Assessment is quite different from evaluation, although measurement is a necessary component of assessment as it is with evaluation. Assessment is not carried out solely to categorize or to judge, but rather to improve the quality of a performance. For example, a doctor may tell you that you have the flu. This would be an evaluation. However, if he or she tells you to go home and get plenty of rest and fluids, he or she is then giving you a way to get better which is a form of assessment.

The table on the next page identifies skills associated with assessment.

When studying for an exam, by using good assessment techniques, you can discover ways to study more effectively and at the same time, determine your level of understanding. You could make lists of concepts you need to learn better, and those you *know* you understand. Students who do well in college are almost always good self-assessors. They are able to analyze their work and understand what to keep and what to change so their academic product is of the highest quality.

Table 5.1

Assessment Skills		
Developing an Assessment	**Conducting an Assessment**	**Reporting an Assessment**
setting criteria	introspecting	presenting feedback
assuring validity	reflecting	complimenting
assuring completeness	applying criteria	accepting feedback
creating a measurement system	measuring against a standard	

Assessment and Self-Assessment

In principle, assessment and self-assessment are identical. However, with self-assessment, the assessor and assessee are the same person. While very similar, the difference between the two processes can be significant. For most people, they find it more difficult to self-assess themselves than to assess someone else.

To point this out more clearly, suppose you are asked to look at a snapshot and let the photographer know (1) what makes the picture good and (2) what the photographer could do to improve the next snapshot. What would you look at? You may notice the focussing and centering of the picture. Now suppose the snapshot is of you! Your assessment may be completely different unless you keep in mind what *you* look like in the snapshot is *not* the only important issue.

Profile of a Quality Assessor

Below are some of the attributes and characteristics that are associated with people who are good assessors.

A quality assessor…

- is willing to use evidence to make informed decisions,
- is objective,
- is comfortable receiving and giving feedback for improvement,
- is aware that nothing is so perfect that it cannot be improved,
- has the ability to multitask, and
- can focus on what to observe.

A description of different levels of assessor performance is presented later in this chapter.

Assessment Methodology

The Assessment Methodology provides a framework for making structured assessments. The four main stages of the assessment process are (1) set up the assessment, obtain shared purpose from the assessee and the assessor; (2) design the assessment, establish important criteria; (3) perform the assessment collect and analyze quality data; and (4) report the assessment, provide feedback in a constructive manner.

Table 5.2

	Assessment Methodology
1. Develop guidelines for the assessor to follow when assesssing a performance.	Both the assessee and assessor should: a. Define the purpose of the performance. b. Define the purpose of the assessment. c. Determine what is appropriate to be assessed. d. Agree on what should be reported and how it should be reported (for the assessment/feedback report).
2. Design the methods used for the assessment.	Both the assessee and assessor should: a. Inventory a list of possible criteria to be used as part of the assessment. b. Choose the criteria from the list in (Step 2a) which best meet the previously established guidelines (Step 1). c. Determine an appropriate factor (or set of factors) for each of the chosen criterion (Step 2b) which will be used to assess the assessee's performance. d. Determine the appropriate scale for each factor (Step 2c) which will be used to determine or measure the quality of the assessee's performance.
3. Collect information during the performance.	The assessor should: a. Set up a system to complete and collect information pertaining to the factors. b. Measure the collected information against the established factors using the determined scales. c. Document the assessee's strengths, areas for improvement, and insights which will be shared with the assessee. d. Offer feedback during the performance, if appropriate and agreed upon beforehand, with the assessee.
4. Report the findings to the assessee.	The assessor should: a. Share the assessment report with the assessee. This includes information gathered during the performance and how it relates to the criteria, along with feedback for improving future performances. b. Analyze a performance that is believed to be poor or of low quality. Determine what part is due to the information collected, the criteria chosen, and/or the performance itself.

Discussion of the Assessment Methodology

Develop guidelines for the assessor to follow when assessing a performance.

The first step in setting up an assessment is to define the purpose for the performance and the purpose for the assessment. With this information, the person being assessed (assessee) can better determine what is important to assess, and the person doing the assessment (assessor) is equipped to give correct and appropriate feedback.

After determining these two purposes, the two parties should collaborate to determine what is appropriate to assess. This depends on the nature of the activity being performed, the skill of the person performing that particular activity, the level of assessment skill on the part of the person assessing, and the assessor's knowledge of the activity/content the assessee is performing. Finally, the assessee and assessor must decide on the form and content of the assessment report, what the report should include and how it should be reported.

Design the methods used for the assessment.

In designing a method for assessment, both parties should collaborate to generate a list of possible criteria that could be used by the assessor to give feedback to the assessee. From this list, both should agree and select the most important criteria that best meet the guidelines from the first step in the methodology. In most cases, this list should contain no more than four criteria. For each chosen criterion, determine appropriate factors to assess the performance and the appropriate scale to measure or determine the quality of each chosen factor. Note that in some cases where the assessment is more narrowly focused, the criterion may be manageable enough without defining factors.

One of the keys to learning how to assess is to start simple. Often the evidence you collect for analyzing quality can be measured on a basic scale. For example, if you are asked to assess an oral presentation, one of the factors could be "eye contact." A veteran assessor might collect evidence by determining the eye contact on a scale of 1 to 10. However, a novice assessor could use a scale of {*none, some, lots*}. Both scales elicit information to create constructive feedback.

Collect information during the performance.

While the assessee is performing, the assessor must collect information based on the chosen criteria and factors. It is important for the assessor to also be noting: (1) the strong points of the assessee's performance (things done well) and *why* they were considered strong, (2) the areas in which the assessee's performance can improve, along with *how* the improvement could be made, and (3) any insights that might help the assessee. By including this additional form of feedback, the final reporting back to the assessee can take the form of an assessment rather than just an evaluation.

In some cases, rather than waiting for the final assessment report, the assessee may ask the assessor for feedback during the performance, called "real-time" feedback. If appropriate to the situation, and agreed upon prior to the start of the performance, the assessor may offer feedback (to the assessee) during the performance. For example, a basketball coach may give feedback to a player during a game but it is more difficult for an orchestra conductor to give feedback to musicians during a concert.

Report findings to the assessee.

The final step of the methodology is for the assessor to provide the report to the assessee. The assessment report documents the information collected during the performance, and provides a discussion on how it relates to each criterion. The agreed upon factors and scales should be integrated into the assessment discussion. An assessment report also includes feedback about how the assessee can improve future performance with references to particular skills. A suggested format requires the assessor to provide information on strengths, areas to improve, and insights made during the assessee's performance.

When a performance has not gone well from the perspective of the assessor, it can typically be attributed to the poor quality of one or a combination of the following:

1. the performance of the assessor,
2. the information collected (leading to the wrong evaluation), or
3. the criteria (inappropriately chosen criteria).

Finally, the assessee may offer feedback about the assessor's performance so that the assessor can improve his or her assessment techniques in the future.

SII Method of Assessment

The SII Method of assessment is a form of assessment that requires the assessor to focus on three main items: **S**trengths, areas for **I**mprovement, and **I**nsights gained. The SII Method can be used in most any assessment situation.

Strength — identifies the ways in which the performance was of high quality and commendable; also includes a statement as to why particular strengths were considered most important.

Area for Improvement — identifies what changes can be made in the future (between now and the next assessment) to improve performance; also includes mention about how changes can be implemented most effectively.

Insight — identifies what new and significant discoveries or understandings were gained concerning the learning process; i.e., what did the assessor learn that others might benefit from hearing or knowing.

An insight can be described as…

- something valuable you learned for the first time.
- something you now begin to understand that you did not understand before.
- something you recognized that you hadn't noticed before.
- something that you perceive is significant.
- an awareness of something important.

Examples of Designing an Assessment

Consider the following example to help you understand the assessment process. Within the given scenario, examples are given for criteria, factors, and scales.

Scenario: Gloria Adams is a sophomore in college who plans to major in chemistry. She is given a laboratory assignment to do at home for the General Chemistry class she is taking. She asks her aunt, who is a chemical technician at a major chemical firm, to assess her performance in completing the laboratory assignment and in understanding how the lab supports the material she is learning in the classroom.

Purpose of performance: to complete a laboratory homework assignment

Purpose of assessment: to help Gloria improve her laboratory technique

Criterion: uses appropriate measuring techniques

Factor 1: can replicate mass measurements on balance during the experiment

Scale: performs without mistakes, sometimes spills the liquid, sometimes leaves the liquid in the container, doesn't know how to use the balance

Factor 2: can weigh material correctly during the next laboratory session

Scale: the grade the instructor gives Gloria for her laboratory performance in measuring

Criterion: understands how the results of the experiment support the theory

Factor 1: correctly analyzes the laboratory results which will be used in the laboratory report

Scale: is either {*correct* or *incorrect*}

Factor 2: can explain how the hypothesis is linked to the theory and how the hypothesis is supported by the experiment

Scale: the grade received on the next chemistry quiz

Another Example

Consider a situation where the performance of a salesperson is being assessed (refer to Table 5.3).

Initially, a larger criteria list (with six criteria) is generated. Each criterion has factors associated with it. The factors are measured using scales. In this example, the three sample qualitative scale values are presented to represent different levels of performance (*excellent*, *good*, and *fair*). The numerical values for the scales are fictional and are provided simply for example purposes.

From this large list, the assessor must narrow the focus (in agreement with the salesperson) to come up with a smaller "criteria list." Normally factors and scales are determined only for those criteria chosen for the final criteria list.

Table 5.3

Criterion	Factor	Scale		
		Excellent	Good	Fair
Diligence	Number of hours worked per week	50	40	35
	Number of phone contacts made for future appointments per week	30	15	8
	Number of sales presentations made per week	10	5	2
Productivity	Number of sales made per week	5	2	1
	Amount of revenue per week	$50k	$20k	$10k
	Ratio of sales presentations to sales made	2 to 1	3 to 1	5 to 1
Self-growth	Number of sales seminars attended per year	4	2	1
	Quality of time management	Excellent	Good	Fair
	Honesty and ethics	Excellent	Good	Fair
Appearance	Neatness and cleanliness	Excellent	Good	Fair
	Business attire, clothing	Excellent	Good	Fair
Knowledge base	Quality of a sales presentation	Excellent	Good	Fair
	Knowledge of products	Excellent	Good	Fair
	Knowledge of market and competitor's products	Excellent	Good	Fair
Follow through	Quality of the follow-up service after the sale	Excellent	Good	Fair
	Repeat business, % of customers who buy again	75%	50%	25%

Performance Levels for an Assessor

You can learn more about assessment and what makes a person a quality assessor by studying the five levels of assessor performance. The descriptive sentences distinguish assessor performance with respect to interpreting information, giving feedback, comfort in using and applying the process, and selecting criteria.

Level 5 Sage

- Correctly interprets the key performance areas, and clearly describes the strengths, areas for improvement, and insights in all contexts.
- Relates the performance issues to the assessee in a way that can transform the quality of the performance.
- Expresses the report in future oriented language leading to a specific plan of action.
- Seeks assessment opportunities in any context and models the use of the skill for assessment across various contexts.
- Removes personal values and biases.

Level 4 Mentor

- Usually interprets the key performance areas, and usually describes the strengths, areas for improvement, and insights in familiar and some unfamiliar contexts.
- Consistently provides specific, supported feedback that helps the assessee to grow.
- Uses real-time assessment to improve immediate performance.
- Seeks assessment opportunities, and models good assessment techniques within a particular context.

Level 3 Guide / Coach

- Often interprets the key performance areas, and describes the strengths, areas for improvement, and insights best in familiar contexts.
- Identifies and provides helpful feedback on prominent performance issues.
- Conducts intermittent assessments, and formulates insights that are valuable to future performance.
- Appropriately selects performance criteria, and recognizes the specific context of application.

Level 2 Learner / Player

- Sometimes interprets the key performance areas, and sometimes appropriately describes the strengths, areas for improvement, and insights.
- Provides superficial feedback on obvious performance.
- Exhibits a mechanical approach by completing assessments by following the steps but without appreciating any future value.
- Can use given performance criteria to assess within a specific context.

Level 1 Novice

- Offers ambiguous strengths, areas for improvement, and insights, which would seldom lead to meaningful improvement.
- Offers unsupported feedback, which misses many important performance issues.
- Engages in little or no assessment, and cannot identify growth opportunities.
- Is unable to recognize appropriate performance criteria in any context.
- Is biased in every aspect and is oblivious to or unaware of the “affect” of the assessee.

Inquiry Questions

1. What is the difference between a criterion and a factor?

2. What are the differences between assessment and evaluation?

3. In way ways are assessment and self-assessment different? In what ways are they the same?

4. What is meant by the SII method of assessment reporting?

5. What is the significance of assessment to you as a student? Why should you be concerned about developing your assessment skills?

6. How would you distinguish a poor assessor from someone who excels at assessing?

7. What are some important considerations when giving an assessment report to a person who has just been assessed?

Activity — Assessment Methodology

Why

The Assessment Methodology is an especially useful tool (for improving the quality of assessments) because most people are unfamiliar with a formalized process for performing an assessment. Whether it be at school, work, athletics, or any other context, assessment is crucial for improving your performance in the future. In addition, the ability to *self-assess* is essential if you are to become an independent learner. Developing strong assessment skills will enable you to effectively gauge your progress and to make improvements as you work and perform in various contexts.

Learning Objectives

1. Gain a greater understanding of the Assessment Methodology by analyzing it in the context of a given example or case study.
2. Be able to demonstrate how the Assessment Methodology (in its general form) was applied in a specific context.

Performance Criteria

Criterion #1: the connections made between the case study and the use of the Assessment Methodology

Measures:

a. complete, all the steps are accounted for

b. accurate, the parts of the scenario are correctly linked to the steps in the methodology

Criterion #2: your team's discoveries about the Assessment Methodology

Measures:

a. demonstrate an application (more than statements of a fact)

b. unique from other teams' discoveries

Plan

1. Read the case study describing an assessment situation.
2. Answer the Discussion Questions. Write three discoveries about the Assessment Methodology made by your team as a result of answering these questions.
3. Demonstrate your understanding of the Assessment Methodology by linking parts of the case study to the components of the methodology.
4. Create an outline with all the steps of the Assessment Methodology. Describe which parts of the case study correspond to each part of the methodology.

Assessment Case Study

June, a junior chemistry major, has been contributing to an undergraduate research project at her college. She plans to present a 20-minute talk on her research at an undergraduate student symposium. June is eager to present her scientific findings and at the same time wants to get practice in talking in front of others. She has asked Professor Bohn, who is not her advisor

on the project, but has done research in a similar field, to assess the talk she gives at the symposium. He agrees.

June asks to be assessed on her understanding of the research methods she has used and her overall performance as a researcher. She would also like feedback about the quality of the presentation she makes about her findings. Both agree that Professor Bohn should evaluate June's general understanding of her research and the organization of her presentation. Neither feels he should assess her oral presentation techniques, since Professor Bohn has little expertise in this area. The feedback will include strengths as well as areas to improve. Since this is June's first research project, Professor Bohn decides to adjust his assessment accordingly by using scales for measuring quality that are lower than they might be for an experienced researcher.

June and Professor Bohn brainstorm possible criteria that he *could* assess. Their list looks like:

- appropriate use of terminology,
- knowledge of other researchers who have contributed in the area,
- quality of presented data,
- quality of analysis of data,
- quality of explanation of future avenues for this type of research,
- ability to answer questions from the audience, and
- organization of the presentation.

After looking at the guidelines already set up, June and Professor Bohn mutually agree that he will evaluate the following three criteria:

1. *The quality of presented data*. Professor Bohn will look specifically at the methods used to obtain the data. He will measure June's performance in this area on a scale from 1-5, where 1 is not scientifically sound and 5 is extremely scientifically sound.

2. *June's ability to answer questions from the audience*. Professor Bohn will pay attention to the accuracy of June's answers measuring on a scale from 1-5, where 1 is incorrect or not answering the question, and 5 is the correct thorough response to the question. At the end, he will average all the question ratings.

3. *The organization of the presentation*. Professor Bohn will consider the appropriateness of the presentation with respect to the audience as well as the completeness of the presentation. He will measure the appropriateness using a scale of {*inappropriate* or *appropriate*}. Completeness will be measured using the following scale {*not at all complete*, *missing more than one element*, *missing one element*, and *missing nothing*}.

Professor Bohn sits in the back of the room while June gives her talk. He keeps a list for each factor used in the assessment. During the presentation, Professor Bohn is impressed by June's level of understanding about the subject. Her data collection is flawless, and the analysis is appropriate. However, he notices that June answers questions from the audience too quickly and sounds somewhat condescending in her responses. In addition, she misunderstands one of the questions and answers a different question from the one that was asked. He also notes that, although the talk is informative and enjoyable, most of the undergraduate audience is waiting to give their talks and were lost after the first few minutes. Professor Bohn's assessment notes for June's presentation are shown in the following table.

Criterion	quality of data	answering questions	organization	
Factor	methods used to obtain data	accuracy of answers	completeness	level of complexity
Scale	5	3	missing nothing	inappropriate

As Professor Bohn takes notes during June's talk, he arranges his notes so that they are organized according to the SII method of assessment.

Professor Bohn writes a report to June that includes his assessment. He reports that one of June's strengths is her thorough understanding of the underlying science in her research and her skills as a careful experimentalist. He feels that she could improve by taking into account the audience's level of understanding. Those unfamiliar with the research may find it difficult to follow. He feels she could improve this by looking for reactions of the people she is talking to. Professor Bohn's insight is that it is important to know who your audience is before giving a presentation.

From Professor Bohn's point of view, the only aspect of poor performance was in June's dealings with the audience. He determines the criteria chosen are appropriate, the information he collected is accurate, and attributes the poor performance to June. He has already given June feedback on this and suggestions on how to improve in the future.

Discussion Questions

1. Why does the assessor need to know the purpose of the performance before setting up an assessment with the assessee?
2. Should the assessor and the assessee always discuss what is important to assess rather than one of them making the decision? Why or why not?
3. Why are criteria, factors, and scales all used in an assessment? How are they related and how are they different?
4. How might Professor Bohn's scale differ (keeping the criteria and factors the same) if he were assessing a fellow researcher rather than a junior in college?
5. What other factors could Professor Bohn have used to evaluate the same criteria? What scale could he have used for each additional factor?
6. An assessor must have many talents including knowledge of the content area to be assessed, good observation skills, and a desire for fairness. Which of these do you think is the most important for Professor Bohn to possess in this scenario? Why?

Exercises

1. Choose a type of performance you would like to improve upon. Find someone whom you trust who is qualified to evaluate this type of performance. As the assessor following the Assessment Methodology, have this person create an assessment report. Write a two-page paper about the results including comments about the ways in which using this approach improved your performance.

2. Interview a coach of some sport. Determine what criteria he or she uses to evaluate the team's performance, the factors for each criterion, and the scales for each factor. Also determine the various types of feedback given to the team members. Write a one or two-page paper about your findings.

Unit 6

Becoming a Self-directed Learner & Self-grower

Personal Development

Why Is This Chapter Important?

As compared to previous chapters which dealt with cognitive or intellectual skills, this chapter focuses on your personal development and emotional well being. A methodology for personal development along with a profile of a self-grower are presented. Emotional management and value development skills from the affective domain are identified. Because research suggests that a person's emotional development might be a greater predictor of success that a person's intellectual intelligence, the significance of this chapter should not be overlooked.

Learning Objectives

1. Know the steps in the Personal Development Methodology and how they can be applied to situations in your life.
2. Identify and articulate skills in the affective domain; especially skills pertaining to emotional management and value development.
3. Gain a greater understanding of the coping process and how to become better at this skill.
4. Reflect on the Four C's model and its application in your life.

Performance Expectations

1. Document your use of the Personal Development Methodology, in a step-by-step manner, as it pertains to a particular aspect of your life at college.
2. Self assess your performance as a "self-grower" using the Profile of a Self-Grower as an upper benchmark.
3. Reflect on how you handle frustrations that occur in your life. Write down strengths and areas for improvement in terms of your skill at managing frustration.

Chapter Overview

Aspects of Personal Development Covered in this Chapter

Belief and Desire Must Come First

Self-Grower –A Quality Model for Personal Development

Profile of a Self-Grower

Personal Development Methodology

Discussion of the Steps in the Personal Development Methodology

Emotional Well-Being

- Responding to success
- Responding to failure
- Managing frustration
- Taking risks
- Coping

Inquiry Questions
Activity — An Ethical Model to Live By
The Four C's
Applying the Model to Real Life

Key Terms and Concepts

affective domain

self-grower

mentor

value development skills

emotional development skills

coping process

Aspects of Personal Development Covered in this Chapter

Personal development refers to the process where you seek to grow, improve, expand, and advance as a person. Fully applying this process involves making a conscious and deliberate effort to grow in all aspects of your life. This includes growth in the following areas:

- mentally and intellectually, *(cognitive domain)*
- socially, *(social domain)*
- physically (including health), and *(psychomotor domain)*
- emotionally and spiritually. *(affective domain)*

Concepts and processes associated with your mental and intellectual development (*cognitive domain*) are specifically addressed in Unit 3 (Information Processing) and Unit 4 (Problem Solving). This chapter focuses on personal development from the perspective of the skills and processes associated with the affective domain which includes a person's emotional well-being. The Personal Development Methodology, a general methodology that can be applied to different aspects of your life, is also introduced.

Belief and Desire Must Come First

Before you begin to experience the growth you desire, you must first *believe* in your potential for growth and improvement. You must acknowledge that you are not "stuck" where you are and that you are not limited or constrained by your current level of ability in any area.

You must also possess the *desire* to improve, which will motivate you to take action and ultimately "make it happen." Mentors and friends can assist in this process but ultimately, you and only you, are responsible for your growth and personal development.

Self-Grower — A Quality Model for Personal Development

Recall from Unit 2 that *self-growers* represent the highest level of performance for learning. Self-growers not only exemplify excellent learner performance but also provide a good model for performing the process of personal development. With strong learning and self-assessment skills, self-growers have the greatest capability to develop their skills and improve future performance. More can be learned about self-growers by (1) looking at a profile (of a self-grower), and (2) focusing on a key tool used by self-growers, the Personal Development Methodology.

Profile of a Self-Grower

A self-grower…

- has a high degree of self-confidence and emotional maturity.
- has a strong desire to grow and develop in all aspects of his or her life.
- uses information effectively for specific needs and processes information in an efficient manner to limit "information overload."
- has developed emotionally so that he/she is willing to take risks to put himself or herself in challenging environments which require an increased performance level.
- creates his/her own challenges, but also responds to external challenges that are personally critical or important to society.

continued

- seeks to improve his/her own performance with every experience.
- takes control of his/her own destiny—there are no bounds.
- serves as a mentor to others.
- thinks critically in different contexts so as to be efficient while producing quality results from the processes utilized.
- self-assesses and self-mentors to facilitate his/her own growth.
- is a strong problem solver who understands and recognizes relevant problems and can properly define them; he or she can also clarify issues and identify critical assumptions associated with problems.

Personal Development Methodology

We all make decisions regarding what we do and how we choose to spend our time. However, few people utilize a methodology to assist with their personal development. The Personal Development Methodology, presented below, serves as a framework to help you focus more clearly on your personal growth. By using the Personal Development Methodology you can gain a greater sense of self-confidence and self-esteem as well as a greater appreciation for who you are as a person.

The Personal Development Methodology begins with self-assessment. This involves determining likes, dislikes, and looking at personal values. Based on this self-assessment, each individual proceeds through the methodology in his or her own unique way. The concept of a mentor is introduced in step four of the methodology. A mentor is similar to a coach or teacher; a person who works with you during the process and offers assessment and encouragement as needed.

Table 6.1

 ***Personal Development Methodology***	
1. Pre-assess likes and dislikes.	Identify your interests and preferences.
2. Establish values.	Decide what is important to you.
3. Determine objectives.	Set goals with criteria.
4. Select a mentor.	Designate a person to assess the quality of your performance.
5. Develop a plan.	Create a plan which includes defined activities and time allocation.
6. Collect data.	Monitor progress toward objectives.
7. Adjust the plan.	Evaluate criteria during activities, measuring progress, and making adjustments accordingly.
8. Reflect on growth.	Regularly assess efforts and acknowledge growth and progress.
9. Reward achievement.	Motivate yourself for future successes.

Table 6.2

Personal Development Methodology — A Simple Example	
Scenario: Jason would like to take up a recreational activity during the summer. He isn't sure what he would like to do. He would like to narrow his choices and make a decision.	
1. Pre-assess likes and dislikes.	Jason likes interacting with others, the sunshine, and competitive games. He dislikes activities associated with water, and recreational activities that have undefined endings and are played alone.
2. Establish values.	It is important for Jason to get exercise and meet other people.
3. Determine objectives.	Jason wants to find an activity or sport where he can improve each week during the summer, measured by number of points (games) won against a specific competitor.
4. Select a mentor.	Matt, Jason's older brother agrees to help and provide feedback with respect to the objectives Jason has set for himself.
5. Develop a plan.	Jason makes a list of possible activities. He chooses the top three possibilities taking into consideration likes, dislikes, and values. He makes a list of possible people who might like to join him.
6. Perform the plan and collect data.	The list includes golf, volleyball, and tennis. Jason finds many interested people in golf and tennis but not enough interested people to play volleyball.
7. Adjust the plan.	The cost of golf equipment and fees leads Jason to choose the cheaper of the remaining activities. Jason decides on tennis.
8. Reflect on growth.	All the players are better than Jason at the beginning of the summer. Each week, he improves the number of games won against his neighbor. By the end of the summer he occasionally wins a set.
9. Reward achievement.	Jason joins a health club with indoor tennis courts so he can continue to play during the winter months.

Discussion of the Personal Development Methodology

Pre-assess Likes and Dislikes

A key to personal development is knowing your preferences. Create a self-assessment report which looks at a variety of areas related to you and your interests. Examples include your learning style, educational interests, career preferences and skills, recreational interests, and social concerns. Research and write a comprehensive personal assessment. This will help to clarify who you are and define your vision and goals for the future.

Establish Values

Your life experiences have helped to shape and define your personal value system which impacts and influences the daily decisions you make. Values also affect how you interact with the feelings, concerns, or problems related to other individuals and events in a variety of contexts. Knowing and understanding your value system helps you to choose activities, experiences, and goals which are more likely to be positive and rewarding. Exploring values is also critical to understanding ethical issues and how they relate to your personal value system and to a societal value system.

Determine Goals and Objectives

Having specific, meaningful goals (with measurable and/or observable criteria) plays a significant role in the personal development process. Goals and objectives serve in a positive way to channel your efforts into actions and activities that will get you to where you want to be in the future. You should allocate time to regularly review your progress toward meeting your goals as well as to review the processes used to achieve them. Goals should be self-chosen and realistic with action statements written in a positive manner.

Select a Mentor

Identify and select a person who has an interest in helping with your personal development. A mentor is like a personal guide, teacher, tutor, or counselor who is positive, supportive, and gives you constructive feedback. A mentor can help motivate you and keep you moving forward toward meeting your goals and objectives. A mentor also assesses the quality of your plan, the processes you use (to meet your objectives), and the ongoing progress you make.

Responsible mentoring…

- is a structured, one-to-one relationship or partnership that focuses on the needs of the mentored participant (mentee).
- fosters caring and supportive relationships.
- encourages individuals to develop to their fullest potential.
- helps an individual to develop his or her own vision for the future.
- is a strategy to develop active community/campus partnerships.

Mentoring is a process of developing an interdependent relationship between a mentor and a “mentee” for the expressed purpose of helping the mentee learn the skills and behaviors necessary to accomplish the mentee’s goals (which the mentor has no stake in).

Develop a Plan

Develop a comprehensive action plan. As part of the plan, include activities that will help you achieve your stated objectives. Identify and list the people and resources you think can assist and facilitate your growth. Also, consider potential negative or blocking forces which could impede your progress, and how you might deal with each of them. Include a time schedule. Take into account the availability and cost of resources.

Perform Plan and Collect Data

Put your plan into action and gather data in a timely manner and on a regular basis. Monitor planned versus actual results. Assess your plan to determine what is working well and what is not. Document your progress toward the identified objectives and criteria. Your mentor should be involved as you implement the plan. He or she should help collect data and regularly assess your performance, identifying strengths and areas to improve.

Adjust the Plan

Based on the data collected in the previous step of the methodology, adjust and modify the plan accordingly. Change tactics, if necessary, but do not change or alter your overall objectives. Adjustments may include revising the planned activities, the performance criteria, or the way in which progress is measured. Continue to apply what is working well.

Reflect on Growth

Throughout the entire personal development process, be sure to record, reflect, and document your positive thoughts, your accomplishments, and the personal growth you notice. This serves as a motivator in addition to building self-esteem and self-confidence. Assessing and recognizing incremental growth improves your chances for maintaining and repeating successful behaviors in the future.

Reward Achievement

When you reach an objective, celebrate your achievement with those who appreciate and care about what you have accomplished. Acknowledge what you have achieved and treat yourself to something you enjoy.

Table 6.3

Affective Domain — Value Development Skills	
Valuing Self	**Valuing Others**
building self-esteem	respecting
attending to personal needs	being nonjudgmental
identifying personal values	empathizing
establishing an ethical code	caring
committing to self	sharing
trusting self	forming shared values
creating a vision	committing to others
maintaining a sense of wonder	desiring to serve others
following convictions	appreciating diversity
desiring self-expression	practicing family values

Emotional Well Being

Take a moment to look at the emotional management skills shown below. These skills are from the Affective Domain within the *Classification of Learning Skills* (see Appendix).

Table 6.4

Affective Domain — Emotional Development Skills		
Emotional Management		
responding to success	coping	decision making
responding to failure	grieving	being confident
responding to humor	managing frustration	being patient
managing dissonance	managing worry	being assertive
asking for help	maintaining balance	being nurturing
recognizing emotions	taking risks	being courageous
expressing emotions appropriately	using intuition	being competitive

At various times throughout your life, you will be in situations that require you to use each of the above-mentioned skills for emotional management. Realize that by improving your performance with any *one* skill, you are making a contribution to your overall emotional well-being. Imagine the growth that occurs when you focus on improving *several* skills. A few of the skills important to you as a student are discussed in more detail.

Responding to failure

How a person responds to an *unsuccessful* outcome and his or her subsequent actions is an especially important skill. Those who are strong with this skill display emotional maturity and balance. They are able to reduce the impact of the failure realizing that a failure is only a temporary outcome and does not diminish current strengths. This is in contrast to those who wallow in self-pity and make excuses after a failure.

When an unsuccessfulWhen an unsuccessful event happens, a person who is strong at responding to failure:

- puts the event/failure in proper perspective,
- self-assesses and determines what can be improved and identifies how to make the improvement (realizing that overcoming the failure will require some extra effort), and
- continues to recognize and believe in his or her personal strengths.

Responding to success

How a person responds to a *successful* outcome and his or her subsequent actions is a skill. Those who are strong with this skill are humble about their accomplishments and have learned to build upon their successes. This is in contrast to those who behave in a cocky manner and live in the glory of past accomplishments.

When a successful event happens, a person who is strong at responding to success:

- is future-oriented rather than living in the past,
- looks for areas to improve (in the future),
- enjoys the journey on the road to a success and does not dwell strictly on the outcome, and
- maintains emotional balance; he or she doesn't get too high and puts the accomplishment in the proper perspective.

Managing frustration

Typically, frustration occurs when the degree of challenge in a learning situation is too great compared to the available skills and resources. Those who are strong at managing frustration are able to keep their emotions in check without getting to the point of anger or complete disengagement. They believe that frustration, at the right levels, can be positive and lead to productive outcomes as well as building emotional skills. This is in contrast to individuals who when they get frustrated, let initial frustrations quickly get out of control and the result is unproductive behavior.

When a person who is strong at managing frustration gets frustrated, he or she:

- does not let frustration decrease his or her level of performance,
- uses frustration as a motivating tool,
- does not let his or her frustrations affect others and their performance, and
- uses a variety of techniques to release or neutralize the frustrations.

Taking risks

Risk-taking involves taking on new challenges that have uncertain outcomes. Success is not guaranteed and the possibilities for failure are real. Those who are strong risk- takers are willing to move outside of their comfort zones in various contexts (mind, body, relationships, etc.) focusing on the upside potential rather than the downside. They are willing to accept short-term failure to obtain long-term success. This is in contrast to individuals who do not venture outside their comfort zones and need the security of certain positive outcomes before taking on new challenges, thus limiting their opportunities for personal growth.

Typically, strong risk-takers:

- focus on the potential benefits rather than costs or downside,
- are strong at responding to both successes and failures,
- are strong emotionally; not letting fear be an immobilizing emotion,
- are able to make great intuitive leaps, and
- view risks within realistic contexts.

Coping

It is a rare person who does not experience some form of emotional turmoil at some point in their life. Emotional and mental difficulties may simply be due to ineffective coping skills. The result can be a feeling of walking about in a state of confusion, or doubting one's ability to deal with situations and surroundings. Developing good coping skills forms the foundation for emotional stability, and empowers individuals to feel good about how they think and feel as they deal with life's situations.

The table below breaks the "coping process" into ten stages that represent various aspects of the coping process. Each stage is equally important although not all stages are necessary for every (coping) situation.

Table 6.5

Stages of the Coping Process	
Awareness	Look about (inside or outside oneself) and ascertain what exactly happened.
Understanding	Describe what happened, how it happened, and why it happened.
Rationalization	Constructively place what happened into a context that works for you.
Acceptance	Acknowledge what is factual. Recognize what has happened and accept that you can't change it. Rid yourself of all the ""what-ifs,"" thus accepting the situation to be true.
Change	Accept, feel comfortable with, and welcome change or something new.
Inner Strength	Believe in yourself, knowing what you feel and think can be validated.
A Sense of Control	Know that ultimately you are in control of your future. You, and no one else but you, makes the choices and decisions that guide your way.
Positive Attitude	View the world positively rather than negatively. Focus on the good rather than the bad side of situations.
Caring	Possess the basic belief of the good in humankind. Have faith in your environment, systems, society, people and share this faith with others.
Selective Focus	Understand that we as humans have enormous potential to comprehend and internalize our external world. As a coping mechanism, we select and focus on specific areas and aspects (of our lives) which we are best equipped to deal with emotionally. Based on our value systems, we subconsciously determine (and prioritize) what we are best able to cope with.

Inquiry Questions

1. What are the main characteristics of a person who is a self-grower?

2. Referring to the first two steps in the Personal Development Methodology, what are the differences and similarities between a “like” and a “value”?

3. What role does a mentor play in personal development and what are some responsibilities of a mentor?

4. What suggestions would you give to help someone become better at responding to failure?

5. Which skills from the Value Development skills are most important to you? Explain why.

6. How can you categorize or break apart the ten stages of the coping process? What sub-headings would you use to group together stages of the coping process?

Activity — An Ethical Model to Live By

Contributed by Dr. James J. Seymour, Saint Augustine's College, Raleigh, NC

According to author David L. Bender, the prevailing attitude on our American society's ethical climate is very negative indeed.

> Newspapers daily record the crimes and unethical escapades of Americans from every part of the country. From the latest serial murderer with a new record body count to a white collar criminal who managed to bleed a bank or company and its investors dry of a previously unheard of amount, in addition to the millions of ethical and criminal offenses in between, the reading public has probably decided that these are indeed the worst of times. From the halls of government to the streets of every small town, Americans may wonder what happened to traditional values like honesty, integrity, accountability, and concern for others. (Bender, 1993)

> In a society that seems to have lost its ethical rudder, citizens will find it more difficult to steer their individual ships straight. In America, the problem is compounded by cultural diversity. Although pluralism brings the strength of many talents to the melting pot, it also presents the difficult choice of whose ethical system individuals should adopt. In a more monolithic or homogeneous society, the choice is made for you. You simply do what the majority does. Peer pressure forces you to accept and follow the dominant ethical standard of the society. In contemporary America, the dominant ethical standard has become blurred. We are each the captain of our own ship, adrift in a sea of confusing choices. We must chart our own course with little or no help from our culture or family. (Bender, 1993)

Students in particular are faced with a host of ethical situations and many seem terribly ill prepared to make wise moral decisions, leading sometimes to horrendous consequences. Observe these *headlines of horror* and ask yourself two questions; "what has gone wrong?" and "what can we do about it?"

> June 1997: A New Jersey teenager gave birth to her baby in the bathroom stall at her high school prom. She dropped the baby in the trash, then returned to the dance floor, where she asked the band to play her favorite song, "The Unforgiven." (The Washington Post, June 10, 1997)

> October 1997: A 16 year old boy in Pearl, Mississippi, allegedly murdered his mother, then went to school and shot nine students, killing two, including his former girlfriend. (CNN October 2, 1997)

> December 1997: A young boy opened fire on a prayer meeting at Heath High School in West Paducah, Kentucky, killing three and wounding five of his classmates. (The Washington Post, October 22, 1997)

> March 1998: In Dallas, Texas, four teenagers claiming to be vampires went on a drug-crazed destruction spree, vandalizing dozens of cars and homes, spray-painting racial slurs and burning down the office and fellowship hall of Bethany Lutheran Church. (Associated Press, March 6, 1998)

> April 1998: In Yonkers, New York, a 15 year old girl, upset that her teacher called her parents about her poor academic performance, attacked the pregnant instructor with a hammer. The teacher suffered multiple skull fractures. (Associated Press, April 8, 1998)

> April 1999: "Massacre Kills up to 25"… Suicide mission terrorizes a Colorado high school. Two young men, both Juniors at Columbine High School in Littleton Colorado, outside of Denver, responded to their rage and humiliation at being made fun of by the high school athletes and went on a rampage that ultimately left 13 people dead, including themselves, by self inflicted wounds. The boys were a part of a group of students who considered themselves outcasts among their peers and called themselves the Trenchcoat Mafia. (Raleigh News and Observer, April 21, 1999)

A suggested model for making ethical choices, called *The Four C's*, is presented next. An important premise of this model is that it is possible to have a clear understanding of how to think through implications, and then make moral choices that can greatly assist an individual to *steer a straight course* through the stormy seas of this life. In some cases, these choices make it possible to steer away from the dangerous reefs that lure us to almost certain destruction. This is not to minimize the power of free choice. However, freedom is accompanied by awesome responsibility and it is important to be as equipped as possible to make wise choices.

No one can avoid making decisions on ethical issues. Even routine, everyday choices often involve judgments about good and bad, right and wrong. The more one's choices affect other people, the more urgent the moral problem becomes. (Crook, 1995) Let us examine one potential model to live by.

The Four C's

The Four C's model is a simple tool that is easy to remember. If remembered and applied, this tool can help a person make wise choices and decisions in college and throughout the rest of his or her life.

The first "C" refers to **Circumstances**, those things that are going on around us. This refers to the *objective realities* around you at this moment. What are *the facts* of your life at the time that you are preparing to make a moral decision. Are you being encouraged to lie, get high, have sex, cheat on a test, hand in someone else's assignment with your name on it? Are you failing a course and do you think that cheating is the only way you can pass? Do you have the opportunity to steal something from work and not get caught, and is this all right because they pay you such a low wage? Your finances are insufficient, but because your best friend is a cashier at the local grocery store you can buy a large quantity of groceries but she only rings up a part of the actual bill. Is this really stealing, or just a wonderful opportunity that you would be foolish to pass up? What are your circumstances?

The second "C" speaks of one's **Context**. The focus here is on what is happening within you. What are you thinking, fearing, feeling, or concerned about? This is a *subjective experience*. Are you afraid that you won't pass your courses and your family will be angry? Are you afraid of being rejected by your friends, not having a boyfriend or girlfriend, or being called a coward if you don't get involved in what others are doing, even if you have been instilled with values that say *this is wrong*?

The third "C" is about your **Choices** that inevitably follow your circumstances and personal context. We all have to make choices every day. What clothes to wear in the morning, what to eat for breakfast etc. Not all choices are moral or ethical choices.

The combination of your circumstances, what is going on around you, and your context, what is going on within you, will largely influence your choices. However, those choices that deal

with your behavior and how it will effect ourselves or other people, or deal with the issues of what is right or wrong, are ethical choices you must consider very carefully because they bring you to the fourth "C."

The fourth "C" brings us to the **Consequences**. The final result of your choices based on the circumstances you face and the way in which you respond to them, brings about either positive or negative consequences. Be sure of one unchangeable truth, *all moral choices will have consequences.* An act of kindness, or bravery, or generosity will have some kind of a consequence either in your life or in the life of the person you reach out to. By the same token, an act of selfishness, deception, or violence will also lead to some form of consequence for you or other people. Some religions refer to this as the *law of sowing and reaping.*

Applying the Model to Real Life

The tragic love story of two college freshman

In November of 1996, two college students met in a motel room in the state of Delaware. Brian and Amy had been a couple since high school. They were both Caucasian and came from fairly wealthy middle class families in the state of New Jersey. After becoming sexually intimate, Amy became pregnant. They were both afraid to tell their parents. On a chilly November day the time for the baby to be born arrived, and Brian assisted Amy in giving birth to their son. Within moments he killed the baby, put it in a trash bag, and threw it into the dumpster behind the motel. They then got into their separate cars and drove back to their dormitory rooms, one in Pennsylvania, and one in Delaware. They had seemingly solved their "problem."

The hopes of this traumatic event fading from memory quickly became impossible as Amy began to hemorrhage and had to be taken to the emergency room of a local hospital. The doctor immediately realized she had recently given birth, but wondered where was the baby? It didn't take long for the police to get involved and for the whole tragic story to unfold. The young college couple was arrested, and charged with first-degree murder. How could the love story of two college freshman, full of hopes and dreams for a wonderful future take such a tragic and irreversible turn? Perhaps we can gain some insight by applying the 4 C's.

Bender, D.L. (1993). How Do Others Make Moral Decisions? California: Greenhaven Press Inc.

Cook, R.H. (1995, 1990). An Introduction to Christian Ethics (Second Edition) New Jersey: Prentice Hall Publishers.

Discussion Questions

1. What were the *circumstances*, the objective facts that you have learned by reading this story?

2. What do you think might have been some of the areas of emotional turmoil Brian and Amy were dealing with during the nine months that they were aware of her pregnancy? This refers to their subjective reality, that which we have labeled *context*.

3. What are some of the things *you* would be dealing with emotionally if you were in Brian's situation? What would you be concerned with if you were in Amy's situation as a pregnant college freshman?

continued

4. What are four other *choices* that Brian and Amy could have made to address their situation?

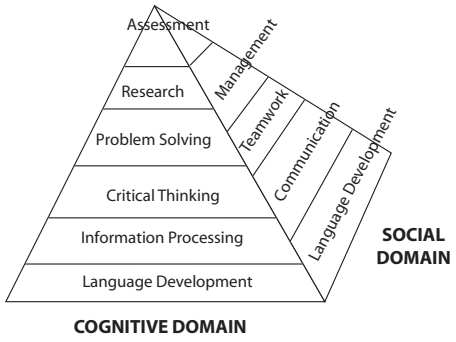
5. Apart from the imminent *consequence* of having to go to prison for their crime, what other consequences do you envision that Brian and Amy now face in their lives? How would you recommend they learn to cope with these consequences?

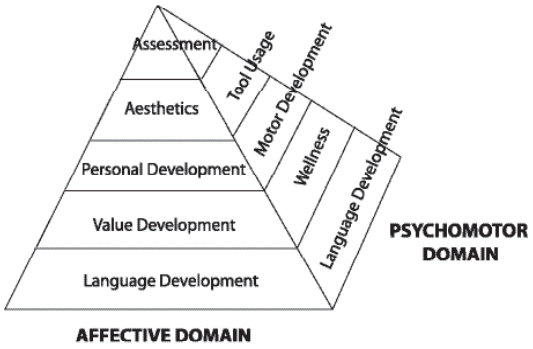
Homework

Choose a newspaper or magazine article that deals with an ethical siutation. Apply the 4 C's Model to the article or story. Examine the story by asking the discussion questions listed above..

Appendix

Classification of Learning Skills





Cognitive Domain

Information Processing Skills

Collecting Data	Generating Data	Organizing Data	Retrieving Data
observing/recognizing	predicting	outlining	reading
skimming	experimenting	categorizing	brainstorming
recording	surveying	systematizing	remembering
listening	estimating	sorting	reviewing
memorizing	translating	using information systems	
sensing			

Critical Thinking Skills

Applying Knowledge	Modeling	Reasoning	Analyzing	Synthesizing	Creativity
transferring	visualizing	evaluating	interpreting	combining	being open minded
contextualizing	exemplifying	using induction	deconstructing	summarizing	divergent thinking
generalizing	abstracting	identifying consequences	parallel processing	defining rules	lateral thinking
using metaphors	building analogies	logical thinking/ inferring	identifying similarities	designing systems	inquiring/questioning
	simplifying/ concretizing		identifying differences	recognizing contradictions	making and ignoring assumptions
			making assumptions	making connections/ convergent thinking	questioning assumptions/ challenging
			identifying rules	integrating prior knowledge	
			using deduction		
			identifying function		
			identifying learning needs		
			evaluating appropriateness		
			determining the quality of data		

Cognitive Domain *(continued)*

Problem Solving Skills

Setting Up the Problem	Structuring the Problem	Solving the Problem	Assessing Problem Solution(s)
identifying the problem	partitioning	reusing problem solutions	validating
identifying key issues	sequencing	applying prior knowledge	documenting
defining the problem	defining knowns	integrating solutions	understanding context
identifying assumptions	defining unknowns		ensuring solution robustness
			generalizing problem solutions

Research Skills

Identifying Knowledge Needs	Discovering	Peer Review
making hypotheses	creating linkages	presenting a paper
identifying learning requirements	designing experiments	peer reviewing a paper
identifying missing knowledge	testing hypothesis	accepting peer review
evaluating existing paradigm	drawing conclusions	
recognizing the need for a new paradigm	finding counter examples	
	sharing ownership of ideas	
	structuring a new paradigm(s)	

Social Domain

Communication Skills

Creating the Message	Presenting the Message	Receiving the Message	Effective Use of Form
articulating an idea	selecting the appropriate time	attending	conversing
choosing the medium	selecting the appropriate place	rephrasing	debating
defining purpose	using appropriate verbal elements	retaining	informing
generating credibility	using appropriate nonverbal elements	checking perception	persuading
defining outcomes	using graphics effectively	feeding back	public speaking
structuring the message			reading body language
			interviewing
			writing with technical detail

Teamwork Skills

Team Building	Team Maintenance	Performing in a Team
defining team roles	negotiating	following
commitment to a group	compromising	collaborating
planning	supporting	cooperating
team goal setting	politicking	performing within a role
	attending to group needs	group decision-making
	resolving conflict	

Social Domain *(continued)*

Management Skills

Managing Organizations	Managing Systems	Leadership	Managing Resources
motivating	designing	leading	utilizing resources:
hiring	implementing	mentoring	effectively
firing	modifying	performing by example	efficiently
marketing	networking	accepting challenge	within a budget
promoting			
evaluating performance			
facilitating change			
delegating authority			
building consensus			
creating a productive environment			

Affective Domain

Value Development Skills

Valuing Self		Valuing Others		Valuing Institutions
building self-esteem	trusting self	caring	being non judgmental	valuing history
following convictions	attending to personal needs	sharing	forming shared values	valuing tradition
committing to self	identifying personal values	respecting	desiring to serve others	valuing principles
desiring self-expression	maintaining a sense of wonder	empathizing	committing to others	
establishing an ethical code		appreciating diversity	practicing family values	

Personal Development Skills

Self Management	Emotional Management		Social Management
preparing	recognizing emotions	being courageous	giving
planning individual action	taking risks	being confident	self-sacrificing
focusing	responding to success	being competitive	loving
persisting	responding to failure	responding to humor	following manners
managing time	coping	managing frustration	citizenship
managing curiosity	managing dissonance	managing worry	being courteous
setting personal goals	being patient	maintaining balance	volunteering
setting priorities	being assertive	grieving	obeying laws
managing personal finances	being nurturing	self motivating/ self-starter	parenting
	using intuition		following social conventions
	asking for help	expressing emotions appropriately	service-mindedness

Affective Domain *(continued)*

Aesthetic Development Skills

Self Expression

drawing	producing humor	singing	photographing	imagining
dancing	producing music	acting	story telling	inventing
cooking	creative writing	dressing	innovating	

Cultural Appreciation

- appreciating music
- appreciating art
- desiring to travel
- culinary appreciation

Psychomotor Domain

Wellness Skills

Maintenance

- eating a healthy diet
- exercising
- maintaining hygiene
- sleeping

Renewal

- recreating
- relaxing
- managing stress

Motor Development Skills

Physical Development

- developing strength
- developing spatial orientation
- developing postural awareness
- developing sensory acuity
- developing endurance
- tolerating pain
- developing flexibility

Motor Integration

- being versatile
- being coordinated
- being dexterous
- being balanced
- being precise
- using the appropriate speed
- being accurate

Tool Usage Skills

Using Information Processing Tools

- using computers
- using the Internet
- using laboratory devices

Processes and Skills Common to All Domains

Assessment and Evaluation Skills

Designing an Assessment

- setting criteria
- creating a measuring system
- assuring validity
- assuring completeness

Conducting an Assessment

- applying criteria
- introspecting
- reflecting
- measuring against a standard

Evaluating

- making judgements
- rewarding
- punishing

Reporting an Assessment

- presenting feedback
- complimenting
- accepting feedback

Language Development Skills

Building Vocabulary

- defining
- practice and usage

Decoding Communication

- pattern recognition
- recognizing symbols
- assigning meaning

Understanding Syntax

- word recognition
- proper use of sentence structure
- proper use of grammar

Identifying Semantics

- recognizing meaning
- recognizing connotations
- using rhetoric

Identifying Context

- identifying cultural background
- identifying historical background