



CRSP

Canadian Restructured School Plan
Le Projet D'une École Canadienne Restructurée

Problem Solving

CRSP is a project of the



Canadian Vocational Association
Association canadienne de la formation professionnelle

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About this Learner Guide . . .

Glenlawn Collegiate Institute of Winnipeg, Manitoba, has implemented a series of graduation outcomes that a student must achieve in order to receive a Glenlawn Certificate. There is a comprehensive learner guide for each outcome. Some of the learner guides require students to work toward the outcome throughout their high-school career.

This sample contains material from the learner guide for the outcome stated as follows:

“The student demonstrates problem-solving skills and uses the results.”

The original learner guide has been modified somewhat to fit the CRSP learner guide format.

Why study the topic?

If you survey people from many different walks of life and ask them to name the skills, knowledge and attitudes they regard as essential for success in life, you'll find that they inevitably put problem solving somewhere near the top of the list. Whether they are students, teachers, parents, business people, employers or employees, school board trustees or community college representatives, “problem-solving skills” or some variation appears in virtually everyone’s vision of the ideal high-school graduate.

If problem solving is prized in the real world, it is certainly something worth learning and developing further. Knowing how to solve problems will help you to find success in further education or training, in the world of work, as a citizen, and as a family member.

This learner guide is meant to be used as a resource tool. You may use it as a resource for:

- generating ideas
- self-teaching if you are not familiar or confident with the problem-solving process
- assisting you as you work through your selected problems

- getting remedial help after a “Not Yet” evaluation (If you worked through the problem and then got a “Not Yet” in Step 5, for example, you may retain the good stuff you’ve done (Steps 1 to 4), turn to Sections 5 and 6 of this learner guide and revise the unsatisfactory steps with its help.)

What do I need to know before I begin?

No special knowledge is required to work through the activities in this guide.

What will I know and be able to do when I have completed the guide?

After you have completed this learner guide, you will be able to say not only that you have “problem-solving skills,” but that you can *prove* you have them. The portfolio you create will contain tangible evidence that you have indeed mastered this essential life skill.

What resources are available to help me?

Your teachers will provide you with directions on how to problem solve using the six-step process explained in this guide, then plenty of chances to actually work on problems in or outside of class. Don’t be afraid to ask a teacher for advice. (The six-step process is shown on page 16 of this guide.)

Here are some other resources you can use to find additional information.

Books

Adams, James. *Conceptual Blockbusting: A Guide to Better Ideas*. San Francisco: W. H. Freeman and Company, 1974.

Beyer, Barry. *Practical Strategies for the Teaching of Thinking*. Boston: Allyn and Bacon Inc., 1987.

- Buzan, Tony. *Use Both Sides of Your Brain*. New York: E.P. Dutton Inc., 1983.
- DiTiberio, John K., and Allen L. Hammer. *Introduction to Type In College*. Palo Alto, CA: Consulting Psychologists Press, Inc., 1993.
- Dryden, Gordon, and Jeanette Vos. *The Learning Revolution*. Rolling Hills, CA: Jalmar Press, 1994.
- Earl, Lorna, and Bradley J. Cousins. *Classroom Assessment: Changing the Face, Facing the Change*. Ontario: Ontario Teachers' Federation, 1996.
- Ellis, Julie. *Using Creative Problem Solving in Gifted and Enrichment Programming*. Lethbridge: The Gifted and Talented Project at The University of Lethbridge, 1986.
- Flesch, Rudolf. *The Art of Clear Thinking*. New York: Barnes and Noble Books, 1951.
- Gelatt, H.B., et al. *Decisions and Outcomes*. New York: College Entrance Examination Board, 1973.
- Gelatt, H.B., et al. *Decisions and Outcomes: A Leader's Guide*. New York: College Entrance Examination Board, 1973.
- Isaksen, Scott G., and Donald J. Treffinger. "Creative Problem Solving: The Basic Course." (Pamphlet from a professional development course.) n.d.
- Kretchman, M. Lily, Lori Cranson, and Bill Jennings. *Entrepreneurship: Creating a Venture*. Toronto: John Wiley & Sons Canada Limited, 1991.
- McDonald, Joseph, et al. *Graduation By Exhibition*. Alexandria, VA: Association for Supervision and Curriculum Development, 1993.
- Mezich, Jan. *Using Portfolio Assessment and Integrated Thematic Instruction to Strengthen Your English/Language Arts Instruction*. Bellevue, WA: Bureau of Education and Research, 1993.

- Miller, Gordon Porter. *Life Choices*. New York: Bantam Books Inc., 1978.
- Rawlins, L., I. Singh, and K. Walton. *The Transition Years*. Toronto: The Ontario Institute for Studies in Education, 1994.
- Resnick, Lauren B., and John G. Wirt. *Linking School and Work*. San Francisco: Jossey-Bass Publishers, 1996.
- Royal Bank of Canada. "Competencies: Keeping the Edge." Royal Bank Customer Service Representative, March 1996.
- Rubin, Theodore Isaac. *Overcoming Indecisiveness*. New York: Harper & Row Publishers, Inc., 1985.
- Walch, J. Weston. *Applied Thinking Skills: Reasoning to Successful Conclusions*. Portland, Maine: J. Weston Walch, Publisher, 1983.

How may I meet the expectations of the guide?

Complete all the activities in this guide. You will notice that the Activities Section is divided into six parts for the six steps in the problem-solving process. If, however, you are confident that you know and understand how to do one of the steps, you can skim through or completely skip that particular section.

When should my work be done?

This learner guide is a long-term project; it is not meant to be completed within a short period of time. Plan instead to work on this learner guide from time to time over the course of an entire school year, possibly even two school years.

How will I demonstrate I have met the expectations?

By the time you reach the end of your final high-school year, you will be expected to demonstrate that you are indeed able to problem solve. You must identify at least three substantial problems and then use research skills and the six-step problem-solving process to arrive at a decision or solution(s).

Each of the problems you select must satisfy the following conditions:

1. The problem should be real and should not have one obvious solution. The problem selected may arise from course work in any subject area, or it may be personal, social, technical, scientific, philosophical, ethical, financial, or political in nature. It could be a problem at home, at school, at work, in the neighbourhood, or in the international community.
2. The problem should require reference to at least three reputable sources.
3. The specific problem must be approved by a staff member familiar with the field.

You will present a completed portfolio that shows how you dealt with the three problems and how others evaluated your problem-solving abilities. In essence, your portfolio must include:

- three problems, each supported by a written document that tells exactly what you did during each of the six steps of the problem-solving process and
- three evaluation checklists, one for each of the problem-solving exercises, with every category marked either “Very Good” or “Excellent”

Your job, then, is to seek out opportunities to learn and practise problem solving until you can demonstrate you’ve mastered it.

You will document each of the six steps you followed to solve the problem.. A sample form that you could use for your portfolio is given below, but feel free to create one of your own. Point form is acceptable, but clarity is a must. The more details you provide, the more likely you are to earn a “Very Good” or “Excellent.”

***DOCUMENTING THE SIX STEPS
OF PROBLEM SOLVING***

Name of problem solver:

1. The problem I'm working through:

2. The alternatives I've generated:

A: _____

B: _____

C: _____

D: _____

E: _____

F: _____

3. The consequences of each alternative are:

Alternative	+ The Pros	- The Cons
A:		
B:		
C:		

Alternative	+ The Pros	- The Cons
D:		
E:		
F:		

When ready, you ask a teacher, a coach or a supervisor at work to evaluate your performance, using the special evaluation checklist or “rubric” form provided on the following page.

By June of your graduating year, you must have three or more rubrics completed (all criteria on all forms at the “Very Good” or “Excellent” level). You may collect all three rubrics in one year, but it is advised that you try to replace any “Very Goods” with “Excellents” as you proceed through high school. The more “Excellents” you have, the more impressive your portfolio.

Problem Solving Rubric

Criteria	Excellent	Very Good	Not Yet
<p>1. Identified the problem</p> <p>Comments:</p>	<p>problem is complex, requires creativity, innovation</p>	<p>problem is authentic, substantial</p>	<p>problem is too limited; does not warrant the six-step process</p>
<p>2. Identified possible solutions</p> <p>Comments:</p>	<p>multiple alternatives: clever, unique, creative thinking</p>	<p>several alternatives generated: clear and logical; may be obvious</p>	<p>few alternatives generated: even obvious missing</p>
<p>3. Evaluated alternatives</p> <p>Comments:</p>	<p>thorough, exhaustive list of pros and cons</p>	<p>pros and cons provided for each alternative</p>	<p>incomplete list</p>
<p>4. Chose solution that best solved problem</p> <p>Comments:</p>	<p>logical defence of chosen solution and rationale for rejecting others</p>	<p>logical defence of chosen solution</p>	<p>no defence, or limited defence of chosen solution</p>
<p>5. Took action</p> <p>Comments:</p>	<p>complex, multiple actions consistent with solution</p>	<p>action consistent with solution</p>	<p>no action taken, or action inconsistent with solution</p>
<p>6. Evaluated results of solution</p> <p>Comments:</p>	<p>describes whether solution worked or not; gives recommendations regarding problem or process; may redefine problem and repeat process</p>	<p>describes whether or not solution worked and why</p>	<p>no evaluation or limited evaluation</p>

What activities do I need to do?

The sections in this learner guide correspond to the six steps of the problem-solving process, which are also the six sections of the evaluation rubric. They can be found on the following pages:

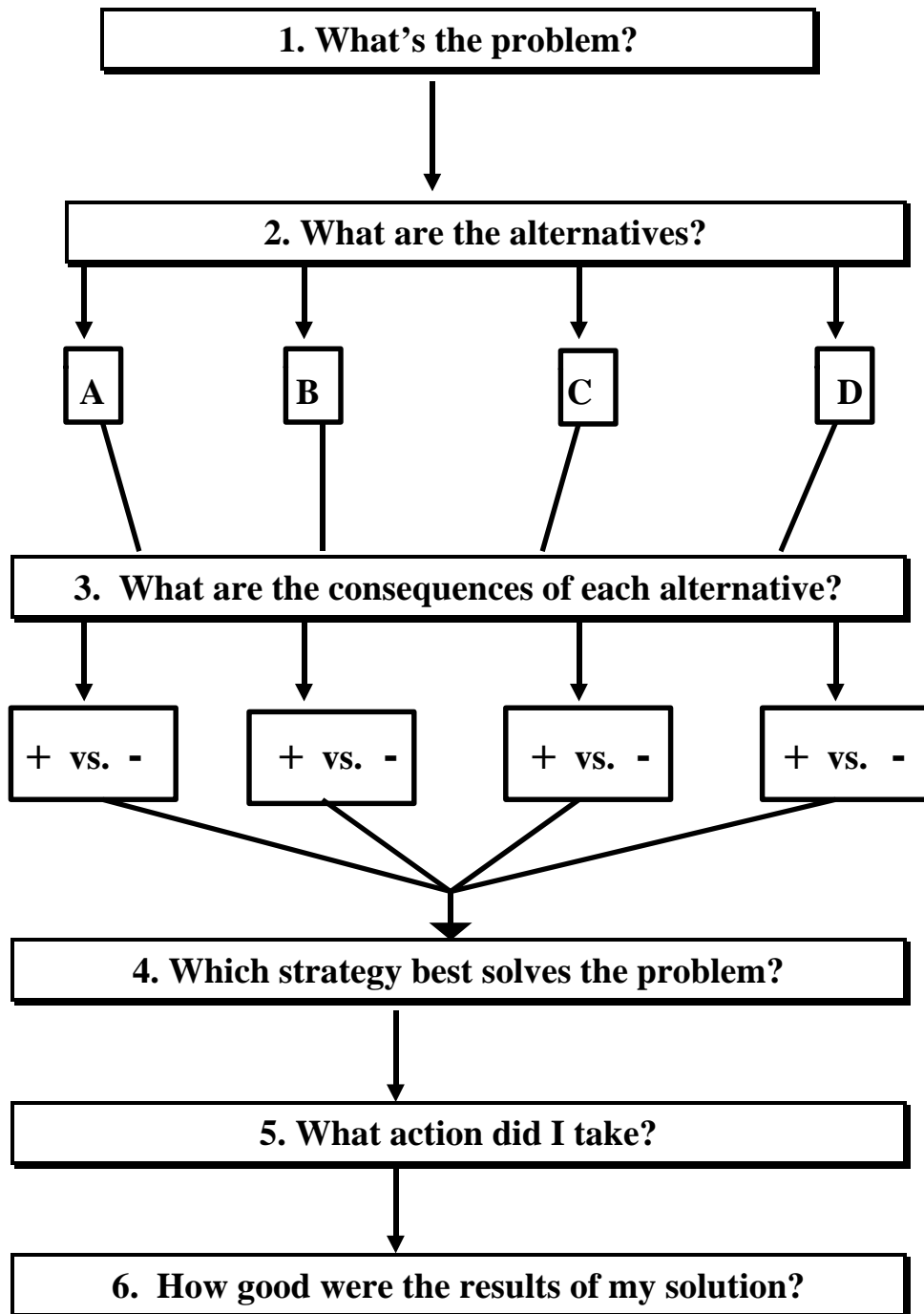
- Step 1: Identifying the Problem** (Pages 17 to 36)
- Step 2: Identifying Possible Solutions** (Pages 37 to 50)
- Step 3: Evaluating Alternatives** (Pages 51 to 54)
- Step 4: Choosing the Best Solution** (Pages 55 to 64)
- Step 5: Taking Action** (Pages 65 to 75)
- Step 6: Evaluating the Results of the Solution Chosen**
(Pages 76 to 89)

Depending on the evaluations you receive, you may only need to concentrate on certain specific sections in this guide. That is, if you receive a “Not Yet” in Step 6 only, you should focus on this section. There is no need to read Sections 1 to 5. Instead, turn immediately to that section and get busy.

However, if you are having trouble with one or more aspects of problem solving and you’d like to do some independent work on it, this learner guide is designed to help. The learner guide is set up so that you may find help in any or all of the six steps of the problem-solving process.

The six steps of the problem-solving process are shown in the following diagram.

The Six Steps of Problem Solving



One final thing before you begin: When you are ready to do something about a problem, almost anything can help. When you are not ready, no amount of workshops, counselling, or programs will effect a change.

Step 1: Identifying the Problem

What Is Meant by a “Substantial Problem”?

The problems that you include in your portfolio must be *substantial problems*. If you have no idea what that means, you cannot reasonably begin the process of selecting your three problems to solve. If you have already submitted a problem for evaluation and you got a “Not Yet” in this section of the evaluation rubric, you too must be wondering, “What is meant by a substantial problem?” Here are a few introductory examples. Deciding what to wear is not a substantial problem, but deciding how you can afford a ritzy, first-class-all-the-way graduation is. Trying to decide which friend to call tonight is not a substantial problem, but trying to decide what to do about a friend who makes racist jokes most definitely is.

A substantial problem is defined as one that:

- requires research skills/information gathering (from at least three pertinent sources) to arrive at a solution or decision.
- allows you to go through all six steps of the problem-solving process.
- will present multiple alternatives.
- is authentic (real) and possibly cross-curricular.

This is a very wide definition that allows you to choose a problem from almost any academic course or from your personal life. On pages 31 to 36, you will find excellent examples of substantial problems from every subject area plus many examples of suitably challenging personal problems. If after reading the list you are still stymied about what problems to tackle, ask someone you know for some advice. Perhaps that person could be the teacher of your favourite course.

People use a number of different terms for problem solving. Some examples are given below, and there are more.

- a. Decision making
- b. Self-improvement
- c. Inventing
- d. Designing
- e. Planning
- f. Designing backwards (The ideal is defined first, then the designer works back to the creation.)

Any activity that requires your full effort on the six steps on the flowchart given on page 16 is probably a legitimate problem. If you are in doubt, ask.

Here is a table showing several different types of problems. Perhaps this will give you some food for thought . . .

Problem Type	Description	Examples
Information Deficient	A decision or plan must be made or a product designed, but more information is needed first.	Buying or making a gift for someone you don't know well.
Idea Deficient	A solution has to be developed, and the usual or available ideas are unsatisfactory.	Coming up with a gift idea for someone you know well, but who is difficult to buy for.
Solution Deficient	So many ideas or approaches are possible that it's difficult to pick a direction or focus and get started.	Write a poem about nature.
Solution Testing	Two or more plans are available or have been developed, but they need to be evaluated in order to choose the best one.	A class must choose one of three plays as the one they will prepare to perform for a special audience.

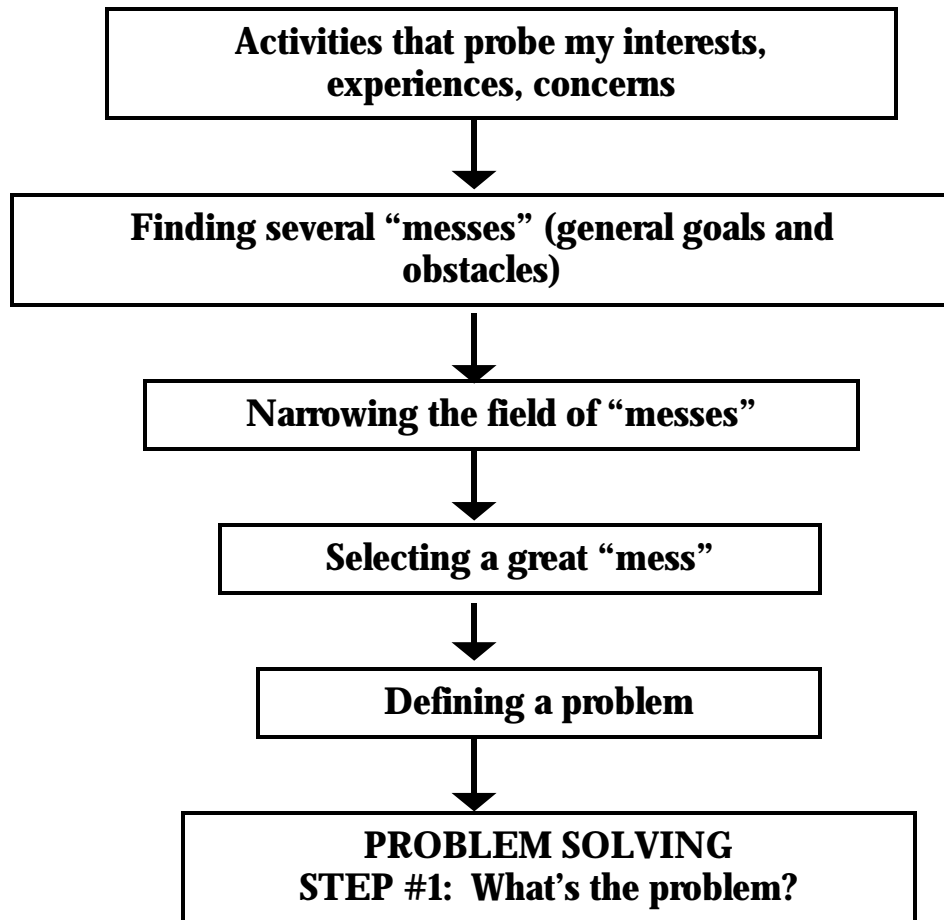
How Do I Come Up With a Problem? ***My Mind is Blank!***

Experts in problem solving have some advice for those having trouble defining a problem to solve. In fact, they say you are right to be hesitant at this stage because there is a step to complete even before you define the problem. They call this step, interestingly enough, “mess-finding.” So, don’t despair. Creative thinkers need to spend quality time at this preparatory stage.

“Mess-Finding”

You have been given the task of solving several substantial problems. How do you find one you’d enjoy working on or need to work on? If you cannot off the top of your head think of a substantial problem, you are not alone. The experts advise you to “mess-find,” which involves probing your interests, experiences, and concerns. A “mess” is not a problem per se, but simply an intriguing general area from which you later might be able to pluck a suitable problem.

As you can see from the diagram below, mess-finding is a phase that comes *before* you embark on the six steps of your actual problem solving. Some people may not need to do this phase, but if you haven’t a clue how to devise a suitable problem, and you can’t find one you like to work on from the lists on pages 31 to 36, mess-finding is for you.



The mess-finding activities that follow should lead to some possible starting points for the problem solving process. **Do as many activities as it takes for you to generate a usable idea. You need *not* do them all.**

Activity A



Wouldn't it be interesting if . . .

- I could take part in . . .
- I could solve the puzzle of . . .
- I could teach my boss . . .
- I could figure out how to . . .
- I could find . . .
- at home I could . . .
- at school I could . . .
- at work I could . . .
- I could substitute . . . for . . .
- I could eliminate . . .
- I could replace . . .
- I could combine . . .
- I could add . . . to . . .

Activity B



Wouldn't it be nice if . . .

- I had encouragement to . . .
- I had the opportunity to . . .
- I had the challenge of . . .
- I got my wish for . . .
- I reached my dream/goal to . . .
- I had friends who . . .
- I had assistance in . . .
- my pals . . .
- I had a special place where . . .
- I could retreat to . . .
- I could vacation in . . .
- I met my target of . . .
- I could schedule . . .
- I could relax about . . .
- I could increase/improve in . . .
- I could choose . . .
- I could invent . . .
- I could enjoy . . .
- I felt happy about . . .
- I could anticipate . . .

Activity C



Wouldn't it be awful if . . .

- I worried about . . .
- I feared . . .
- I felt threatened by . . .
- I was frustrated by . . .
- My enemies were . . .
- My opponents were . . .
- The pests/nuisances in my life were . . .
- I had an accident with . . .
- a mess in my life was . . .
- I felt frantic about . . .
- I was rushed /late for . . .
- I was hassled by . . .
- I overlooked . . .
- I was bored by . . .
- I had to get over . . .
- I had to put up with . . .
- I was bugged by . . .
- I was irritated/aggravated by . . .

Activity D

Key Questions for Mess-Finding:

- What's important to me?
- What am I curious about?
- What am I interested in?
- What am I concerned about?
- How do I plan?
- How do I work with other people?
- How do I react to new people or situations?
- What kind of risk taker am I?
- What would I like to do? Do more? Do better?
- What's on my mind?
- What's nagging at me?
- What have I been trying unsuccessfully to avoid?
- What challenges/opportunities are on my mind?
- What paradoxical or puzzling situations might I consider?
- What demands are really most pressing?
- What concerns are most important?
- What risks are worth it? What risks are necessary?
- What are my priorities?
- What do I most hope to preserve, achieve, attain, or improve?
- What are my bottom-line goals and concerns?

Activity E

Read the two descriptions below. Which one best describes you?

What's Your Style?

Independent Style

- Good at analyzing and structuring the components of a problem.
- Does well on problems that involve lots of details, figures, or complicated technical facts.
- Enjoys abstract or theoretical problems.
- Not very comfortable with interpersonal problems.
- Has a knack for finding the right cues needed to solve a problem.
- Likes to work alone when solving problems; not likely to ask for help.

If this describes you, you should perhaps concentrate on finding an abstract, theoretical, or technical problem. Check out the sample problems given on pages 31 to 36 that deal with industrial arts, math, science, fine arts, and computer studies/business skills for a start.

Social Style

- Has trouble analyzing the components of a problem.
- Not very interested in problems involving detailed numerical calculations or complicated technical facts.
- Enjoys problems that are concrete.
- Comfortable with interpersonal problems.
- Has difficulty finding the right cues, especially if they are “buried” in technical or theoretical detail.
- Likes to work with other people when problem solving or decision making.

If this is you, why not consider a concrete or interpersonal problem, especially one that lends itself to group work? Have a look at the sample problems given on pages 31 to 36 that deal with English, French, home economics, social studies, fine arts, student services, physical education, and work experience for some ideas.

Tidying Up the “Mess”

After you have brainstormed, using one or more of the mess-finding exercises, it’s time to tidy up, that is, it’s time to narrow the field. From your list of possible messes, select three that are goal-oriented and three that are obstacle-oriented. Then analyze each of these messes to see if they’ll work for this problem-solving process.

Use the table given below to help you set your priorities and choose wisely. Put a check mark in each column to which you’d answer “Yes.” **The messes with the most checks are your best choices.**

	Mess #1	Mess #2	Mess #3
Can you influence the outcome? (Is it your problem to solve?)			
Is the problem “your style”?			
Is the mess interesting to you?			
Can you find resources/information?			
Is this a familiar, recurring mess?			
Is it critical that this mess be cleaned up?			
Is there time to go through the problem-solving process?			

*“The trick is to avoid the pitfalls,
seize the opportunities, and
get back home by six o’clock.”*
Woody Allen,
“My Speech to the Graduates”

How to Choose Wisely

At this point, you have probably done the mess analysis and have now narrowed your search to two choices. If you have to choose between two or more messes or problems, take the following advice into consideration:

1. Choose something you see as a challenge, not as a threat. You will be more open to alternatives and more likely to persist this way. Threats tend to lead to black-and-white thinking, meaning you will only see two alternatives (not enough for a “Very Good” on your

evaluation!) People dealing with threats may also jump to conclusions, another “no-no.” When you choose an interesting challenge, you’ll enjoy the process and will therefore spend the necessary amount of time on each of the six steps.

2. Be sure you choose a problem for which you have ownership. If the problem is not yours, it is probably impossible for you to solve. If your friend has a weight or drug problem, you may want to help. But the problem can only be solved by your friend, the one who actually over-eats or takes the drugs. Only that person can take the actions needed to solve the problem. You might offer to consult, but really, the problem is not yours to solve.
3. Choose a problem for which there exists plenty of resources (paper resources, experts, Internet sources, etc.). It is advisable to investigate what resources are available before you choose. If one problem will require extraordinary measures to find information and one will not, tackle the second problem.

How Do I Turn a “Mess” into a Well-Defined Problem?

Once you have established a general area of interest, a “mess” you’d like to deal with, you must spend some time and energy on putting your problem into writing. The way the problem is initially stated is very important because this guides the way you will attempt to solve it.

1. Isolate and locate the source of the problem.

If you do not do this, you will probably waste a great deal of time and energy, and this can be very frustrating! Here are some practical tips:

- Don’t be vague!

Poor: “I’ve been upset lately”

Better: “I’ve been upset about the messy way my sister leaves our shared room.”

- Find the part of the environment that is most likely responsible for the issue.

Poor: “Why am I so stressed?”

Better: “What can I do to decrease my anxiety about math?”

This environmental factor could be one person or several people, an object, an attitude, or a relationship. It could be something physical (size or dimensions, for example), or a time factor, or a cost issue. It could be the way things are arranged.

2. Be specific in your wording.

Poor: “I’d like to read more.” (not specific enough)

Better: “How can I arrange to read at least five novels by the end of June?” (specific)

*“If you find a good solution
and become attached to it,
the solution may become your next problem.”*
Dr. Robert Anthony

3. Don’t be restrictive in your wording.

Most of life is ambiguous; there are often many right answers. But if you think there’s only one right answer, you’ll stop looking as soon as you find it. That is what is meant by being “restrictive.”

Poor: “How can I show that capital punishment is the answer to the crime problem?”

If you word a problem like this, you betray the fact that you have already found “the right answer” and are mentally unprepared to entertain any other responses to the problem of crime. You will probably be tempted to ignore any information that does not support your preconceived solution. Therefore, you are not really problem solving (Unless you count figuring out how to write propaganda to manipulate others as an exercise in problem solving!).

Better: “What can be done to lower the crime rate in Winnipeg?”

A major problem with restrictive wording is that it can limit the possibilities.

Poor: “How can we build a better can opener?”

Better: “Is there a new way to open cans?”

Because of the non-restrictive wording of the second statement, the engineers involved expanded their thinking much more creatively. Instead of focussing on how to improve the can opener, they toyed with ideas like the easy-to-peel banana, and eventually designed the ring pulls you see on soft drink cans.

4. Use fresh perspectives or “lateral thinking” if you get stuck.

Sometimes the problem with your problem is that it is framed in such a way that the attempts to solve it lead quickly to dead ends. One writer, Edward de Bono, calls this type of thinking “vertical thinking.” In the example above, “How can we build a better can opener?” shows vertical thinking. Vertical thinkers often get stuck because there are too few alternative solutions to work with, or the possible solutions don’t make much sense. This could mean that the problem needs to be re-framed and a new perspective taken. This process has been called “lateral thinking.”

*“Vertical thinking is
digging the same hole deeper.
Lateral thinking is
trying again elsewhere.”*
Edward de Bono,
The Learning Revolution

Here’s another example of the difference between vertical and lateral thinking:

Problem: The automated curtain in a hospital room closes when the “Open” button is pushed and opens when the “Close” button is pushed because of a defective motor.

Poor: “How do we fix the curtain mechanism?” (vertical thinking)

Solutions generated:

1. Replace the motor (expensive and not sensible because the curtain works!)
2. Disable the motor and replace with a cord. (not satisfactory because it is impossible for bedridden patients to use a cord)

Lateral thinking to reframe the problem lead to this new problem:

Better: “How can we get the direction of the curtains to coincide with the labels?”

New and better solution generated: switch the labels on the buttons.

5. Don't include a solution in the problem statement.

Poor: “What type of raffle should the grad committee run to raise money?”

Better: “How should the grad committee raise money?”

The first statement limits the problem solver to one solution, a raffle.

6. State the problem in a positive, optimistic way.

If you both see and phrase your problem as a positive challenge, your motivation will likely be much stronger! Note the restatements of these poorly-worded problems:

Poor: “What can I do to get through this lousy English course I'm taking?”

Better: “How can I attain a mark of 65% in English by the end of June?”

Poor: “What if I can't get a job after I graduate?”

Better: “How can I get a child-care related job after I graduate?”

You may be thinking, “Isn't a problem by definition a negative thing?” If so, you are probably going to have trouble with the concept of a positive problem statement. Psychological research has shown, however, that the way the problem is viewed has a huge impact on the solution rate. Would you rather work hard to solve Problem A or Problem B below?

A. How can I keep myself from losing \$10,000?

B. What can I do to make \$10,000?

To come up with a positive statement, try this technique. Visualize what you'd like to achieve; define your vision of the ideal result. How to get there, how to bridge the gap between where you are now and what you'd like to achieve can be your problem.

7. Include a deadline in your problem statement, if appropriate.

For example:

Poor: "I'd like to get in shape."

Better: "In three months, I'd like to be able to jog 5 kilometres non-stop."

Sample Problems

The staff at one school has brainstormed the following list of problem-solving opportunities. These are some of the many that probably exist within the courses you are taking or will take at your school. As these opportunities are presented to you, why not document the process as required, ask to be evaluated, and "kill two birds with one stone"? Not only will the problem-solving process help you to do a great job on the class assignment, but the evaluation your teacher makes can be placed in your portfolio.

Computer Studies/Business Skills

1. Law term paper.
2. Case studies related to:
 - law
 - starting your own business
 - accounting
 - economics
 - simply accounting
 - software applications
 - computer application and technology
3. Computer programming.
4. How can we stop students from copying each other's work in the computer labs?
5. How can I deal with a major drop in a mark from one term to the next?
6. How do I best set up a data base for a major event?
7. How do I improve my keyboarding/word-processing speed and accuracy?
8. How do I develop and produce a web page?

English

1. Write a persuasive essay or speech on a topic like:
 - Should advertising be controlled by government?
 - Should high-school literature be censored?
 - Rock videos: Are they art or ads?
2. Design a children's book for a specific child.
3. Write a story, poem/song lyric, play, etc. (Successful writing means continuous problem solving.)
4. Write a research paper using the Inquiry Model. (Another name for problem solving.)
5. Plan and deliver an effective group presentation.
6. Choose a novel for a book report assignment or as a recommendation for classroom study.

Fine Arts

1. How can I use multimedia to teach a concept?
2. How can I raise the performance level of the musicians around me?
3. How can this class put on a successful variety show?
4. Write a play for a client with specific content/approach requirements.
5. Design/compose and execute a work of art. ("Design" is actually problem solving by a different name.)
6. Write and perform a song or dance or play for an identified audience.

French

1. How can I present my topic in French to the class?
2. How can we prepare a "French luncheon" for peers/staff?
3. How can I conduct an interview in French?
4. How do I prepare for an oral test?
5. How can I improve my grammar?

Home Economics

1. Should I continue to live at home or move out?
2. Where should I purchase my groceries?
3. Which product is the best value for me?
4. Should I become a vegetarian?
5. How can I plan a menu on a budget?
6. How can I get my child to eat vegetables?
7. Where can I find a suitable mate?
8. Can I combine children and career?
9. What toy should I purchase for . . . ?

10. What is the best project for me to sew this year?
11. What can I do about poverty in this community?

Industrial Arts

1. How can I power a cooling fan for a sports mascot's head?
2. How can I build a robot for a specific task?
3. Design and build a CSA approved product.
4. Design an architectural space according to a client's specifications.
5. Design and produce a piece of furniture or a graphics printed product or a working amplifier.
6. Design an industrial product.

Mathematics

1. How do I improve in math?
2. Consumer issues:
 - the cost of living on your own
 - so you want to buy a car
 - "Freedom 55"
3. Surveying problems (such as "How tall is Building X?").
4. Planning a trip (distance/route, efficiency considerations like speed, accommodations, etc.).
5. "Best design" concept (with a minimum waste of materials, etc.).
6. Costing a building plan for a room or a house.

Physical Education

1. Design a fitness program for a specific person.
2. How do I improve my skill level in a specific activity? (For example, my golf swing, my basketball free throw shooting percentage, my start in the 100-metre dash, my curling out-turn takeouts, etc.)
3. Design a personal fitness plan.
4. Design a stress management program.
5. How can I stop smoking?
6. As an elite athlete, how do I reserve time for my school work and leisure activities?
7. How can I lose 30 pounds and keep it off permanently?

Social Studies

1. Should Canada reinstate capital punishment?
2. What should Canada's role be in the world?
3. Should the young offenders laws be changed?

4. What should be done about a specific world issue such as:
 - terrorism
 - population growth
 - sustainable development
 - starvation
 - animal rights
 - immigration
5. What should be done about such social/ethical problems as:
 - gangs
 - eating disorders
 - abortion
 - mercy killing
6. How should Louis Riel (or some other important historical figure) be viewed today?

Science

1. What is the best way to package something fragile/perishable like lettuce? Or something dangerous like nuclear waste?
2. Design a product that uses a chemical timer. (For example, an egg timer that changes colour at exactly three minutes.)
3. How can I breed tropical fish?
4. How can the spread of the AIDS virus best be dealt with?
5. How can I improve plant growth?
6. What is the best way to dye fabric?
7. How can this school/business effectively recycle?
8. Should animal or human cloning be permitted?

Work Experience Program

1. How to choose a career.
2. How to survive a work experience placement I do not like.
3. How to deal with the fear of graduation.
4. How to get accepted into a post-secondary institution with my present credits.
5. How to deal with personal problems such as:
 - an ill family member
 - substance abuse
 - peer acceptance
 - an unhealthy peer group
 - pregnancy
 - birth control choices
 - family conflicts
 - gangs

Student Services

1. Career/post-secondary problems in such areas as:
 - career choices
 - realistic goal setting
 - financing your goals
 - upgrading
 - family expectations/family support
 - not meeting entrance requirements
 - selecting an institution (location, tuition, accommodation, etc.)
 - ennui (that is, letting things happen to you; having no plan)

2. Academic problems such as:
 - underachievement/boredom
 - over-achievement
 - a learning disability
 - attendance
 - parental expectations
 - inappropriate placement
 - test anxiety
 - relationships with teachers or peers
 - study strategies
 - course selection

3. Transition problems (either from junior high to high school or from high school to the post high-school world).
 - peer pressure
 - displacement issues
 - changing, adapting, coping
 - reframing relationships
 - loneliness
 - acceptance
 - parental expectations
 - ennui
 - scholarships

4. Personal problems or issue areas such as:
 - teen pregnancy/parenting
 - suicide
 - homosexuality
 - substance abuse
 - blended family

- divorce/separation/custody
- death and grieving
- relationships
- racism or discrimination
- personal finances
- addictions of family members
- violence/anger management
- illness
- disability
- legal/probation/youth corrections
- foster care
- runaways
- eating disorders
- peer pressure
- depression
- stress

General School-Related Problems

1. Should I drop this course?
2. What do I do about a problem with Teacher X?
3. What do I do if I want/need a course but I don't have the prerequisite?
4. What do I do if I fail a course?
5. How do I select the right courses for next year?
6. How do I find and use information?
7. How do I use unfamiliar technology?

Note: Some of these problems may not be suitable nor appropriate for inclusion in your portfolio. Problems of a personal nature certainly need solving, but you may not wish to share them with a prospective employer.