Problem-Solving:
Strategy, Samples and Procedure

Part of this handout comes from -

The Strategy:

1. **Select and Define** the problem. (Is the problem too big for you to solve?)

> e.g.
> -- problems beyond our abilities to solve: depression; card slave.
> -- Problems within our reach but of a large scope: 1) college students' habits of using credit cards; 2) college freshmen study time less than one hour (「台灣高等教育資料庫」第一期調查報告，大一新生有 58％男生和 48％女生每天讀書時間不到一小時。)
> -- problems of a smaller scope: 1) the problems of lateness and late papers of English dept students; 2)   English dept freshmen's problems in orientation (adjusting to college studies, life away from home, etc.)

2. **Explain** why the problem is a problem. (Why is it a problem? Why does the problem need to be solved?   What can be accomplished?   How can the problem be divided into <u>different aspects</u>?)

3. **Provide solutions** and enumerate the goals to be served by the solutions.   (You need to prioritize the solutions, too, since they cannot be done all at once.)

4. **Outline specific procedures needed in each solution** to the problem and their possible outcomes.

5. **Appraise** what appears to be the best solution, long-term or short-term, and what cannot be solved right away.

Research (discussed next time)

The Big Six in information management -- source: http://www.big6.com/)

- ○ 1. Task Definition
- ○ 2. Information Seeking Strategies
- ○ 3. Location and Access information
- ○ 4. Use of Information
- ○ 5. Synthesize and present the information
- ○ 6. Evaluate Process and Product

(The following two samples are kindly provided by Ms. Wen-ling Su.   The first sample was written by a student named Christine, who was the Vice Chair of our Student Association.)

Sample 1:

1.   Define the problem. (Is the problem too big for you to solve?)

"I just don't understand why you students insist on this time and money consuming

cheerleading contest," the chairman of the German department said.   And he continued to say, "because of this contest that holds every year, my students have to work for it for at least two months, which limits their time for study and, worst of all, they might get hurt in practicing."

→ time

→ money

→ safety

2. **Explain** why the problem is a problem. (Why is it a problem? Why does the problem need to be solved?   What can be accomplished? How can the problem be divided into different aspects?)

1.   Do students' studies get affected?   If not, they get good physical training and it's a good memory to keep.

2.   Do they spend a lot of money?

3.   "It's true that they might get hurt in practicing the skills, but there are things we can do to prevent and to reduce the risk."

3. **Provide solutions** and enumerate the goals to be served by the solutions.   (You need to prioritize the solutions, too, since they cannot be done all at once.)

1. Time: The leader of the cheerleading squat should schedule their training carefully so that all the team members will come to the practice and it will be done effectively.   Other than this measure, individual time management needs to be done individually.

2. Safety: Any sport has its own risk and danger. What we can do is prevent and make the risk as low as possible. We can't cancel the Olympics simply because it might be dangerous. Practice makes perfect. It takes time to practice in order to make the final performance wonderful. The more practice, the more understanding between members; the more understanding they have to each other, the lower risk of getting hurt they are under.

[. . .][T]o ensure safety, what we have done this year is to add more restrictions. **First,** regulate the height for the acrobatics and the number of protectors. **Second**, ask for insurance certificates for every cheerleader that participates in the contest in the enrollment. The third one, ambulance car and first-aid personnel should stand by on the scene." The SA president of Japan Department continued, "there are actually some other things we can do, like to purchase pads for daily practice and for the contest. But it's a pity that we can't either afford the expense or borrow them from other places."

4. **Outline specific procedures needed in each solution** to the problem and their possible outcomes.

Strict regulations on moves prevent cheerleaders from making moves that are too dangerous. What we do this year is to have at most one flyer (cheerleader whose feet are on other cheerleader's shoulders or hands) climb over two layers in each move. One layer means the height of one cheerleader stands, so at most we allow three layers this time. And a three-layer move needs two protectors. Under the same rules of moves, cheerleaders of each team have to think of other ways to win over the other competitors rather than triumph with dangerous moves. Protectors are also helping to lower the risk of getting hurt. Mostly we have protectors who are also cheerleaders, but now we have to make a distinction. Protectors cannot be cheerleaders, and all they have to do is to protect those cheerleaders whose feet are not on the ground. The second additional clause we can make is to require the teams to get insurance for every cheerleader. The insurance ensures compensation of injuries; that is, even if some one gets hurt while practicing the skills for the cheerleading contest, he/she won't have to shoulder all the medical bills. As for the pads exclusively for gymnastic use, are the perfect protections for cheerleaders. Even if they fall, their bodies won't directly touch the solid ground, but the softer pads made of foam rubber.

5. **Appraise** what appears to be the best solution, long-term or short-term, and what cannot be solved right away.

"Why don't we replace cheerleading with traditional dancing," the chairman of Spanish Department claimed, "I think it is also workable and less risky." Teresa, president of English department SA answered, "I don't think it would be less risky, less time and money consuming; besides, the unity it lacks of might make it difficult to vote for a No.1." "It won't be easy to judge traditional dancing," one president went on, "since every traditional dancing represents different culture and each one of it is unique."
Is traditional dancing workable? Yes and why not. . . .

Sample II (from http://www.engl.niu.edu/ehoffman/text/oldtext/Chapter%2012.doc)

1. **Define** the problem. (Is the problem too big for you to solve?   How can the problem be divided into different aspects?)

1. This problem focuses on a conflict between what final exams are supposed to accomplish and what they actually do. These exams are supposed to give students a chance to bring together all of the most important things they have learned that semester. Professors are supposed to find out from a final examination exactly how much of a course's material students have learned. But because of all the pressure and the limited time students have to take exams,

they may not be able to show all that they have learned and professors don't get a very good idea about how much students know about the subject after studying it for a semester.

2. **Explain** why the problem is a problem. (Why is it a problem? Why does the problem need to be solved?   What can be accomplished?)

2. Final exams are a problem because they make everyone feel like too much of a failure at the end of the semester. The students don't have a chance to show what they have really learned and they get grades that make it seem as if they all know less than they do. Professors feel cheated because they have worked hard all semester to teach students something and final exams seem to say that students haven't learned as much as they should have. So, the professor's time seems wasted. Everybody ends up feeling like a loser.

3. **Provide solutions** and enumerate the goals to be served by the solutions.   (You need to prioritize the solutions, too, since they cannot be done all at once.)

3. Some system should be used to test students' knowledge at the end of a course. But it shouldn't include conditions that work against students' really showing what they have learned. There should be a balance between what students are expected to do and what conditions allow them to do. And whatever system is used, it should be good enough to reveal what students have actually learned and what teachers have actually taught.   All three of these goals are equally important and you can't achieve one without achieving the other two.

Students should be tested at the end of a semester because no one can really know how much they have learned if they are not tested. But the tests they are given should not be picky. Final exams should ask about the most important topics covered in a course. Students should also not be asked to finish a final exam in a short period of time. If they are going to be stating all that they have learned in a course, they should be able to relax and respond to questions at an easier pace than most final exam schedules allow. Two ways to do this would be to give them take-home exams or to let them take exams in class over a period of two or three days.

Omitted: solutions discussed and prioritized.