*(mainly from "The Elements of Academic Research", by R.H. McCuen, ASCE Press. USA. 1996
and partly from "The Research Student's guide to success", by P. Cryer, Open University Press, Buckingham)*

<u>*Outline:*</u>

- Time in research.
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Time in research.

People think that "researchers' or academicians' time is very flexible. They can prepare their own schedules or weekly time tables, therefore time management skills is not critical for them." This is wrong. Just on contrary. It is because of this possibility of flexibility that researchers need to be good time managers.

Researchers need long hours. They may need to enter dark tracks from time to time. The results might be unpredictable and unexpectable. Some procedures may take longer time than expected. Therefore, they need careful time management to reserve time for such cases.

Researchers have several different responsibilities like,

- taking and studying for courses
- lab assistantship
- tutoring
- invigilation
- departmental works
- exam grading etc.

A researcher will be lost among these works if he/she is not skillful in time management. Any failure in time management will result with the omission of some work, lower quality of research, depression etc.

Another good reason for the necessity of time management skills is the presence of deadlines for most work undertaken by a researcher. The research schedule by itself should be carefully designed to fit into the time allowed. Requests for extension may not be helpful, and usually they result with a damage in your career either by elongating the time to reach your goals or making your skills and background questionable.

You especially need to improve your time management skills if you often say: "No need to worry. I can prepare it in the last week, or in the last night."

Keep in mind that there there are no hard and fast rules on how to spend time while undertaking research. What matters is that you should be content with your won use of time.

Note that time spent on leisure activities or talking to people is not necessarily time wasted. You need them, in a balanced fashion, to maintain your physical and mental health, and help your work.

Definition of time management.

We should spend some effort to manage the time since:

- time is not something that can be changed in any way, it can not be accelerated or slowed, or stopped.
- time itself can not be controlled,
- therefore time itself can not be managed.

We can only control our "use" of our time.

Time management is essentially the organization of your time in a manner that most effectively **helps** you **meet** important **goals**.

Benefits of time management.

- you can gain control over your time. That does not mean that you become super-workaholic. It means you can finish earlier.

- You will have improved self-confidence by being more organized and get greater satisfaction from your research experience.

- You will have less stress due to easier coping with the deadlines. That will not help only in research activities but also help to improve your health and interpersonal relations.

- You will have better productivity and performance.

- All of the above will prepare the most suitable medium and conditions for a quality research. Your career will benefit much from the research under these conditions in which there is no time pressure.

Risks of improper time management.

Poor time management can lead to opposite of these benefits.

You may become a slave to deadlines.

Poor time management is often the result of procrastination (delaying to a later time). The more you procrastinate, the more pressure will adversely affect your performance.

Some people believe that they become more productive towards the deadlines. That is a misconception. The work done just before the deadlines had been proved to be of very low quality. Unexpected drawbacks like sicknesses, computer crashes etc can not be tolerated towrds the deadlines.

Some people believe that they work well under pressure. But there is always a risk for failure. An early start will prevent such risks.

The most serious damaging effect of a poor time management is the potential negative effect on interpersonal relations. This may endup with poor student-supervisor relations, weakened group-interactions, anxiety in personal relations etc.

Technics for time management.

A time management system can be summarized in five steps.

1. setting goals
2. setting priorities
3. planning
4. scheduling
5. revising

A small warning. You should not become a superorganized or superbusy researcher, otherwise, your performance will suffer. Thus, do not spend too much time on planning and scheduling. Try to spend just enough time on your time management such that you believe you are meeting all of your goals in a timely manner.

Setting goals.

Establishing goals and objectives is the first step.

Goals are outcome statements that define what you are trying to accomplish . Goals describe future expected outcomes or states. They provide programmatic direction. They focus on ends rather than means.

Example: "Finishing the experiments for thesis"

Objectives tell how to meet a goal. Objectives are clear, realistic, specific, measurable, and time-limited, statements of action which when completed will move towards goal achievement. They start with an action word.

Examples:

 - "Reviewing the literature for the latest free-amine protection methods within 15 days"

 - "Designing the free-amine protection experiments until the end of January"

 - "Sending the results to METU for analysis latest June 20"

 - "Analysis of results and doing fine tuning experiments until September 1"

Make sure that the goals and objectives are clear and concise.

Also make sure that the objectives are also measurable; i.e., it can be removed from your list when completed without difficulty.

Your objectives should not be too simple or too complex such that they should be realistic enough: they should not look discouraging or extremely demanding.

There are usually more than one onjectives for each goal. (2 to 5 objectives per goal)

Begin by brainstorming. Write down as many goals and objectives as possible and do bubble sorting; i.e., sort them in order of importance (more relevant to your goals).

You can use a pyramid to picture your goals and objectives. Put your short range goals to the top wheres the long range ones are at the bottom. Your pyramide may have 4-5 levels.: daily (at the top), weekly, monthly, yearly... goals. Highest priority is placed on the daily goals.

Priority should not be confused with importance. The most important goals are the long-range goals, but the highest priority goals are the daily goals. One will fail in attaining a yearly goal if he/she can not manage with the daily goals.

Never avoid discussing your goals with your supervisor. His/her priority list may be different, and clash with yours.

Once you have a refined list of your goals, you may start labeling the relative importance of of each goal by labeling them as A, B, and C (or similar). A might mean "critical", B "important" and C "minimally important (that must still can not be overlooked)".

Setting priorities.

Setting priorities will let you know what constitutes the best use of your time.

It will also ensure that the most urgent tasks will be worked on first.

Once again priority and importance are not the same.

Importance implies the overall significance of the outcome.

Priority is a measure of both "importance" and the "urgency". So the priority of a goal depends both on its importance and its urgency.

You must give higher priority to an earlier task.

You must assign priorities to all tasks.

The priorities may change by time. Therefore, they may be revised from time to time.

You may give priorities as "high", "medium" or "low"; or 1, 2, 3, 4 and 5.

You can give a high priority to a long term important task to give an early start to it.

Caution: Avoid "paralysis by analysis": A **perfectionist attitude** will result with inabilities in assigning priority to the tasks since everything is equally important and urgent according to a perfectist. They can't easily choose a task to start with. At the end, they may prefer to do nothing. This phenomenon is known as "paralysis by analysis".

Planning.

Planning is the listing of the tasks and establishing a time line that includes each task.

Planning involves other variables like budgeting, availability of resources, originality, data analysis methods, etc and puts them on a timely basis.

Planning usually starts by thinking about the goals and priorities. It could actually be completed in the mind. However, most experts strongly recommend that you formalize the plan in writing to avoid forgetting something.

You may have monthly, or weekly plans.

Some experts strongly recommend to do "do-lists" or "To-do lists"

You can start your day by preparing a do-list for the day and set priority to each task. This do-list will motivate you to remember your responsibilities that must be carried out during the day.

Items that you could not complete one day can be the starting work of the next day.

A good advantage of a do-list is that it will give a chance to evaluate/assess your progress. Crossing off completed items will provide a sense of satisfaction.

Don't forget to include some flexibility in your plans since no research is completed as exactly as planned. There is always a possibility of deviation due to several reasons. Therefore, you never finish a task on the planned time. Therefore be realistic while you do your planning.

Scheduling.

Scheduling is deciding when to spend the times you estimated on the tasks.

When are you going to do a one-week experiment? On Monday afternoon + Wednesday morning + whole Saturday?

Research needs concentration and continuity. You are dealing with several different activities. Try to schedule your research activities ınto days or time-slots you are most likely to have minimum concentration distorts or disturbance. Doing research in your office hours might not be fruitful.

Leave enough flexibility in your scheduling as well for setbacks, time overruns, delays and other unforeseen reasons.

Revising.

Periodic revising of your goals and tasks, plans and schedules is necessary. For example, when goal-A of highest priority is finished, your goal-B may become goal-A.

Revising is needed to compare your goals and objectives with your performance, and to see if you are proceeding as scheduled. If you have fallen behind the schedule, revise it.

If you are ahead of schedule, then you can revise your goals to include more goals and objectives, or finish earlier.

Procrastination.

Procrastination is carrying out less urgent tasks first and continuously delaying the most urgent tasks

There are various symptoms (signs) of procrastination:

- watching tv instead of doing homework
- talking with friends instead of concentrating on the team project

- delaying the return of library books

Procrastination have consequences like prevention of success, delay of effects that can be very serious or even disastrous.

Causes of procrastination.

There are three reasons:

Facing an unpleasant task is the most common reason. Procrastinator hopes hat the task will go away before he or she starts on it!!!!   Unfortunately it doesn't. It will end up with accumulating stress each day.

Facing a complex or intimidating task can also lead to procrastination. The procrastinator doesn't know how to begin solving the problem, and believes that the effort could be wasteful, and the award for this may not worth doing it.

Facing indecision is having difficulty in assigning priorities to competing demands on his or her time. Usually perfectionists fall into this class. People who are affraid of doing wrong decisions also fall into this class.

Overcoming procrastination.

Recognize procrastination and admit to yourself that you are a procrastinator. It is is difficult to do it (like admitting that a person has a drinking problem), but it is a necessary beginning step.

Learn to separate the main task into smaller tasks that are easier and less unpleasant. This a very effective method as it helps to increase the motivation after each successfuly completed subtask.

Formulate a simple leading task to get started. For example you may develop an outline of a research paper before writing a manuscript.

Set firm early deadlines. You can set your own deadlines so that they are earlier than the true deadlines and and adhere to your deadlines. You can tell teh others about your deadlines to increase the chance of success. This creates an external pressure to meet your deadlines.

Schedule the unpleasant tasks first. You will feel that the rest of the tasks will be downhill once you manage the difficult one. Just work hard to complete the first task.

 Promise an award to yourself upon completion of a tough task. This may have variations:

- rewarding at set points on the project
- using a variable-reward system in which their reward decreases in value as the completion date is extended etc.

Learn to do planning and scheduling consistently. Weekly planning and scheduling will ensure that you remain in control of your time.

Please note that procrastination is habit forming like all other bad habits. Just recognize that there is such a problem and do not allow to build such habits. Once you submit your homework late, and your instructor stayed silent, most probably you will be trapped by procrastination and submit the second homework late, even later than the first one. This however put you in stress, damage your impression on your instructor, and lower the quality of your work.

Eliminating the time wasting habits.

This is necessary to improve your time management skills.

It requires the assessment of how you currently spend your time. This can be done by keeping a careful log-book for a short period of time, say 1 week. It includes writing everything you do and time spent for them.

Common time wasting habits are:

Failure to balance the demands of an activity and your mood. Every activity requires different levels of concentration. Have a flexible schedule to adjust your mood.

Taking a perfectionist's attitude for an unimportant task. This is something like wasting your time for the preparation of publication quality graphs or demonstrations to be used for discussing the results with your supervisor. A quick draft graph may suffice, and save you a lot of time.

Not using the technology. Use of computers, phones, scanners, user friendly graphing software etc. may be helpful and save your time considerably. Carrying your laptop to everywhere may improve your efficiency as you are always ready to show your results anytime to anybody, get their opinion, to the necessary changes or improvements on your project etc.

Having no plan for unexpected free time or unscheduled delays. You should always have something to do (like reading an article, drawing a graph, reading a users manual etc) when you find an unexpected free time like while waiting for the end of a long telephone conversation of your supervisor during your visit.

Having frequent and inefficient meetings. Some meeting coordinators may fail to keep the discussions on track and convert the discussions to conversations or branch the discussion to unnecessary topics. If you think so, take over and ensure, diplomatically, that the discussion stays on track. If it is inappropriate to do it, then you can think about your research project and brainstorm yourself on a problem of immediate concern.

Having frequent and long phone conversations. When talking with a person, stay focused on the agenda. Gently request your friends and relatives not to disturb you during the work hours for unimportant and non urgent issues. Don't forget, you are doing a job which requires high level of concentration.

Chitchat. Some of chitchat may be desirable but it must be avoided since it can easily distort your attention.

Surfing in internet, chatting, and exploring the software

This is the most common time wasting habit nowadays and worth a separate section.

Surfing on the pages which has nothing to do with your goals and expectations can easily kill your time.

Be firm with yourself.

Decide in advance what precisely you are going to use the web for, and stick to it.

Or allow yourself a specific small amount of surfing as a break from the work.

If you can't stop yourself surfing or chatting through internet you can try one or more of the followings:

- keep your door open as to allow others to see what you are doing.
- align the monitor of your computer such that anybody entered the room would be able to see what you are doing with your computer. You definitely won't want anybody see you wasting your time.

- uninstall chat programs from your office- computer.

Trying to explore the most sophisticated features or capabilities of a software, trying to learn a software which is not of absolute necessity in your field. For example, learning a detailed use of AutoCad will have almost no help (hence a total time waste) for a chemist. Similarly trying to explore all features of PhotoShop is also a time waste if you are not going to deal with photography at professional level. Such software will also have other negative consequences like slowing your computer down.

Non-stop working for hours at a time.

In some cases the students may find themselves studying for very long time periods, say 13 hours, without giving a true break. The common cause is usually the time pressure, or pure delight and fascination. In addition to diminishing level of concentration and efficiency, such work/study habits have other health drawbacks like eye strain (after prolonged use of computers), excessive tiredness, unknown effects to pregnant women, repetative strain injury etc. Although it may be necessary under certain conditions, one can, and indeed must avoid non-stop works.

One must develop habits to give regular breaks. You can go ahead and get a cup of coffee, chat with your friends, or better do some physical exercise. Or you can at least do a totally different work like washing the clothes delayed to these break times.

Nonstop work till late-night should especially be avoided. No creativity or healthy decision capability is expected from a sleepy person.