Note-taking has been an important part of human history and scientific development. The Ancient Greeks developed hypomnema which were personal records on important subjects. In the Renaissance and early modern period commonplace books which served a similar function became popular.

So many techniques have been used to structure information since time immemorial, to make it easier to find and to understand, later on. The format of the initial record may often be informal and/or unstructured or it depends on individual style of keeping notes. One common format for such notes is shorthand, which can allow large amounts of information to be put on notebook very quickly. But shorthand has its' limit as it has an intricate nature and requires independent study of it. As note taking is important need of students during lectures and study so for the temporary phase they need to learn it. In some contexts, such as college lectures, the main purpose of taking notes may be to memorize the material in the mind; the written notes themselves being of secondary importance.

Historically, note-taking was a physical process which was kept on paper but with the advent of Science and Technology its nature has been changed. In the digital age, computers, tablet PCs and personal digital assistants (PDAs) even smart phones are common.

Note-taking is a kind of race against time. The note taker typically is under severe time pressure, and different note-taking styles and techniques try to make the best use of time. This way his listening skill is also on the test.The average rate of speech is 2–3 words per second, but the average handwriting speed as only 0.2–0.3 words per second.

Regardless of the medium (paper, computer), note-taking can be broadly divided into linear and nonlinear methods, which can be combined.

Types of Note Taking

1.Linear note-taking

2.Non-linear note-taking

1. Linear note-taking- It includes following things.

Outlining- It is a process where according to structure of information reader or note taker makes a system. This system includes headings or numbers or alphabets. We can see typical style of taking notes from this format.

I. First main topic

A. Subtopic

1. Detail
2. Detail

B. Subtopic

II. Second main topic

A. Subtopic

However, this sort of structure has limitations in written form since it is difficult to go back and insert more information. Adaptive systems are used for paper-and-pen insertions, such as using the reverse side of the preceding page in a spiral notebook to make insertions. Or one can simply leave large spaces in between items, to enable more material to be inserted. The above method is effective for most people, but you can be creative in making your own method.

Non-linear note-taking

There are many types of non-linear note-taking techniques, including: clustering(making a diagram which linked to one root) ,cocept mapping cornell system, Idea mapping Instant replays, Ishikawa diagram,Knowledge maps,Learning maps,Mind mapping ,Model maps,Pyramid principle (writing ,Semantic networks and Smart Wisdom.

Some of these can be understood in detail.

Cornell note-taking system is a note-taking system devised in the 1950s by Walter Pauk, an education professor at Cornell University. Pauk suggested its use in his best-selling book *How to Study in College.*

Concept mapping-A **concept map** or **conceptual diagram** is a diagram that describes suggested relationships between concepts. It is a graphical tool that technical writers, designers engineers and others use to organize and structure their knowledge or line of action.

A concept map typically represents ideas and information as boxes or circles, which it connects with labeled arrows in a downward-branching hierarchical structure. The relationship between concepts can be articulated in linking phrases such as *causes*, *requires*, or *contributes to*.

Ishikawa diagrams (This is also called fishbone diagrams, herringbone diagrams, cause-and-effect diagrams, or Fishikawa) are causal diagrams created by Kaoru Ishikawa (1968) which shows the causes of a specific event. Common uses of the Ishikawa

diagram are product design and quality defect prevention, to identify potential factors causing an overall effect.

Semantic System "Semantic Nets" were first invented for computers by Richard H. Richens of the Cambridge Language Research Unit in 1956 as an "interlingua" for machine translation of natural languages. Basically this is abstract graph created for the purpose of using information.

Charting

This includes making grap h with symbols, or a table with rows and columns. Graphs and flow-charts are useful for documenting a process or event. Tables are useful for facts and values.

Mapping

Here, ideas are written in starting, with lines connecting them together. This also referred to as brain-storming or a central point, purpose or goal in the center of the page and then branching outward to identify all the ideas connected to that goal. Colors, small graphics and symbols are often used to help to visualize the information more easily. This note-taking method is most common among visual learners and is a core practice of many accelerated learning techniques. It is also very popular for planning and writing essays.

Sentence method

It is basically written in points or in bullet form. Every new thought is written as a new line. Speed is the most desirable attribute of this method because not much thought about formatting is needed to form the layout and create enough space for more notes. When taking these notes, you can number them or bullet them. This method can allow the reader to tell where a new thought ends and begins. This style is very popular among teachers and students as they have to focus their ideas on a particular topic during lecture.

SQ3R

SQRRR is a reading comprehension method named for its five steps: **survey, question, read, recite, and review**. It was introduced by Francis Pleasant Robinson in his 1946 book *Effective Study*, based on principles documented in the 1930s.This method, created for college students, can also be used by elementary school students, who can practice all of the steps once they have begun to read longer and more complex texts (around fourth grade)

Similar methods developed subsequently include PQRST

Process

1. Survey

The first step, survey or skim, advises that one should resist the temptation to read the book and instead glance through a chapter in order to identify headings, sub-headings and other outstanding features in the text. This is in order to identify ideas and formulate questions about the content of the chapter.

2. Question

   Formulate questions about the content of the reading. For example, convert headings and sub-headings into questions, and then look for answers in the content of the text. Other more general questions may also be formulated:

   - *What is this chapter about?*
   - *What question is this chapter trying to answer?*
   - *How does this information help me?*

3. Read (R^1)

   Use the background work done with "S" and "Q" in order to begin reading actively.

4. Recite (R^2)

   The second "R" refers to the part known as "Recite/wRite" or "Recall." Using key phrases, one is meant to identify major points and answers to questions from the "Q" step for each section. This may be done either in an oral or written format. It is important that an adherent to this method use his/her own words in order to evoke the active listening quality of this study method.

5. Review (R^3)

1. The final "R" is "Review." In fact, before becoming acquainted with this method a student probably just uses the R & R method; Read and Review. Provided the student has followed all recommendations, the student should have a study sheet and should test himself or herself by attempting to recall the key phrases. This method instructs the diligent student to immediately review all sections pertaining to any key words forgotten

Guided notes

Sometimes lecturers may provide handouts of guided notes, which provide a "map" of the lecture content with key points or ideas missing. Students then fill in missing items as the lecture progresses. Guided notes may help students in following lectures and identifying the most important ideas from a lecture. This format provides students with a framework, yet requires active listening (as opposed to providing copies of powerpoint slides in their entirety). Research has shown that guided notes improve students' recording of critical points in lecture as well as their quiz scores on related content.

Electronic note-taking methods

The growing use of laptops in universities and colleges has led to a rise in electronic note-taking. Many students write their notes in word processors. Online word processor applications are receiving growing attention from students who can forward notes using email, or otherwise make use of collaborative features in these applications and can also download the texts as a file (txt, rtf...) in a local computer.

Online note-taking has created problems for teachers who must balance educational freedom with copyright and intellectual property concerns regarding course content.

Professional services

Professional notetakers provide access to information for people who cannot take their own notes, in particular the deaf and hearing impaired. Professional Notetakers most frequently work in colleges and universities, but are also used in workplace meetings, appointments, conferences, and training sessions. They are usually educated to degree level. In the UK they are increasingly expected to have a professional note-taking qualification, such as that offered by the Council for the Advancement of Communication with Deaf People (CACDP).This trend is also growing in India.

Steps to start to take notes: Generally it has been seen that students write on the paper without proper mentioning few important things and due to it their precious material which is important lost.

Paper 2 ½ Inch margin on left side

- Notebook
- Course name
- Chapter
- Date
- Writer/Orator

Listening has limit

In fact most of us are not, and research suggests that we remember between 25 percent and 50 percent of what we hear. That means that when you talk to your boss, colleagues, customers or spouse for 10 minutes, they pay attention to less than half of the conversation. This is dismal!

Turn it around and it reveals that when you are receiving directions or being presented with information, you aren't hearing the whole message either. You hope the important parts are captured in your 25-50 percent, but what if they're not? So taking notes is the best way the concentrate our mind and enhance its capability.

Why write notes?

This is useful for future revision to remember the subject in better way particularly in the exams and at the time of synchronizing your ideas.

- This act as a summary of the main points of what you read, heard or saw which is possibly mind forget or slip in regular process.
- This is an essential record of where information came from (for referencing purposes).Human tendency is to generalize ,simplify and receive things into fiction form which seems to be ok when one is
- it remind you of other things you should do to continue learning, e.g. sources to check out; action to take
- Note-*taking* means you simply write what you hear in lectures, or from printed texts to understand topic or subject.
- But it should be regarded as the first-stage only of the process and should lead on to note-*making.* **Note-making** is the second stage of note taking actually it is a comprehensive understanding analyzing entire material according to the requirement. All the information, data is cross-checked during note-making.
- Note-*taking* is when you simply write what you hear in lectures, or from printed texts. If the subject is unfamiliar.
- But it should be regarded as the first-stage only of the process and should lead on to note-*making.*
- Now we can understand it with following heads.

Step #1: Record

<u>Record in Class</u>

- During the lecture, write as many facts as you can.
  - Use shorthand to get the full idea or your own developed acronym

- Leave spaces between ideas so you can fill in more later. Even you can write your ideas and immediate understanding so that you can refer it later on.

Step #2: Recall

- Recalling what your wrote in your notes, write questions in the Recall column of your notes to quiz yourself on the material.
    - Write your questions as close as possible to the beginning of the section in your notes

you are quizzing yourself on.

- Write a question for each new idea presented in your notes. These questions will help you during utilization of material.

Step #3: Recite

Recite from the Recall Column.

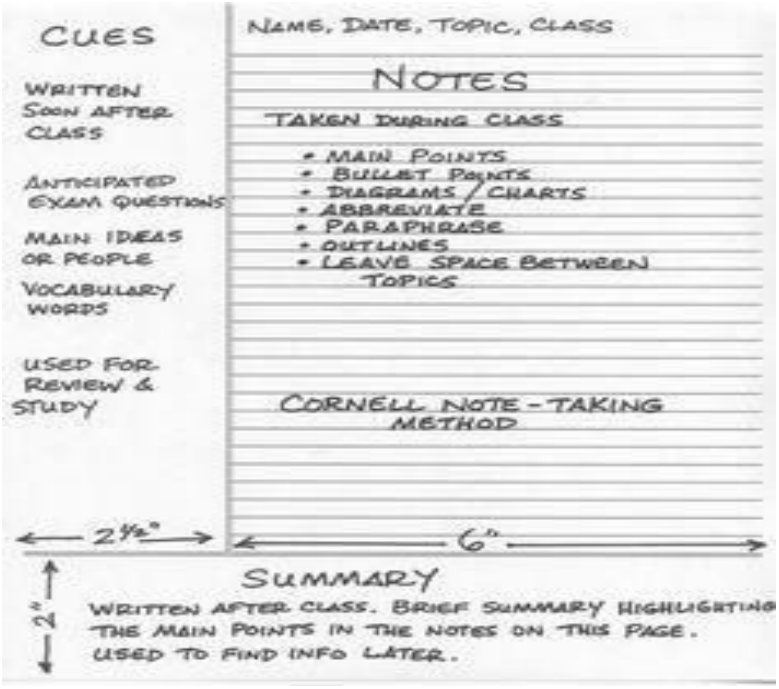
- Cover the Record Column and try to recall it with reference to the subject.
- Using only the words in the Recall Column, say over the facts as fully as you can *in your own words*!
- Then, uncover your notes and check what you have said against the facts. This will help transfer ideas to your long-term memory!

Step #4: Review to improve your memory.

- If you will spend ten (10) minutes every week or so in a quick review of these old notes, you will retain most of what you have learned and you will relate the facts and ideas to present lectures or readings.
- Step #5: Reflect on possible test questions and mark unclear points.
- Helps in making sense of your notes by finding relationships and order in the material.
- Try to put ideas in categories & tie old material to the new facts and figure.
- Think about which points will appear on tests & highlight any unclear points so you can ask questions about them *before* the next lecture.

Things to Do before Taking Notes before attending any lecture it is always useful to study and consult related material.

- To understand entire lecture you can write things in paragraph form and put headings on it.
- Listening skill is on check and tasted during note taking because there one need to understand the body language of orator too.
- Note taking help us in any case of diversion for example mind has a limit of concentration. So to keep it on track one requires few exercises of listening and note taking is one them.
- Use focused listening techniques to combat inattentiveness and other distractions.
- As for as spelling is concern simply write as it sound but check and correct spelling later on.
- It has been seen that notes are left abandoned after the lecture which become futile exercise so all the note-book must be organized and categorized immediately after the lecture.
- If lecture is based on any particular book better you mark that part and use pencil for commentary.



Note-*making* follows on from taking notes when you review your notes and re-organize them in a way that makes more sense or leads to more obvious connections between points or when you attempt to produce this type of note in the first place particularly as you read.

Note taking from Reference material

Reference is a relation between objects in which one object designates, or acts as a means by which to connect to or link to, another object. The first object in this relation is said to ***refer to*** the second object. The second object – the one to which the first object refers – is called the **referent** of the first object.

(Wikipedia)

The term *reference* is used in many places of human knowledge, adopting shades of meaning particular to the contexts in which it is used and applied.

Bibliographies are having particular meaning of it which is used to identify as many published works on a given subject as possible, and serve as compilations for other authors or researchers. This establishes its authenticity.

Reference can be referred to particular work which contains basic information in form of articles or research papers in one book that cover a broad scope of knowledge in one book, or a set of books. Sometimes these reference books cannot be taken out of the library. For example some of the libraries keep reference books or material in their archive. They do not issue it to the readers. In that case reader sits in the library and takes notes.

For books, there exists the ISBN and for journal articles, the Digital object identifier (DOI) is gaining relevance. Information on the Internet may be referred to by a Uniform Resource Identifier (URI).

Note taking from Reference Material

Note-taking is a technique of writing important information for future use. Before you begin to take notes, you need to clarify your purpose of taking notes. This purpose will decide length of notes. Ask yourself why you are taking the notes and in which way you are going to use it. At the last one can write his/her action plan also. Good notes should be as brief as possible without missing any important points, and they need to be accurate. You can use the title of the passage or the chapter to help you anticipate the main ideas of the text. When you read a text, you need to draw out the main idea and supporting details of a paragraph. Good notes should have a clear organizational pattern. When you take notes, you should write them down with your own words, and the ideas in your notes should relate to one another. That is to say, your notes should be arranged into an appropriate form e.g. a list, a diagram, a table, etc.

Good notes need to indicate the source where the information comes from. After the lecture all the information should be properly checked. It enhances credibility and

authenticity of the information. One need to mention the name of the author, the date of the publication, the title of the book or journal, the name of the publisher, the volume number in case of an article, and the page number(s),etc. exactly as they are written. If you want to comment on what you are reading, keep your ideas separate from those in the text. You may draw a box around them. When you finish, sum up what you have written.

Read Following News Passage and make notes:

N. GOPAL RAJ

For future missions, ISRO will have to turn to the Geosynchronous Satellite Launch Vehicle (GSLV) and GSLV Mark III that can lift much heavier spacecraft than the PSLV.

After the stunning success of its very first shot at Mars, the Indian Space Research Organisation (ISRO) will need to take those capabilities forward, despatching bigger, and more advanced spacecraft in the years to come. That, in turn, requires rockets that can carry such probes on the first leg of their journey and place them in orbit around Earth.

For its first attempt with the Mars Orbiter, ISRO turned to the Polar Satellite Launch Vehicle (PSLV), a rocket with an impeccable track record. Initially, it seemed that this launcher would not be powerful enough for the task and every aspect of the mission had to be carefully optimised in order to make that possible, according to V. Adimurthy, the space agency's senior adviser for interplanetary missions. He led a study team whose 2011 report laid out how India could send probes to the Red Planet.

For future missions, ISRO will have to turn to the Geosynchronous Satellite Launch Vehicle (GSLV) and GSLV Mark III that can lift much heavier spacecraft than the PSLV. The former, equipped with an indigenous cryogenic stage, had its first successful flight only in January this year. An experimental launch of the Mark III, with a non-functional cryogenic upper stage, is to take place shortly. (The rocket’s operational cryogenic engine and stage are still under development.)

ISRO needed to carry out a system study of how the GSLV and GSLV Mark III launchers could be used to carry probes for Mars, observed its chairman, K. Radhakrishnan “Certainly for the next mission we have to go for [a spacecraft with] higher mass.”

The space agency would not be in a position to send a spacecraft to that planet during the 2016 launch opportunity, he told this correspondent. The launch window that opened in 2018 would be the earliest that the next mission to Mars could go. It was also necessary to be clear what science such a mission could carry out, he added.

In order to utilise the GSLV and GSLV Mark III, the cryogenic engines on those rockets will need 'multi-start' capability so that they can be shut down after one burn, undergo a period of coasting and restart, noted Dr. Adimurthy. This was crucial for placing a spacecraft in the proper orbital orientation around Earth, a prerequisite for its eventual injection on a trajectory to Mars. A new liquid propulsion stage for carrying out the trans-Mars injection too was needed.

"Such improved systems will eventually pave the way for larger spacecraft to go into orbits closer to Mars, and have lander and rover operations on the planet's surface," he said.

Starting, shutting down and restarting a cryogenic engine in space is complicated, noted S. Ramakrishnan, who retired recently as director of the Vikram Sarabhai Space Centre, ISRO's lead centre for launch vehicle development, and earlier headed the Liquid Propulsion Systems Centre that develops liquid propellant engines needed for the space programme.

Restart capability has not yet been demonstrated with the GSLV's cryogenic engine. As for the cryogenic engine being developed for the Mark III, "once we do the initial engine-level tests, we can look at introducing the restart capability," he remarked.

ISRO has designed and ground-tested a 'Payload Assist Module' using a liquid-propellant engine that powers the PSLV's fourth stage. This module had originally been developed so that the GSLV could launch Russia's Global Navigation Satellite System (GLONASS) satellites, a proposal that ultimately did not materialise.

The module could go atop the GSLV or GSLV Mark III and enhance their capabilities to send probes to Mars, said Mr. Ramakrishnan.

Keywords: India space programme, India Mars mission, Mars Orbiter, Mangalyaan, ISRO, Indian Space Research Organisation, Polar Satellite Launch Vehicle, PSLV rocket, Geosynchronous Satellite Launch Vehicle, GSLV rocket

Source: 1 oct 2014,The Hindu