# Tutorial 3 –Task Analysis

**Introduction**
This week you will be looking at two forms of Task Analysis, Hierarchical and Procedural. There is some information for you to read about each method and then a diagram to draw, or textual description to create. You can do this on the computer (using Visio, PowerPoint or anything else you like) or on a piece of paper.

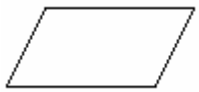
**Part 1 : Procedural Task Analysis**
Procedures are strictly defined so that each step is clear and unambiguous to the learner. They can be simple, whereby the learner follows one set of steps in a sequential fashion or they can be complex, with many decision points that the learner must make.

A procedural analysis breaks down the mental/physical steps that the learner must go through so that the task can be successfully completed. The steps that make up a task are arranged linearly and sequentially, illustrating where the learner begins and ends.

Oftentimes, the steps throughout the task, from start to finish, as well as any decisions that the learner must make are arranged in a flowchart, but they can also be done in an outline form.

To create a procedural Task Analysis there are four basic steps [2]
1. Determine whether a particular procedure is applicable.
2. Recall the steps of the procedure.
3. Apply the steps in order, with decision steps if required.
4. Confirm that the end result is reasonable.

## Flow Chart Notation

| | |
|---|---|
|  | Start/End - used as the beginning symbol pointing to the first task and as a symbol indicating that no more tasks are to be performed. Flowcharts have one starting point; but there can be more than one END point. |
|  | Input/Output - represents either an input task or an output task. E.G. an input task is keying the account number of a savings account in a bank, an output task is printing a report or displaying the results of a computation. An output at the end of a chain creates the input for the next step. |
|  | Process - a simple procedure, an operation, or an instruction. Processes do not include tasks requiring a decision. E.G. Calculating simple interest or typing a report. |
|  | Decision - used when two alternative sequences are possible depending upon the outcome of the decision. Usually decisions are posed as questions requiring a yes or no answer. However, any two-way alternative may be posed. |

## Example Textual Description [2]

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Objective: The learner will be able to give a large dog a bath in a
bathroom tub.
Definition of Learning: The learner will be able to perform the step-
by-step process of giving a large dog a bath.
Essential Learning:
I. Prepare for giving dog a bath
   A. Get Supplies
      1. Purchase dog brush
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2. Purchase dog shampoo
3. Gather old towels to use for drying dog and covering floor of bathing area

B. Arrange bathing area
1. Cover floor with old towels
2. Place shampoo near water source where dog will be bathed
3. Place remaining old towels in pile within reach, but as far from water sources as possible
4. Place brush near pile of towels
5. Close doors to rooms that you do not want dog to enter while damp

**II. Get dog to bathing area**

A. Lead dog to bath
1. Secure collar and leash on dog
2. Walk dog to bathing area (you may need dog treats to bribe the dog)

B. Secure the dog in bathing area
1. Close door behind you and dog after entering bathing area
a. Lift/command the dog into bath tub
b. Remove leash and collar from dog

**III. Bathe the dog**

A. Wet the dog
1. Turn on the water
2. Check the temperature and adjust it until it is luke warm
3. Saturate the dog with water

B. Shampoo the dog
1. Pour shampoo on dog
2. Lather and rub into all parts of the dogs fur vigorously with your hands

C. Rinse the dog
1. Saturate the dog with water
2. Massage water into fur with your hands until all remaining shampoo is washed away
3. Drain remaining water from tub (if applicable)

**IV. Dry the dog**

A. Reach for the towels and pull closer to you

B. Lift/command dog out of tub

C. Towel dry the dog
1. Place towel on dog's back and rub up and down
2. Repeat step one using dry towels and rubbing different areas of dog

D. When all excess water is off dog and it is essentially damp, put leash and collar on dog

E. Take the dog to area where you would like it to continue drying

F. Give dog a treat

**Exercise**

Work in pairs to write a textual description of the procedure to edit a word document (or the open office equivalent), type your name and save the document. The document for editing ***could already exist or could be a new document*** so an alternative would exist e.g. does the document already exist (yes / no).

Convert this textual description into a flow chart.

## Part 2: Hierarchical Task Analysis

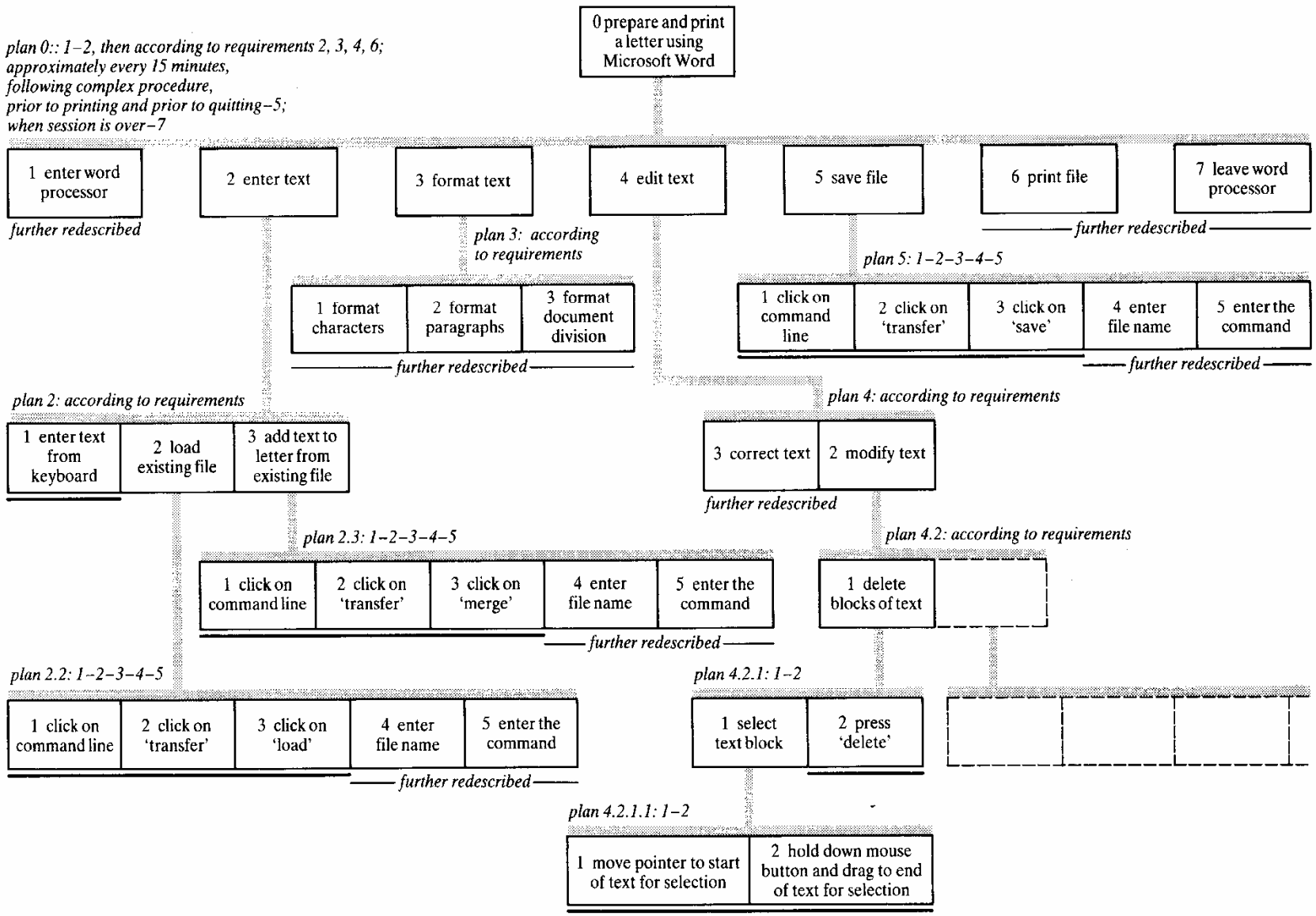
Hierarchical analysis breaks down a task from top to bottom, thereby, showing a hierarchical relationship amongst the tasks, and then instruction is sequenced bottom up.

To create a Hierarchical Task Analysis:

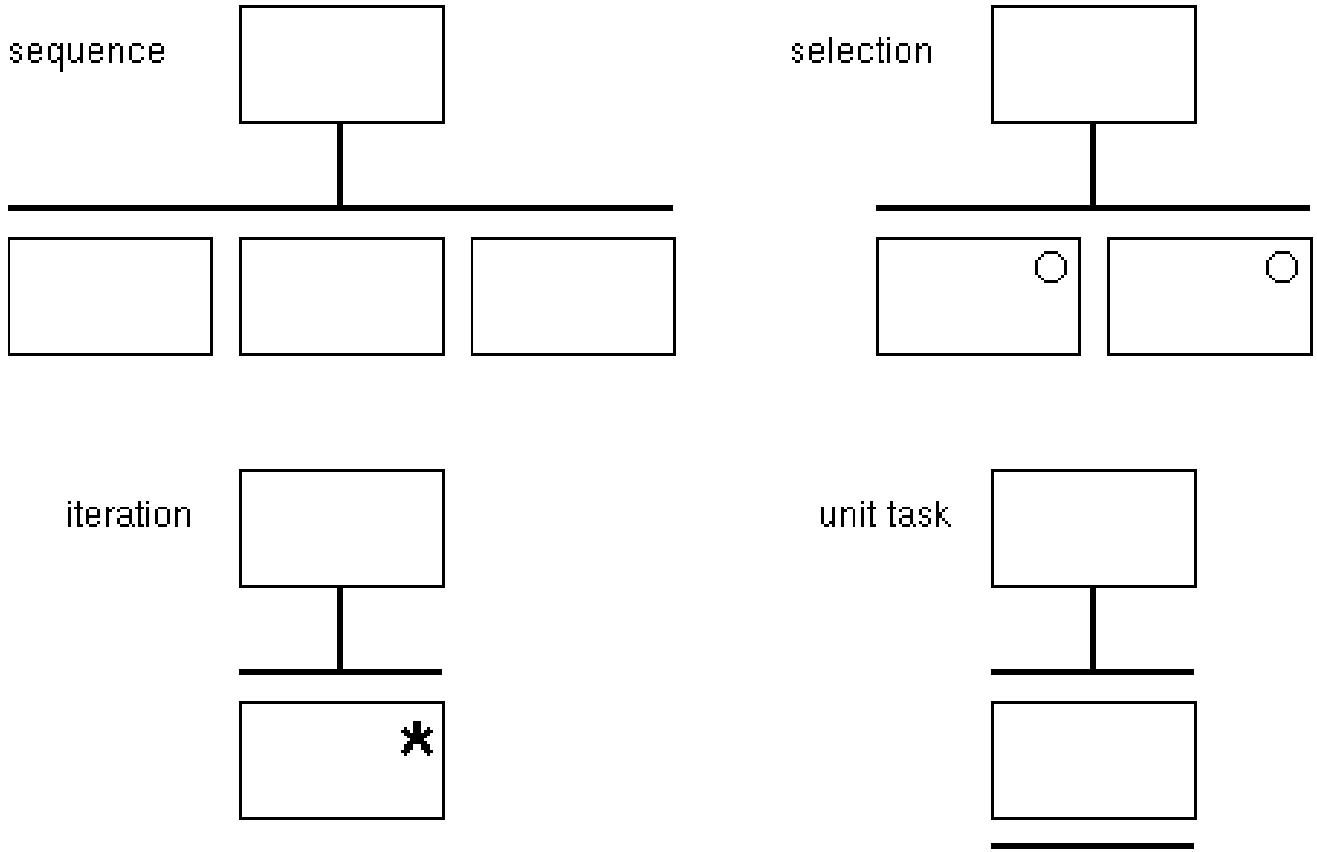
- Starting the analysis
  - a) Specify the main task.
  - b) Break down main task into 4-8 subtask, and specify in terms of objectives. Cover the whole area of interest
  - c) Draw out as layered plans, logically & technically correct. None should be missing.
- 2. Progressing the analysis
  - a) Decide on level of detail and stop decomposition. Should be consistent between tasks. Can range from detailed to high level description.
  - b) Decide if a depth first or breadth first decomposition should be done. Can alternate between the two.
  - c) Label and number the HTA.
- 3. Finalizing the analysis.
  - a) Check that decomposition and numbering is consistent. May produce a written account of the processes.
  - b) Have a second person look it over. They should know the tasks but not be involved in the analysis.

## Example

The example below shows a HTA for Preparing and Printing a letter using MS Word. The Plan is included to show the order that tasks are performed in and also shows that some tasks are optional


plan 0:: 1–2, then according to requirements 2, 3, 4, 6;
approximately every 15 minutes,
following complex procedure,
prior to printing and prior to quitting–5;
when session is over–7
0 prepare and print a letter using Microsoft Word
1 enter word processor
further redescribed
2 enter text
3 format text
4 edit text
5 save file
6 print file
7 leave word processor
further redescribed
plan 3: according to requirements
1 format characters
2 format paragraphs
3 format document division
further redescribed
plan 5: 1–2–3–4–5
1 click on command line
2 click on 'transfer'
3 click on 'save'
4 enter file name
5 enter the command
further redescribed
plan 2: according to requirements
1 enter text from keyboard
2 load existing file
3 add text to letter from existing file
plan 4: according to requirements
3 correct text
2 modify text
further redescribed
plan 2.3: 1–2–3–4–5
1 click on command line
2 click on 'transfer'
3 click on 'merge'
4 enter file name
5 enter the command
further redescribed
plan 4.2: according to requirements
1 delete blocks of text
plan 2.2: 1–2–3–4–5
1 click on command line
2 click on 'transfer'
3 click on 'load'
4 enter file name
5 enter the command
further redescribed
plan 4.2.1: 1–2
1 select text block
2 press 'delete'
plan 4.2.1.1: 1–2
1 move pointer to start of text for selection
2 hold down mouse button and drag to end of text for selection

**HTA Notation**



**Exercise**
Work in pairs to create a HTA for making a PowerPoint presentation. This will include drawing out the tasks, numbering them and writing a plan. Remember you can choose how much you think you need to decompose tasks. The main things you will need to include are:
- Starting PowerPoint,
- Entering text in a number of ways (typing it, copying it from one slide to another, editing text on a slide and anything else you think is reasonable).
- Add in diagrams and pictures by drawing, pasting etc
- Slide transition and timing is also a feature of Powerpoint, **you do not need to decompose this task** but include it
- The presentation needs to be saved

## Summary: What's the difference between the two?

1. Hierarchical task analysis answers the question: "What must the learner know or be able to do to achieve this task?" where as Procedural task analysis answers the question: "What are the mental and/or physical steps that the learner must go through in order to complete this task?"
2. A hierarchical task analysis is developed bottom up, from general to specific where as a procedural task analysis is developed linearly and sequentially, step-by-step. It has a directional flow, and a start and an end.
3. A hierarchical task analysis is represented in terms of levels of tasks. Each level should (more or less) represent one learning level (e.g. problem-solving, concept learning, etc.). The highest level is the most complex. Lower levels form prerequisite skills for higher levels. Lines connect tasks between levels. Each task can be broken down into one or more tasks from one level to the next. A procedural task analysis is represented in the form of a flowchart or an outline. If a flowchart is used, then lines with arrows connect tasks. The direction of the arrows indicates the sequence of the steps (tasks). Diamond shaped decisions symbols indicate a change in direction depending on the outcome. If an outline is used, the steps in the outline are numbered to indicate the sequence. Subtasks are also numbered to indicate the flow within a larger task.
4. A hierarchical task analysis is read bottom-up. If we were to put arrows on the lines that connect the tasks they would be pointing upward, towards the terminal task. A procedural task analysis is read from left to right or from top to bottom (following the direction of the arrows if in flowchart form, or the numbering of the steps if in outline form).
5. In a hierarchical analysis, each task is a prerequisite to the task directly above it. Tasks that can happen concurrently with other tasks should be on the same level in the hierarchy. If using a flowchart format to do a procedural analysis, you can break down some of the tasks within the flowchart into an outline format if those tasks have subtasks.
6. In a hierarchical analysis, list all your givens or assumptions as prerequisites at the very bottom of the hierarchy.In a procedural analysis, you must always have a START and an END, all tasks must be connected using arrows, and decision symbols can only have a YES/NO going out.

**References**


[1] Seels and Glasgow (1990). Exercises in instructional design. Columbus OH: Merrill Publishing Company.

[2] Dabbagh, N. (2007). The Instructional Design Knowledge Base. Retrieved September 3rd 2007 from Nada Dabbagh's Homepage, George Mason University, Instructional Technology Program. Website: http://classweb.gmu.edu/ndabbagh/Resources/IDKB/index.htm