Effective Notemaking
This is a typical scene in higher education: students in a lecture theatre, writing notes.

However, why are they writing notes?

Are they writing notes because they feel they should, or have they worked out a clear aim and purpose beforehand?

Are they taking or making notes? And what do they do with the notes afterwards?

This booklet examines the process of writing notes for learning purposes. It engages with four questions:

1. What’s the point of writing and keeping notes?
2. What evidence is there that writing notes can help you learn?
3. What’s the difference between note taking and note making?
4. What are the most effective ways of taking, making and using notes?
Students write notes during lectures, either on handouts produced by a lecturer or separately from these. They also take notes in tutorials and seminars and when reading independently.

But why do students write notes? A number of writers and commentators on study skills, for example Cottrell (2003); Sinfield and Burns (2003); and Lowes et al. (2004) offer similar reasons and explanations for writing and keeping notes:

1. What’s the Point of Writing and Keeping Notes?

Notes act as a summary or reinforcement of the main points of what you read, heard or saw; they are also an essential record of where information came from (for referencing purposes). They also remind you of other things you should do to continue learning, e.g. sources to check out; action to take.

They are an aid to memory. If you summarise in your own words, this can help you to remember the subject better, particularly in exams.

Notes are, therefore, useful for future revision purposes, particularly in preparation for exams or writing assignments.

Notes can help you to concentrate on the lecture or reading; the note writing process can help you overcome distraction and can encourage you to become a more active, rather than passive, learner.

Why write notes?

These are the arguments in support of the process
But what evidence is there that writing notes **DOES** achieve these things?

Hartley (1998) has summarised the results of fifty-seven studies of the effectiveness of note taking, which were based on the perceptions of students.

He suggests that there are three main reasons presented by students **why** they write notes:

1. To relieve boredom, and because of peer pressure – everyone is doing it!
2. Students believe the process will help them recall the content of lectures better in the future.
3. They feel the notes will help them to be more organised with their revision.

**And does it work?**

Of the fifty-seven studies Hartley reviewed, 34 (60%) suggested that the process of note writing did aid recall. He points out, however, that the results are based on student perceptions and assumptions, rather than what may actually happen; the students **believed** the process of writing notes led to these outcomes.

However, he also highlights over twenty studies that examined relationships between what was actually written in notes and the amount **actually** recalled by the students. The results of these studies tended to show moderate positive correlations (in the range of +0.20 to +0.50) between the amount noted and actually recalled (1998:80).

Hartley also cites other studies (i.e. Norton and Hartley 1986; and Nye et al. 1984) that checked examination scripts against a range of sources, including the notes taken by the students, to see what sources were actually used.

It appeared that a course textbook was the most widely used source (70% of students referred to it), with a key article next (over 50%), and 35% referring to their own notes in the exam. Hartley asserts that:

“...the more sources a student used in answering the examination question, the higher the mark obtained” (Hartley 1998: 82).
Other studies on note taking (reviewed and summarised by Bligh 1998) suggest that students reviewing their notes in pairs do much better in recalling information than students working on their own.

This would appear to relate to the process involved. Explaining an idea to another person makes you concentrate on the topic and choose your words carefully to express the right meaning. There may be a slight competitive element involved too, in that you don't want to lose face, so you concentrate a bit harder. Both these factors can reinforce the learning.

Kiewra (1987) found that the process of taking and reviewing notes was positively related to academic achievement. And in a follow-up study, Kiewra and Benton (1989) concluded that the "amount of note-taking is related to academic achievement" and the "ability to hold and manipulate propositional knowledge in working memory is related to the number of words, complex propositions, and main ideas recorded in notes." (33).

These last points are important ones. To be effective, notes must engage meaningfully with the subject, be well-organised, re-read and reviewed on a regular basis.

What these studies, however, do not make explicit is what type of notes did the students take or make? Did one style of writing notes work better than another?

Research interest and attention in recent years has turned, therefore, to the style of writing notes and quality of notes produced.

### Summary

- There is some evidence that writing and keeping notes can help you recall what you have learned.
- However, to be most effective notes must be well-organised and reviewed afterwards.
- There is evidence that discussing your notes with another person is effective in aiding recall.
- Research attention has turned in recent years to what types of notes are most effective in aiding recall.

In recent years, research attention has turned to encouraging students to be more active and analytical in the way they use notes, as this can result in ‘meaningful’ learning (Novak and Cañas 2006) - leading to potentially higher marks.
This has led commentators to distinguish between note *taking* and note *making*, although both should feature in note writing strategies: one leads to the other.

**Note-taking** is when you simply write what you hear in lectures, or from printed texts. If the subject is an unfamiliar one, this is often inevitable, particularly with international students who are trying hard to understand, follow and note what the lecturer is saying.

**But it should be regarded as the first-stage only of the process and should lead on to note-making.**

**Note-making** follows on from taking notes and happens when:

(a) when you review your notes and re-organise them in a way that makes more sense or leads to more obvious connections between points;

or

(b) when you attempt to produce this type of note in the first place, particularly as you read.

Note-making then, is when you have to actively select, organise and connect data and information that is particularly relevant and important to a deeper understanding of the subject. Note-making has the potential to become a more creative experience, as you can experiment with note making styles to see which work best for you.
Note-making can happen when:

1. You synthesize your reading from a number of sources on the same topic

Successful synthesis of ideas can follow when we read in pursuit of answers to a particular question that we ask of a topic e.g. “what is meant by the term ‘effective writing’?” We can then pursue answers to the questions we raise, e.g. look for common elements and connection points between commentators, e.g.


These writers identify six features of effective writing in English and share similar views on each of these:

- Short sentences
- No redundant words
- Use of familiar and unpretentious words
- Favour the active to the passive voice on most occasions
- A direct style of writing
- Good punctuation

(Adapted from Hartley and Bruckman 2002:173-4)

A Venn Diagram works on the same principle; see: http://en.wikipedia.org/wiki/Venn_diagram
2. You summarise for yourself the connections in any reading or from any lecture.

This is an example of a form of note making that attempts to show the connections visually between ideas in a journal article.

Source:
This is an example of a student adding his or her own comments and using a variation on the Cornell Method of note making.

**Source:**

<table>
<thead>
<tr>
<th>Topic &amp; key words</th>
<th>Main points:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management of change</td>
<td>Bridges identifies four stages of individual transition to change: disengagement, disidentification, disorientation and disenchantment; individuals must pass through these to change.</td>
</tr>
<tr>
<td>Bridges 4 Stages of transition</td>
<td>Disengagement: breaking away from past activity; typical responses: loss of interest; unresponsive</td>
</tr>
<tr>
<td>Individual responses to change</td>
<td>Disidentification: hanging on to the past; distorted view of future; typical responses: pessimism about new situation</td>
</tr>
<tr>
<td></td>
<td>Disenchantment: anger at new changes; typical responses: self pity; sabotage; back-stabbing</td>
</tr>
<tr>
<td></td>
<td>Disorientation: lost and confused; typical behaviours: continually asking questions/seeking reassurance</td>
</tr>
</tbody>
</table>

**Comments**
Does this apply to everyone experiencing change? What about those who seek change out? Does this apply to all cultures? How did Bridges arrive at this idea? The book was published 1980; how valid is the idea now?

The ‘comments’ section is an opportunity to write down the questions that occur to you from the reading. You can pursue answers to these questions and incorporate the answers in your assignment. If you do this you are moving from description (which is important in assignments) to analysis (which is essential for degree level study).
Summary

<table>
<thead>
<tr>
<th>Note-Taking</th>
<th>Note-Making</th>
</tr>
</thead>
<tbody>
<tr>
<td>A process that involves writing or recording what you hear or read in a descriptive way.</td>
<td>An advanced process that involves reviewing, synthesizing, connecting ideas from the lecture or reading and presenting the information in a readable, creative way; and in a way that will stick in your mind.</td>
</tr>
<tr>
<td>This is the first stage of the process of producing effective notes.</td>
<td></td>
</tr>
</tbody>
</table>

- Note-taking is often inevitable in lectures, particularly when you are faced with a new subject – and in a language secondary to your mother tongue. Lectures are often delivered at a fast pace, so most students concentrate on taking notes: recording accurately what the lecturer has said.

- **However, taking notes should be the first stage of the process.**

- Note-making happens when you engage more actively and creatively afterwards with the notes you have taken. This involves reviewing them and trying to organise and connect ideas from the lectures.

- Note-making can also be the first approach to writing notes from reading, as you have more time in this situation to organise, synthesize and present your notes in a way that makes sense to you. It also gives you an opportunity to be creative; why write dull notes, when they can be interesting to look at?
There is no one best or effective way of taking or making notes, although each method has its champions and advocates. The ‘best’ method is the one that works best for you.

Essentially, note taking styles fall into three main types:

a. Linear Notes
b. Visual or Pattern Notes
c. Voice Notes

However, there is no reason why visual elements cannot be integrated into linear notes. Making notes is a study technique that is wide open to new, creative and imaginative approaches that work for you.

### a. Linear Notes

Linear notes are those that summarise, using sentences, half-sentences or abbreviations, the main points heard or read. To be most effective, there needs to be two levels of engagement with linear notes:

#### Level 1
Summarising the main points from a lecture or other source

#### Level 2
Can include one or more of:
- Review and re-organisation of notes
- Connecting and synthesizing ideas
- Adding your own personal comments and reflections on the ideas summarised

See page 8 for example of two levels of engagement in linear notes.
Example of Linear Note Taking/Making

This is an approach that combines note taking and making, and is particularly useful for notes from reading. In the right hand column the main points from the reading episode are recorded. In the left hand column, you can then highlight any key points or questions raised by the experiment and add a summary or comment at the bottom. This converts a passive process into something more active, and into note making. It is important to take careful note of the source for citation and referencing purposes in assignments.


<table>
<thead>
<tr>
<th>Topic &amp; key words/issues</th>
<th>Main points:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topic: Does Mind-Mapping work?</td>
<td>A test involving two groups of 2nd &amp; 3rd yr. medical students, 50 in total, to see if 'Mind-mapping' note-taking study technique improved memory of something read.</td>
</tr>
<tr>
<td>What other methods used?</td>
<td>Two groups – one used mind-mapping technique for notes; the other groups used other methods of note making; students randomly assigned to groups. Individuals in both groups asked to read a 600 word passage of text &amp; take notes on it.</td>
</tr>
<tr>
<td>Had they some or all seen it before</td>
<td>After an 'interfering task', groups tested on their recall of the text the same day, and again a week later. No difference in result in short term.</td>
</tr>
<tr>
<td>Why?</td>
<td>However, at 1 week, the recall of detail in the mind map group was greater by 10%. However motivation for the technique used was lower in the mind map group; if motivation could have been made equal in the groups, the improvement with mind mapping would have been 15% (95% CI 3% to 27%).</td>
</tr>
</tbody>
</table>

Comments/Summary

Some resistance to mind-mapping in the group – why? What didn’t they like about it? Was resistance a reaction to the experiment or to the MM technique, or both? They were all medical students, was this a factor in the resistance? Don’t force this technique on people – doesn’t work for everyone. What other experiments done on MM techniques?

For maximum impact you would now need to follow up some of the questions raised. The notes would also have to be filed in an organised way that leads to easy retrieval of the information when needed.
Other Examples of Linear Note Making Include:

- Photocopying sections of a book or journal articles and highlighting key sections and adding comments of your own, or writing key words in margins. File these alphabetically by author, as this makes compiling your bibliography or list of references easier.

- Writing on ready-punch file paper. These can be moved easily around in a lever arched file. Write one major point on a different sheet and file them alphabetically by author, for same reasons as above.

- Cards record system (filed by subject or author)
Linear Notes and Lectures

Lecturers will often make PowerPoint notes available before the lecture. The notes supplied are usually ‘skeleton’ outlines of the topic and you are usually expected to add to them as the lecture progresses, and space is usually provided on the notes for this purpose.

At the end of a lecture it is important to review your own notes to make sure you understand them! It can be particularly useful to review notes with at least one other person to compare your comments with theirs and to make sure you did not miss anything.
If you don’t have any tutor lecture notes, you could use a ‘note and review’ approach, which uses two or three sides of A4 paper.

On the first one or two pages you note what you hear in the lecture (note-taking).

Later, you go over the notes and summarise in your own words what the main points were, add comments of your own and list follow-up tasks (note-making).

There are two note taking/making blank sheets you can use: one relevant for lectures, the other more useful for notes from reading. A completed example of this latter worksheet is shown on the next page, with bullet point linear notes summarising the main points of an article, but with the student’s own comments added.
Title of publication: Future revolutions: unravelling the uncertainties of life and work in the 21st century.
Date of publication: 1998
Author(s): David Mercer
Publisher: Orion Business Paperbacks

Subject: Future trends - based on what 5,000 global organisations predict the world will look like in 2050.

Main points made in the book:

- Individual choice - more important; Internet more prominent - for individual lifestyles; women big role in the workplace.

- Flexible learning = more important, particularly post-grad. quas; distance-learning opps. will increase + distance learning courses material = big business.

- We will gain more control over our bodies, and particularly our brains; gain more access to legalised drugs to improve memory and our social lives (I think he under-estimates cultural/religious objections.)

- Longevity will increase in the developed world to 100+ years (but what about quality of life - Alzheimer's Disease)

- Microchip implants in our brains will develop our abilities to communicate with others, including sharing our emotions telepathically with others (!!! This seems a bit improbable)

- These implants will also help us cope with increasing amounts of information. We will also be able to store aspects of our identities, e.g. memories, in databanks (far-fetched/unlikely?)

- We will increase our use of electronic systems to communicate with others, e.g. three-dimensional video systems; growth of electronic comms. will encourage more home working, - but still be a need to meet colleagues socially.

- The trend toward home working will result in less work-related mobility and will encourage the development of community life. However, the lack of mobility may result in fewer houses coming on the market for sale or rent (But this is an ageing society - people die = houses come on market)

- Service sector work will expand and result in a shortage of skilled labour. Employers will need to make work attractive to their employees in order to retain them; a movement away from working in large multi-nat. cos. to more individual forms of working/self employment.
b. Visual or Pattern Notes

Visual notes have been used for centuries for problem solving, particularly in science and engineering. Ideas are presented in a visual, connected way, showing linkages and relationships between elements.

In the last two decades the idea has captured the attention of trainers and educationalists, largely due to the work of psychologist/author, Tony Buzan (1989; 1999), who coined the term ‘Mind-mapping’. Essentially, the idea involves drawing or building a diagram that illustrates free-association or ‘brain-storming’ approaches to thinking.

Mind Maps

The map involves a combination of words and images, and Buzan encourages the use of at least three colours, symbols, and codes to highlight or represent ideas.

The basic approach to producing a mind map is to start in the centre of the page with a key word representing a concept.

From this key word a central line radiates out, linked to another word associated with the starting concept word. From this central line, thinner lines send out radial shoots. Each radial is connected to an off-shoot idea. You can then build up a root-system picture of your thoughts and responses linked to the central idea or concept.

(Wikipedia 2006)
Buzan argues that the approach works best if people relax and let their minds go free and be unrestrained by conventional thinking. He argues it encourages creative approaches to thinking and problem solving, as one thought sparks off another. Mind-mapping is claimed to be effective in helping people to visualise, structure and classify ideas.

Buzan has been successful in promoting his idea, and it has found many champions and advocates in the world of business, education and training.

There are now many web sites promoting mind mapping software and proclaiming the benefits of the process. The following are typical of the claims about mind mapping that you will find on the web:

“Increases your productivity with a ‘ripple effect’ of efficiency through your entire team”

“Brings more clarity and focus to your thinking – Get more done, faster”

“Accelerate your company’s sales, profits, earnings and advance in your career”

But there are few studies so far to support the claims with hard evidence, although one study is mentioned on page 11 of this booklet - and from this particular study it is clear that mind mapping does not suit everyone.

However, it is likely to appeal to people who like to work visually and who particularly like the free-association of ideas approach at the heart of mind mapping.

Although there are many commercial software products on the market to produce attractive mind maps, these are certainly not essential or necessary, as the following illustration of a hand-drawn map shows (from Wikipedia 2006).

The main advantages of mind-mapping would appear to be from the release of ideas that is encouraged by the process.

The technique, therefore, may be particularly useful in examinations, as a way of pre-answer note making to identify and connect the different elements that form part of an answer.

Mind-mapping can also be a useful approach to exam revision, as the process can reveal what you know about a subject, and, perhaps more importantly, what you don’t know – and therefore need to learn.
Concept Mapping

At first glance, mind maps and concept maps (CMaps) appear to be very similar in appearance.

However, the essential difference is that a mind map has one central concept, from which ideas flow, whereas a CMap is a network of linked concepts. The illustration below is an example using CMap software that can be downloaded free from the Internet: available at http://cmap.ihmc.us/download/

Concept maps are particularly useful to seek answers to a particular question, called a focus question. So the focus question above is, ‘what are concept maps?’ The primary question is usually at the top of the page and cross links added between other concepts, with bridging words, e.g. Concept maps help to answer Focus questions, which connect on to other concepts, and so on.

The main advantages of CMaps appear to be in helping students to identify and link key concepts by organizing and analyzing information. The result can also be imported into assignments or into PowerPoint displays to illustrate, graphically, understanding of linkages between ideas.

There is more positive research evidence about the impact of concept maps in educational settings. But again, they do not suit everyone and the software take practice and persistence to use.
It may be too, that people who prefer more linear maps do so because these represent the final outcome of a thinking process that is similar to that illustrated in concept maps; they feel they do not need to show the process: the outcome is presented in the form of bullet points or other linear summary notes.

But for students interested in exploring concept mapping further, there is free software that can be downloaded to help you produce professional looking maps: http://cmap.ihmc.us/

Also, the University has a site licence for the software ‘MindGenius’ to create mind maps, with a facility to transfer document to Microsoft Word and Powerpoint, and this is available on all student machines.

However, this is not essential if you are producing concept maps for personal note making purposes, as you can produce hand-drawn versions, which can serve the same purpose of helping you connect reading done on a particular topic; see the example below. This student constructing the ‘Food Trail’ map below has some drawing ability, but this is by no way essential!

(Note the focus question below at the start: ‘Where does your food come from?”)

(source: Concept Maps 2006).
Fishbone Diagrams

Fishbone diagrams, or ‘Ishikawa diagrams’, named after Professor Kaoru Ishikawa, the originator, are useful for analysis to identify and illustrate cause and effect issues in any situation.

The problem is identified (tip of arrow) and ‘side bones’ are added, as appropriate, to build up a structure perceived to be contributing to the ‘effect’.

Example

These diagrams are now used regularly in quality management and are particularly useful for group analysis and discussion of a problem, as illustrated above.

However, they are also useful as an individual form of note making, especially if you need to build a note picture of a cause and effect situation in preparation for writing an assignment or tackling an exam question.
Using Word Graphics to Create Pattern Notes

You can use the diagram gallery on Microsoft Word to create pattern notes. Go to ‘Insert’ on Word and click onto ‘Diagram’ to select suitable pattern notes.

Examples:

You can add as many boxes, circles or arrows as necessary.
Using a voice-recorder/Dictaphone to summarise the key ideas verbally can work well for some students, as it can help them to concentrate on reading and to summarise in their own words what they have read.

The process of summarising what you have read, heard or seen into your own words can, therefore, help you to focus on the main points and select the right words to express a particular idea.

Listening to your own voice summarising notes you have made in your own words is a powerful aid to memory and can be a particularly effective tool for revision (Cottrell 2003).

The tapes can also be replayed in many situations away from the library or allocated reading areas, e.g. listen while you exercise, drive or travel on public transport.

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**Voice Recognition Software**

You can also combine audio and linear note approaches by using voice recognition software. This will have a triple advantage of making you concentrate on the main points, summarise them in your own words, and give you a printed set of notes for revision purposes.
Other Aids to Note Taking and Making

If you like playing with words, you will probably enjoy making up **mnemonics** to help you remember lists.

You use the first letter of each word you need to remember to make a new word – one that triggers off your memory.

**Example:**

Creative thinking in business can be advanced using a five-step approach. These five key things are summarised by the mnemonic: **FARCE**

<table>
<thead>
<tr>
<th><strong>F</strong></th>
<th><strong>A</strong></th>
<th><strong>R</strong></th>
<th><strong>C</strong></th>
<th><strong>E</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FOUR-WAY THINKING:</strong></td>
<td><strong>ALTERNATIVES:</strong></td>
<td><strong>RE-COMBINE:</strong></td>
<td><strong>CHOOSE &amp; CONSEQUENCES:</strong></td>
<td><strong>EFFECT:</strong></td>
</tr>
<tr>
<td>The way to break out of rigid thinking is to look at the problem from four different directions (front to back; back to front; bottom up; &amp; top down.</td>
<td>Always look for alternatives to the ‘obvious’ solution. If you stop looking, after finding one answer that seems to fit the problem, you may miss a much better solution. So, brainstorm a problem to try and find at least four alternative approaches to solving it.</td>
<td>Once you have a range of alternatives, you can then try and combine these to get a number of creative solutions to a problem.</td>
<td>From these combined ideas, what is the best one? And what would be the consequence of choosing it?</td>
<td>Then you have to try it! You put the idea into <strong>effect</strong>, otherwise all your hard work will be wasted.</td>
</tr>
</tbody>
</table>

(Rose 2000)
Summary

- Note taking and making falls into three main groups: linear; visual/pattern; and audio.

- Effective note taking and making methods are those that best encourage the process of review and recall of what has been learned, and encourage integration of your own perspectives, comments and reflections.

- Although all methods have their advocates and champions, no one method has proven to be more effective than another. Personal preferences and individual learning styles need to be taken into account, and it is worth experimenting with a number of different approaches to discover what works best for you. There is considerable scope too, for experimentation by ‘mixing and matching’ styles of note taking and making.

- Commentators agree, however, that reviewing and discussing your notes with at least one other person is particularly helpful for effective learning.
References


These are all the titles in booklets in the ‘Effective Learning’ series:

1. Return to Part-time Study
2. Return to Full-time Study
3. The First Semester
4. Time Management
5. Accelerated Learning
6. 20 Tips for Effective Learning
7. Six Steps to Effective Reading
8. Effective Note Making
9. Effective Writing
10. Essay Writing (1) stages of essay writing
11. Essay Writing (2) planning and structuring your essays
12. Essay Writing (3) finding your own voice in essays
13. Essay Writing (4) ten ways to liven your essays
14. Why, When and How to Reference
15. Report Writing
16. Pass Your Exams
17. Your Assignment Results – and how to improve them
18. Presentations
19. Group Work
20. Introduction to Research and Research Methods
21. Foundations of Good Research
22. Writing Your Management Project Report or Dissertation

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