

Inquiring about the World 171



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INTRODUCTION

Using the Inquiry Model for Effective Research in a Scientific Context

This unit will provide you with skills, knowledge and resources to conduct a powerful inquiry-based investigation. The unit is set in a science context with a focus on sustainability and the environment, but the skills you will learn can be used in a range of areas:

- Future research-based tasks in your academic course
- Design and development of strategies for improving the information literacy competencies in students that you will be teaching in the future
- Greater confidence and expertise in the use of a range on Web 2.0 tools that you will find useful when you begin to develop curriculum resources for students in your classes
- A good understanding of key aspects of the Australian Curriculum: Science, which will help you to plan valid and relevant student activities in this curriculum area

You will conduct a single topic investigation over 13 weeks around sustainability and the environment and then complete a report and present your inquiry topic in an exhibition. Along the way there will be tasks to complete and tools to use and experiment with. Throughout the unit you will be using a range on Web 2.0 tools which you will review and evaluate.

Why Whale, Sharks and Whale Sharks

Whale sharks are an enigma, they are not whales and they are the largest ocean fish growing up to 40 feet long. Despite the enormous size of these creatures very little is known about their movements and their habits. Whale sharks are found on the North West coast of Western Australia but where they go to breed, how they travel and where they travel to during the months they are not seen off W.A. is unknown. Research is currently under way in W.A. to determine more about these majestic creatures.

Sharks. We have always had a love / hate relationship with these majestic creatures. We love them, we fear them, we eat them and we are enthralled by their behavior. Are there more sharks in the ocean or are there just more people swimming? See our interview. Can inquiry and research answer questions and provide us with a more detailed picture these majestic creatures?

WATCH: National Geographic Whale Sharks <http://youtu.be/1Fp4cBG18R4>

Before You Start Your Inquiry Journey

An Inquiry is a journey not just the destination.

Each week you will be required to reflect on each stage of the process as you undertake your inquiry. This reflection can take many forms:

- It may be a [mind map](#) that shows how you have developed your prior knowledge on your topic.
- It may be the repository of web resources you developed as part of your [content curation activity](#).
- It may be a [dilemma](#) that causes you to reflect on your thinking.

All the tasks form part of your journey that culminates in your final project.

What is Science?

This unit uses the inquiry process to examine scientific questions and so the first question we seek to answer the question 'What is Science?'

Explore now, the purpose and meaning of science and what science means to a wide variety of scientists in the following examples.

1) With Richard Dawkins and Ricky Gervais consider the purpose of science and how it helps us add meaning to our lives (Sex, death and the meaning of life (time 39.30 to 46.45)).

2) Persevere through the early footage of this video to determine why laws/theories are tentative and why evolution should be taught in Dover Schools (USA) (What is science 2.15 -10.0).

3) Some thoughts about the Nature of Science and Science Inquiry by Science Educators Norman and Judith Lederman (p 4-8)

So what is science inquiry and why is it important?

Do you need to have science in your life?

Examine the links below, an article from Ben Goldacres (Bad Science) and a video from Ted about Science.

Videos

Sex, Death, Meaning of Life <http://youtu.be/kw9i7vIWxgc>

Battling Bad Science http://www.ted.com/talks/ben_goldacre_battling_bad_science.html

What is science? What is a scientific theory? http://youtu.be/_JjT_6_mX1k

Readings

What is Science? (See Appendix)

The Nature of Science (See Appendix)

Reflection

In workshops you will often be required to go to Collaborize or Padlet and post your response in the Forum.

Not only will you benefit from sharing your ideas with your peers but it will also provide evidence of your participation in the reflective process.

e.g. You could be asked to comment on a tool you have used in the workshop or an interview you have watched or an issue that has arisen.

You will need the [attached information](#) or the [help page](#) of the website to help you register in Collaborize.

Data Collection

It is very important that you establish a systematic way to collect and collate the information and research data as part of your journey. You may collect lots of data in the form of articles and sheets and if you use the dropbox you can find the information on any computers.

We strongly suggest that you use a facility such as **Weekly task journal** on **BB** to manage these resources. See the help page for support in creating and managing your assessment and for any other technical support you require.

For this unit we are using a survey instrument called survey monkey as our method of data collection enabling us to assess the value to you of the unit. We are seeking to examine the information technology and also the inquiry process that you have used and your experiences. Please complete the **pre survey here**.

Unit Outline

This unit is designed to guide you through the inquiry process and the resulting product of this inquiry will be a report and presentation on a science or social science problem that you have chosen to investigate. For example the question could be Why do whales beach themselves? or Where do whale sharks go during the breeding months? You will then **investigate** the question, **research** the data around the subject and **synthesize** and **create a report** on your findings.

You need to complete the tasks in the workshops in order (week 1 - week 10) as the development of your inquiry skills are as important as the final product. These inquiry skills will be transferable into your science and social science classrooms and will set you on the road to becoming a researcher.

The unit outline is available on the BB site and **here**.

Inquiry in Action

The button accompanying the picture each week will link you to a video that documents **Inquiry in Action**.

We have interviewed and filmed a number of scientists and historians to examine how they use inquiry in real world contexts. Please watch each video before the workshop so you can discuss the inquiry process.

Matrix

See Appendices

Working Together

There are 2 ways to collaborate

- 1) Partnerships - you may choose to work with a partner on the project
- 2) Support and Critique Group - you will be expected to have your project considered by your peer support group and you will participate in the support group to help others refine their project.

Partnerships

You have the opportunity to work with a partner on your project if you want to or you can work alone. If you work together you will create some tasks on your own and others you can create with your partner and hand in one task.

Be aware that although working with someone seems fantastic you need to consider how you will work with them. These issues include

- 1) How will you connect? (will it be face-to-face, Skype Google hangouts etc)
- 2) How often will you connect? (weekly, twice per week)
- 3) Who will be responsible for what tasks? (consider a discussion on diversion of labour before you start)
- 4) Identify which tasks you must complete and which you can complete jointly (see assessment)

Support and Critique Group

Helping you to refine your project and giving feedback comes in several forms, one is through tutor feedback in week 7 when you have your formative project marked and comments made to help you refine your work. The other is through a support and critique group 3 times in week 3, week 6 and week 10.

The purpose of this group of your peers is to provide a place where you can express your problem and others can ask you questions about how you might research, expand, contain and write about it. It will happen in class or for on-line students on discussion board.

You will also be in a S & C group for your peers to help them with their project.

There are **Guidelines** for this process as well as specific questions for each stage

- 1) Use warm feedback and positive comments first
- 2) Use cool feedback carefully and think about your expression (see video right for examples)
- 3) Listen when you should listen and speak when you should speak
- 4) BE SUPPORTIVE (You could be next)



WORKSHOP ONE: YOU AS A LEARNER

Objectives

- Examine a number of models that will encourage students to reflect on their learning styles, attitudes and behaviours.
- Articulate three strategies that help you learn.
- Create a Podcast and post to the weekly journal.

Discussion

Learning Styles

Use the links on the [thinglink](#) diagram of the brain to visit the websites and investigate your learning style. Remember these are only a guide but may help you become cognizant of the ways you collect, retain and share information and knowledge as part of the inquiry in this unit. [Post your findings on our Wall](#). See the Reflection below.

The power of collaboration when it comes to learning new things

There is great truth in the saying 'two heads are better than one' when it comes to innovation and problem solving. You may want to work with a partner on the project. To get ideas on tools to help you set up a useful collaborating environment go here.

Why is collaboration such a powerful catalyst for creative thinking?

What are some of the new innovative ways that we can collaborate now with the support of technology?

Online learning communities use a range of collaborative tools to problem solves and co-create solutions. This may become a powerful learning strategy for you in this unit when you can share interesting websites and tools you have discovered.

Tasks

- 1) Post 2 things you learnt about yourself and your learning styles in 2 sentences on [Padlet](#). Use only your first name and list 5 things you have discovered about yourself as a learner.
- 2) Set up your [Weekly Task Journal](#) in BB and alert your tutor by email.
- 3) Complete the [survey monkey](#) about your on-line experiences and confidence
- 4) Explore [Collaborize](#) as an on-line tool and register to join the unit group by following this link.
- 5) [Create a podcast](#) that answers the question “Is sustainability important to me?” Start this answer with an example of sustainability and then consider how it relates to you in your life so far and then what you think sustainability actually is (don't research it). Total 2-3 mins and then Post the podcast in [Weekly Task Journal in BB](#)

Your Inquiry Journey

- - Complete [survey monkey](#) one about your on-line experiences.
- Read the newspaper and engage in local environmental news to find problems.

[Create a podcast](#) that answers the question “Is sustainability important to me?” start this answer with an example and how it relates to you in your life so far and then what you think that sustainability is (don't research it). Total 2-3 mins and then Post the podcast in [Weekly Task Journal in BB](#)



WORKSHOP TWO: UNPACKING INQUIRY

Objectives

- Consider what is science?
- Define the key aspects of the inquiry process and explain the significance of each.
- Practice the strategy of active reading for understanding.
- Examine the science stories and identify and analyse the inquiry process used.
- Complete a scaffolded investigation about paper towels absorbency.

Discussion

Using the Inquiry Model for Effective Research

This unit is designed to provide you with the skills, knowledge and resources to conduct powerful inquiry based investigations. As you will see there are many similarities between **science inquiry** and the **information literacy process** - we use aspects from both to provide the framework that you will follow over the next 11 weeks.

You will develop a strong foundation that can then be applied to future inquiry-based tasks, not only in your academic course, but as a framework for the development of information literacy competencies in your future students.

Inquiry Method

Empirical inquiry includes "quantitative" and "qualitative" methods that are the types of tangible data assessed using the evidence of our senses. While these kinds of data collection methods are not the only way in which we "know" things, they are useful for testing research hunches or hypotheses in a variety of fields.

Inquiry methods are most often used for two major purposes:

(1) To establish "facts" or recurring regularities in the environment.

Examples of facts include:

- The incidence of violence on high school campuses.
- The number of shark sightings on the WA coast

(2) To test (and, more surreptitiously, establish) causal explanations for established facts. Most theories address explanations for factual material. Explanations typically assert causal relationships among variables of interest.

For example:

- Students who engage in explosive violence on high school campus have been bullied at that school.
- Science professionals have greater access to the Internet at work than other workers do.

Online Resource: Inquiry Method

Tasks

1) Inquiry in action 1. Complete the investigation exactly as outlined and answer the questions. Post your completed investigation in the Weekly Task Journal. Post your answer about paper towels to the Collaborize page

2) With your friends consider the Dilemma here and consider how you would help the whales.

3) Read the science stories of inquiry that have been included. Summarize each briefly, identifying the aspects of the inquiry process and consider the questions asked.

3) Use the newspaper and other sources to identify one fact establishing article and one attempting to establish a causal relationship.

Your Inquiry Journey

From the local newspaper or the Internet find an example of a study that establishes facts and one that attempts to establish a causal relationship.

Readings:

How to: Inquiry Website)

A Case Study of Memory Loss in Mice (See Appendices)

Childbed Fever (See Appendices)

Salem's Secrets: A case Study on Hypothesis Testing and Data Analysis (See Appendices)

Platypus: an antipodal mystery (See Appendices)

Inquiry in Action 1

As we cruise the supermarket aisles we need to choose which products to buy. How can we make a decision about which paper towel is the most effective in soaking up stains?

WATCH: VIVA Paper Towels Ad Featuring Trevor Heins <http://youtu.be/kw9i7vIWxgc>

Question

Which paper towel brand will soak up the most water?

Independent variable (we are changing)

Type of paper towel

Dependent variable (we are measuring)

Measure the amount of water soaked up

Controlled variables (all other variables need to be controlled)

- The size of the paper towel, time of towel in water
- The place where the water has been spilled
- The measuring container

Can you think of anything else?

Materials

Paper towels (3 types A, B, C), water (coloured), measuring device, container, scissors.

Method

- 1) Cut the paper towels so that they are all the same size and shape
- 2) Fill a container with 30 ml of coloured water
- 3) Put the paper towel into the container and wait for 30 seconds
- 4) Pull out the towel and wait until the towel has stopped dripping
- 5) Then measure the amount of water remaining in the containing using a measuring cylinder
- 6) You need to repeat this investigation with each brand of paper towel, and you need to repeat the investigation three times each.

Results (see the table and graph attached)

Discussion

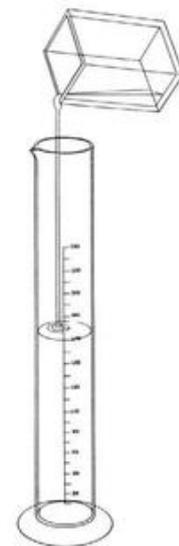
The graph shows that the paper towel 3 absorbs the most water and paper towel 1 absorbs the least amount of water. So the best paper towel is paper towel 3. The science behind this phenomena relates to the design of the paper which impacts on the capillary action and consequently the absorbency.

PMI Positive Negative and Improvement

Positive-

Negative - the paper towel dripped on the bench and not in the container

Improvement - the measuring cylinder was only accurate to 2 ml, more trials would improve the accuracy of the investigation





WORKSHOP 3: DEFINING

Objectives

- Identify 2 research areas that interest you.
- Using 1 mind mapping tool and 1 graphic organiser on-line tool identify all the prior knowledge and general information about each area and other related topics identified.
- Explore the topic of emotional bias about sharks, consider the websites and highlight the use of emotive imagery and language.
- Create an avatar that will provide a brief overview of the topic

Discussion

Defining the topic

At the start of an investigation it is important to be clear about the topic, issue or problem.

Here are some questions you need to ask yourself before you start.

- What do I want to find out about the topic?
- What do I already know?
- Who is the audience for my final presentation / product?
- What kind of information / data do I need to find?

How will this learning change my thinking / knowledge?

Identifying prior knowledge

Before you begin your inquiry you need to identify prior knowledge / understandings/ or preconceptions about the topic or issue. This initial task will not only clarify the extent of your knowledge but also establish the "gaps" in your understanding.

(A **KWL chart** provides a simple framework to document this knowledge and is an excellent tool to use in this **Defining** stage).

Identifying information needs

Use the graphic organisers and mind mapping tools to start expanding your ideas. You need to examine each of the tools we have provided and then pick one tool from each category and start to populate it with your ideas and what you already know. Use the pages attached through the buttons below to complete Task 2.

Emotions and Bias

Many interesting topics around the environment and sustainability are charged with emotion. Whilst this is normal, you need to be aware of the two sides to every situation and be able to put the emotion aside at least initially to gather your data and complete your analysis. Visit the page on emotions through the button below and complete Task 1.

Tasks

There has been a significant increase in fatal shark attacks in Australian Waters.

- 1) Explore how emotional bias will affect research and/or proposals around this issue. To do this choose 1 website on the emotions page and highlight the use of emotive imagery and language and explain how this helps to create their message.
- 2) What might constitute an educational or academic website? Explain
- 3) Use 1 **mind mapping tools** and 1 **graphic organizer tools** to explore 2 topics (1 tool type for each topic)

- 4) Create a Voki about the topic you have chosen. In 75 words explain what problem you have chosen and post it on Collaborize. The Voki should identify the problem and why you have chosen it (this will form the beginning of your rationale).
- 5) Time to support your peers and perform a critique, to present your data to your peer group and get feedback and critique. Critique and Support - Questions and Instructions here.

Your Inquiry Journey

ASSESSMENT 1

15%

Submit in the Assessment 1 Drop Box in Blackboard

a) 1 mind map or 1 graphic organizer that illustrates the planning for the investigation you have chosen.

b) Submit the URL of the Voki you have created that outlines the problem you have chosen in 75 words.

Readings

Emotional Bias

Emotions

Emotions are an important part of our lives and are necessary to keep us functioning. But coming to a topic with a very strong bias will prevent you from considering all the data available and prevent you from being able to be objective in your analysis

Help me please!!

Hello. My name is Cyril the shark and I want to talk about sharks in the ocean. Now there has been a lot of hysteria recently about the number of people interacting with us sharks and we have heard that there are plans to catch, kill and drive us away. Before we all get completely carried away can we have a look at the facts! How many sharks are there currently on the West Australian coast? Are there more swimmers in the water at times of low light? Where are the local fish shoals? So before anyone rushes off to buy a large fishing hook and cooks chips we need to have more data

Finding authentic, authoritative sources of information on the web.

When searching for quality resources on the internet it is important to ensure the information is objective, unbiased and accurate. Use the websites below and pick one and look at the emotive language used to create a feeling about this issue.

Mindmapping

A mindmap is a great way to record your information as you do research. You can use colours, pictures, shapes...anything you like to help you organise information. Lines help you to connect information that goes together. You can draw these maps on paper or you can use some great Web 2.0 tools and iPad Apps to create your maps.

Graphic Organisers

Graphic Organisers allow you to strategically place information on a prepared framework. This helps you to organise your information as you conduct your inquiry and links information to develop concepts and relationships.



WORKSHOP FOUR: DEVELOPING AND REFINING YOUR RESEARCH QUESTIONS

Objectives

- Identify area of interest and expand the mind map.
- Synthesize a variety of questions using the models: the 5Ws, Question Matrix and Blooms Taxonomy.
- Create question(s) to answer in your investigation.

Discussion

The question is the answer

The quality of questions that you ask will determine the focus and depth of your inquiry. There are a number of frameworks that you can use to help broaden your questions and thinking. Examine each of these frameworks to expand the questions around your chosen topic. Some questions will not be suitable or re-searchable, but it is important to have an understanding of the different approaches to questioning that you can use both for personal use and as an educator.

Questioning Resources

The 5Ws
 Question Matrix
 Six Thinking Hats
 Bloom's taxonomy of Questions
 The Question Toolbox
 Open and Closed Questions

Inquiry in Action 2 (see appendix)

Complete **Inquiry in Action 2**.

It is a simple inquiry to answer another very important question.

Under what conditions will the headache tablet dissolve most quickly?

You need to design the methodology yourself focusing on making your investigation as accurate as possible.

Tasks

- 1) Examine all the questioning tools that have been provided for you and **use** them with your topic to create as many different questions as possible. Choose 3 or 4 open ended questions that will form the basis of your inquiry.
- 2) Inquiry in action 2. Design and complete the investigation as outlined and answer the questions. Post you completed investigation in the **Weekly Task Journal**.
- 3) Answer the question on Collaborize - 'Which tool has generated the best questions for your investigation?'

Your Inquiry Journey

Post in [Weekly Task Journal](#) a list of 3 or 4 questions that will form the framework of your topic and lead your investigation.

Resources

These websites provide a range of templates and approaches to developing powerful questions

- Questioning (From Making Metacognition Mainstream)
- The Question (Inquiring Mind)
- Dimensions of Learning and the Questioning Process
- Question Skills

Questioning Techniques

Readings

Effective Questioning Handout

Inquiry in Action 2

You have a really bad head ache and need to dissolve the pain killer as quickly as possible. Instead of icy water would water at room temperature water be quicker, or even warm water What temperature enables the tablet to dissolve most rapidly?

WATCH: Tablet Dissolving RnD <http://youtu.be/gF1xQaIgmao>

Question

What temperature of water would see the tablet dissolve most rapidly?

Independent variable (we are changing)

Temperature of the water

Dependent variable (we are measuring)

Measure the time it takes for the tablet to dissolve

Controlled variables (all other variables need to be controlled)

Materials

Complete the rest of the experiment

Method

- 1)
- 2)
- 3)
- 4) etc

Results (see the table and graph attached)

Discussion

The graph (is it a line or bar graph?) shows

The science (can you explain this phenomena)

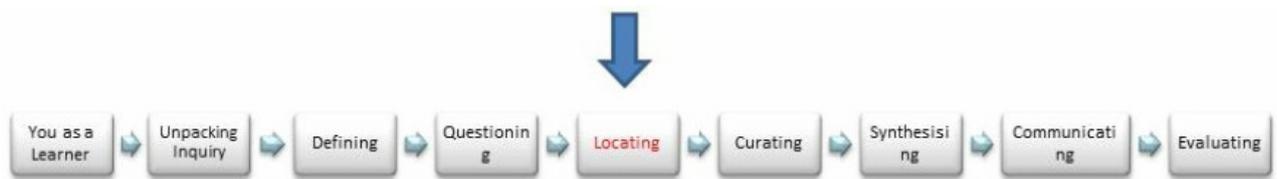
PMI Positive Negative and Improvement

Positive-

Negative - the paper towel dripped on the bench and not in the container

Improvement - the measuring cylinder was only accurate to 2 ml, more trials would improve the accuracy of the investigation





WORKSHOP FIVE: LOCATING RICH SOURCES OF DATA AND INFORMATION

Objectives

- Identify the issues and advantages surrounding primary and secondary sources of knowledge.
- Facilitate on-line searches using a variety of search engines.
- Consider the advantages and disadvantages of qualitative vs. quantitative data and work with statistics.
- Identify creative commons information and describe its benefits.

Discussion

Sources of Knowledge

Finding and Organising information

How do you know what is an authoritative source of information and where are the best places to get this information?

There are millions of online information sources with varying degrees of accurate information. In many instances data integrity is not an imperative BUT when it comes to making an informed decision about something important then data and information accuracy is essential.

So how do you know that the information is accurate and that it has been sourced from an organisation or an individual who is an acknowledged and reputable authority?

To Google or Not to Google!

While Google is perhaps the most popular search engine on the web today there are many other search engines available - some of which have been specifically designed with education in mind.

Now though Google scholar provides parameters that you can use when you search to limit the search to full papers. See the link here to find out howGoogle scholar

'Good' versus 'bad' information

When conducting research how do we know whether a resource is authoritative or not?

How do we become discerning users of information?

To help you learn how to interrogate web resources complete the task below as part of your Research Journey.

Creative Commons and Copyright

The issues of copyright, intellectual property, creative commons and co-creation of information are all aspects of the inquiry process that need to be considered when conducting your inquiry. While it is not a focus of this unit it is still an important area of consideration when using information that is found on the web.

The importance of data sources for scientific inquiry

It is important that you approach inquiry with skepticism. Some amazingly strange and bizarre research has been carried out over the years. Some would never be authorized now due to

ethics constraints or as we discover more information about the area of research and revise ideas. Here are some of the considerations that we need to review.

a) Peer Review

What is the source of the material? This relates to when and where it was published. This is important as when papers are printed in a reputable journal they have been subjected to extensive peer review. That means it has been examined and considered by others in the field.

b) Replicable

Has the methodology been extensively examined? When the methodology is listed other researchers can review the method used and replicate the results. If the results are replicable then it gives the results more value.

c) Generalisable

Are the results able to be generalised to other situations? If the research looked at the action of a new drug on the mind of small mammals such as mice, there is no way the research can be applied to humans without further research. Studies on the effect of caffeine on post-menopausal women yield different results from the effect of caffeine on young male athletes under 25 years old.

Interpreting Data

Ensuring that you can read and examine the data presented to you and make sense of the information is vital. These short articles examine the data related to infectious diseases and are from Health Protection Agency in the UK. Download all the 3 PDF's attached to the buttons to the right and examine the data collected and presented to answer the questions contained below.

Tasks

- 1) Use 2 search engines and search the same phrase related to your investigation to determine what different sites are presented to you.
- 2) Complete the Questions relating to the data on infectious diseases presented above which will help you interpret and understand statistics.
- 3) Evaluate the 5 websites on the scoop.it site using the rubric provided and determine which sites contain reliable material and why you think it is reliable.
- 4) Visit the ethics page and read the information provided. Document your thoughts and comments on the report.
- 5) Conduct a virtual tour of the library (via website). What does this strange building have for you that you can utilise to complete this investigation? For real excitement take an actual tour.
- 6) Comment on the statement on Collaborize 'How do the notion of creative commons impact on plagiarism at University?'
- 7) On Padlet post a comment to 'Does the end justify the means with research in relation to the Tuskegee Report?'
- 8) Time to support your peers and perform a critique, to present your data to your peer group and get feedback and critique. Critique and Support - Questions and Instructions here.

Your Inquiry Journey

On Padlet post a comment to 'Does the end justify the means with research in relation to the Tuskegee Report?'

Assessment

Assessment 2 20%

Post in Assessment Drop Box 2 on BB your completed proposal form that includes the problem, questions, a rationale, mind map and summary of 4 key references

Readings

Malaria Deaths
Malaria Countries
Salmonella

Questions

From *Imported malaria cases and death, United Kingdom 1992 – 2011*

- 1) Which year had the most deaths in the UK as a result of Malaria?
- 2) Which year had the most recorded cases of Malaria and how many cases were there?
- 3) Describe the trend of Malaria cases in the UK from 2000 to 2011.
- 4) Do you feel that there is an overall meaningful reduction in the number of Malaria cases in the UK over the years the data has been recorded? Explain
- 5) Research Malaria and describe how it is spread. From your newly acquired knowledge do you think Malaria is spread in the UK or are all the cases imported from overseas? Explain your answer.

From *Imported malaria cases by species and region of travel, United Kingdom 2007 – 2011*

- 6) Use the data in the table from 2011 only to plot the number of cases of malaria in the UK from the different parts of Africa. (Hint will this be a bar graph or a line graph). Include your hand drawn graph with these questions.
- 7) Which continent has the greatest cases of Malaria?
- 8) Why is Europe not included?



WORKSHOP SIX: CURATING

Objectives

- Evaluate sources of knowledge and make decisions on the quality of data collected.
- Create a digital organizer.
- Create a reference list using EndNote or similar programme.

Discussion

What is content curation?

Pulling together information is an important part of research, and then storing that information in such a way that it is easily accessed at a later date is equally important. **Curation tools** are ways of capturing, organising and holding useful information to be accessed at a later day.

You need to decide, by examining the tools below, which curation tool you will use for your inquiry and then start searching and collating material pertinent to your chosen topic.

Content Curation Tools

Scoop.it
 Edcanvas
 Evernote
 Themeefy
 Bag the Web
 Learnist
 Pinterest

Sources of Knowledge

Primary and **Secondary** Sources of Information

Primary sources of knowledge are the original documents, photographs, letters, manuscripts, reports and statistics that have been created by an individual. If you are using the work of others then you are using **secondary sources of information**.

As you complete your topic investigation you will not be collecting data (primary source) you will be analysing materials you have collected from the web or other reports and sources (secondary source). You need to analyse the secondary data and ensure that it is reliable, accurate and valid.

Referencing

It is imperative that you reference all of your sources of information as you collect your data. The Curtin Referencing Guide is what you will need to follow....See Appendices

Referencing at Curtin
 Endnote (free download for Curtin students)
 APA Referencing Guide
 Getting Started with Endnote

Tasks

- 1) Inquiry in action 3. Design and complete the investigation as outlined and answer the questions. Post you completed investigation in the **weekly task journal**
- 2) Examine data that contains qualitative and/or quantitative information and consider the limitations and advantages of each.
- 3) Examine a range of digital organisers, select one to store and organise your collected information.
- 4) Begin to generate a reference list using End note to capture and display your references correctly.

Your Inquiry Journey

Create a reference list and add it to your Proposal and Post all in **weekly task journal**

Inquiry in Action 3

Complete **Inquiry in Action 3** below.

It is a simple inquiry to answer another very important question. This time it relates to Hot cars in summer?

You need to design the methodology yourself focusing on making your investigation as accurate as possible.

Children in hot cars is a tragic and terrible thing and there is always a story over the summer where a child is rescued or dies in a hot car. How hot do cars get in the sun and is there a large difference between a white car and a dark (black) car.

Inquiry in Action 3

Design an investigation to test the temperature of a white car (or similar object) against the temperature of a black car over a set time (1/2 hour or short shopping trip)

Question

What

Independent variable (we are changing)

Dependent variable (we are measuring)

Controlled variables (all other variables need to be controlled)

Materials

Method

- 1)
- 2)
- 3)
- 4) etc

Results (see the table and graph attached)

Discussion

The graph (is it a line or bar graph?) shows

The science (can you explain this phenomena)

PMI Positive Negative and Improvement

Positive-

Negative -

Improvement





WORKSHOP SEVEN: SYNTHESISING

Objectives

- Examine the reporting style and using that format to synthesize your report.
- Review your report using formative assessment to guide their progress and make appropriate modifications.
- Synthesize data into a report format examining the structure and type of language.

Discussion

Synthesising your paper

This is where you need to start synthesizing your information into a report. You will need to use the skills you acquired in your literacy unit and apply them here.

There is a specific style that you need to use for a report and an example is attached here for you to consider. Read the report carefully and identify the major headings, relevant sections use of appendices.

Ethical use of information and avoiding plagiarism

Correct referencing and ethical treatment of the data is important; the notion of plagiarism is one that continues to plague students through out their University career.

The only way that best describes the notion of plagiarism is to explain it like this.

Coke is a product of the Coke Cola Corporation but if you copied the can, the shape, the colour and the style and said the 'can' was your own then that would not be right and the company would be unhappy - the company would probably prosecute you.

When academics write papers, the ideas contained within are their **products** and if you copy them then without acknowledging the author, then you are plagiarising - you are pretending their ideas are your own.

Plagiarism

Assessment

There are several assessment tasks through out the unit.

Week 6 Formative Assessment - you will get feedback from your tutor to refine your developing report.

Week 10 Summative Report - this will contain your report on your chosen problem and aspects of the inquiry

Formative vs Summative

Formative assessment is important in helping to craft reports, with feedback given to enable refinements to be made in the final product. It is important to realize that all the comments and changes suggested by your tutor while appearing terrible and demoralizing are actually positives to help you create a much better finished product.

Summative assessment is a final assessment of the whole body of work and there is no opportunity to make changes - it is assessed as it stands.

Task

These tasks may take several weeks to complete

- 1) Highlight the key aspects of the report style with a focus on the headings that guide the report you are creating
- 2) Search the Curtin library and other digital sources to continue to synthesise the data in the literature review
- 3) Review the Universities plagiarism documents and website to be very clear on what constitutes plagiarism and how to avoid this in your writings. Consider how Turnitin works and how it can impact on a cut and paste effort
- 4) Continue to craft your inquiry topic, drawing on your tutor's formative comments and your internet and library studies.
- 5) Examine the summative framework and the marking guide to ensure you address the necessary criteria and read the information about report writing

Your Inquiry Journey

On Padlet site post a comment about how you see plagiarism.' Is it a big deal or just the University making a fuss?'

Formative Feedback from your tutor.



WORKSHOP EIGHT: COMMUNICATING

Objectives

- Examine the presentation tools provided detailing how each can be used (on-line or in person).
- Select a tool that would be suitable for presenting the research and briefly explain why it was chosen.
- Consider what factors are important in creating a successful presentation.
- Create a presentation that clearly and concisely articulates the key sections of the report.

Discussion

Creating Powerful Presentations (beyond Powerpoint)

There are many different ways that you can present your findings or the outcome of your research. The presentation format you use will greatly depend on the purpose and audience for your tasks. More and more, with the advent of new technologies, we can merge mediums (mashups etc) to creatively present our work and share with a world-wide audience. Listed below are a range of presentation and digital storytelling tools that you may consider using for your final product.

This video tells you what not to do with a power point and other examples can be found on the technical help page. Link: <http://youtu.be/KbSPPFYxx3o>

Presentation Web 2.0 Tools

Slideshare
 Prezi
 Slidebomb
 Author Stream
 Empressr
 Zoho Show
 Pixorial

Digital Stories

Digital stories are becoming a popular way to make presentations. They combine text, images, sound and movies to connect with the audience. Here are just a few that are available, many are free or have a free version which makes them very accessible for students and schools.

Storybird
 Slidestory
 Animoto
 Smilebox
 VoiceThread
 Capzles

Task

- 1) Examine the presentation tools and select 3 of the tools listed and create a brief summary to explain how to use the tool and any advantages and disadvantages. Explain as if to a novice or a year 7 student.
- 2) Select a tool that would be suitable for presenting your research and briefly explain why you are using this tool and who your audience would be.
- 3) Identify the audience with whom you want to share the presentation
- 4) Watch the video of 'what not to do' in creating a power point

- 5) Identify the key points for your presentation and create your presentation.
- 6) Critique and Support - Questions and Instructions here

Your Inquiry Journey

On Collaborize post any questions and any useful finds (websites, tools etc.). This will help you and your peers and as you all have different topics.

Assessment

| | |
|--|------------|
| Assessment 3 Inquiry Project Using the summative proforma attached to add to the work and complete a project report of your problem max 3000 words | 30% |
|--|------------|



WORKSHOP NINE: EVALUATING

Objectives

- Reflect of the inquiry process undertaken.
- Identify the strengths and weakness of your skills in each stage.
- Summarise how the knowledge and skills learnt in this process will be of benefit.
- Examine the inquiry strand of the Australian science curriculum.
- Present the findings of the project and as a consequence the answers or findings of their inquiry.

Discussion

Reflection

- a) How is your thinking about science inquiry changed?
- b) Now you have completed the process, what do you see as the essential skills that need to be mastered to conduct effective inquiry?
- c) From the technology tools you have used which do you think has the highest value for you as a learner? Why?

Task

- 1). Complete the self-assessment rubric on the process and knowledge gained with a PMI of your strength and weakness.
- 2) Reflect on the questions around your learning and discuss your completed rubric in class
- 3) Now you have completed the process, what do you see as the essential skills that need to be mastered to conduct effective inquiry?
- 4) From the technology tools you have used which do you think has the highest value for you as a learner? Why?
- 5) Examine the Australian Curriculum: Science, considering specifically the science inquiry strand, list the key aspects of the inquiry process, describing specifically what you have done in this unit for each of these key aspects. Which aspect did you find most challenging?
- 6) What aspect do you think would be most challenging for a: Year 3 student?, a year 6 student? A year 10 student?
- 7) Justify your answers
- 8) Display your project in the format you have chosen

Your Inquiry Journey

- 1) Complete the Survey Monkey survey about your on-line experiences.
- 2) Hand in your presentation through the Submission point Assessment 4 box on BB.
- 3) Create a podcast that answers the question “sustainability?” consider how sustainability connects to your project and your life. Total 2-3 mins and then Post the podcast in Weekly Task Journal in BB

EXTRA

Sustainability

Why do whales beach themselves and should humans try to help them. Do we have a responsibility to help? As we have the capacity to engage in ethical conversations and act with compassion should we? If we take this further should we consider our decisions about how we live our lives, how we use limited resources such as energy, and reduce over using other resources such as plastic bags. Should we be considering the impact on the environment and how sustainable our lives are?

What is Sustainability?

Humanity has the ability to make development sustainable to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs. (Brundtland Report 1987 p 24)

Questions about what 'humanity' does or does not do in order to preserve and sustain the environment has been an issue for many years now. Sustainability has been an important focus for scientists and science educators for many years. As the biggest impacting species in the world with the capacity for reflection and ethical behavior should we be considering as stated in the Brundtland Report (1987) our impact on the current environment and on the future?

Consider the Whale Dilemma (from Dilemmas website)

You and your family are on holidays on the south-east coast of Tasmania. You suggest a beach walk on a remote beach about 5 minutes from your chalet. Whilst walking on the beach you notice a large dark patch in the water off in the far distance. Excitement spreads through the whole family. This is what you came to Tasmania for, this is whale watching season. Could this be a pod of whales on their way down to Antarctica? As you move closer to the dark patch you notice it is not out in the ocean, but quite close to the beach. The feeling of excitement from the groups starts to dissipate and a very different feeling descends upon the group.

You come across 100 or more adult Long-finned Pilot Whales that are either in shallow water or on shore. Some are already dead but some are still alive. The species is not endangered but they are listed as "Lower Risk; conservation dependent" on the Red List of Threatened Species of the International Union for the Conservation of Nature and Natural Resources (IUCN). Tourists and locals are present on the beach around the whales and they are asking what course of action should be taken. Three options emerge; do nothing, euthanize the whales that are still alive or push the whales back into the water.

1 What would you do? Why? (Discuss this with a peer, friend or family member)

The decision to push the whales back into the water is taken and while you help, the National Park ranger tells you about the whales. Each whale 3.5 to 5 m long and weighs between 1.5 and 3 tons, for females and males. Males live for about 45 years and females for about 60 years. Whales are social animals living in large groups with a leader and a communal support system in which weaker or endangered animals are helped by the rest of the pod. The groups are mainly 10 to 30 in number, but

some groups may be 100 or more. They eat mainly squid. Some of the females are pregnant. It takes a lot of work and effort to push each whale back into the water. It is obvious that you will not have enough time to save them all.

Q 2 Which animals would you push back first? Why? (Discuss this with a peer, friend or family member)

This group of stranded pilot whales has attracted the attention of a group of Marine scientists who would like to take tissue and blood samples to study the whales and try to find some explanation for the stranding. The scientists want to know if the whales are closely related using DNA profiling techniques and assess their health by testing for toxic poisoning, infection or organ failure. All these causes have been observed in other single stranded cetaceans.

Q 3 Would you agree for the scientists to take samples from all the whales? Why? (Discuss)

After 2 days, only a dozen whales have been successfully pushed back into sea because each animal needs to be put on a sling and dragged across the sand of the sea bed to deeper water. Their skin is fragile and the crew does not want to harm them further. Also, because the beach is in a remote part of Tasmania, it is impossible to use heavy equipment to lift and put the animals back in the water because there is no dock or access road for heavy equipment. The whales cannot be towed from the beach to the water using a towboat because it would break their back. Time is crucial and it becomes obvious that some animals will not be rescued. Before whaling bans, the pilot whale was hunted for meat and fat. It is possible to contact a company that would euthanize the remaining whales and process them for fat. The company will take only the animals that are freshly killed and would pay for each whale. This money would help to cover part of the cost of the rescue. Because they want to process the meat and fat for human consumption, the company propose to euthanize the whales by blowing their heads off with a small explosive, rather than an overdose of drugs which would render the meat unfit for consumption.

Q 4 Would you agree for the company to euthanize the remaining whales and process them? Why? Do you agree with this method of euthanasia? Why? (Discuss)

A few months after the event, the scientists publish their finding in a public report. The scientists point out that the causes for the stranding of cetaceans are numerous and not fully understood. One of the hypotheses proposed by the scientists is that the whale's navigation system and communication was disturbed by ultrasound emitted during sonar equipment testing by the Navy. The number of cetaceans stranded on beaches has doubled over the last decade in the UK. There are no reliable data available for Tasmania.

Q 5 If you knew that the whales beached themselves because of human activities, would you have taken the same decision in Q 1? Why? If you found that it was due to a genetic mutation in the whale would that change your decision?

Task

What, if any, responsibility do we have to the environment and how do the problems we are considering touch the area of sustainability. Discuss your response in a 2 mins podcast and post.

Resources

Australia Curriculum - Sustainability

Readings

Whale Rescue Dilemma (See Appendices)

Science in the Australian Curriculum

Science Inquiry Skills

Although this unit 'Inquiring about the world' does not focus specifically on science in the Australian Curriculum it is important, when you are navigating your way through the activities and exercises, that you become aware of where the process of Inquiry sits within the new curriculum. **Science Inquiry Skills** are one of the three key components of the Content Structure of the Science Curriculum - the other two being **Science Understanding** and **Science as a Human Endeavour** (see below for a more detailed description).

The following extract from the Australian Curriculum website will give you an overview of the key features of the Science Curriculum

Science in the Australian Curriculum

The Australian Curriculum: Science provides opportunities for students to develop an **understanding** of important science concepts and processes, the **practices** used to develop scientific knowledge, of science's contribution to our culture and society, and its **applications** in our lives. The curriculum supports students to develop the scientific knowledge, understandings and skills to make informed decisions about local, national and global issues and to participate, if they so wish, in science-related careers.

The science curriculum promotes six overarching ideas that highlight certain common approaches to a scientific view of the world and which can be applied to many of the areas of science understanding. These overarching ideas are **patterns, order and organisation; form and function; stability and change; systems; scale and measurement; and matter and energy**.

Content Structure

Science has three interrelated strands: **Science Understanding, Science as a Human Endeavour** and **Science Inquiry Skills**.

Together, the three strands of the science curriculum provide students with **understanding, knowledge** and **skills** through which they can develop a scientific view of the world. Students are challenged to explore science, its concepts, nature and uses through clearly described inquiry processes.

Science Understanding

Science understanding is evident when a person selects and integrates appropriate science knowledge to explain and predict phenomena, and applies that knowledge to new situations. Science knowledge refers to facts, concepts, principles, laws, theories and models that have been established by scientists over time.

The Science Understanding strand comprises four sub-strands. The content is described by year level.

Biological sciences

The key concepts developed within this sub-strand are that: a diverse range of living things

have evolved on Earth over hundreds of millions of years; living things are interdependent and interact with each other and their environment; and the form and features of living things are related to the functions that their body systems perform.

Chemical sciences

The key concepts developed within this sub-strand are that: the chemical and physical properties of substances are determined by their structure at an atomic scale; and that substances change and new substances are produced by rearranging atoms through atomic interactions and energy transfer. In this sub-strand, students classify substances based on their properties, such as solids, liquids and gases, or their composition, such as elements, compounds and mixtures.

Earth and space sciences

The key concepts developed within this sub-strand are that: Earth is part of a solar system that is part of a larger universe; and Earth is subject to change within and on its surface, over a range of timescales as a result of natural processes and human use of resources. Through this sub-strand, students view Earth as part of a solar system, which is part of a galaxy, which is one of many in the universe and explore the immense scales associated with space.

Physical sciences

The two key concepts developed within this sub-strand are that: forces affect the behaviour of objects; and that energy can be transferred and transformed from one form to another. Through this sub-strand students gain an understanding of how an object's motion (direction, speed and acceleration) is influenced by a range of contact and non-contact forces such as friction, magnetism, gravity and electrostatic forces. They develop an understanding of the concept of energy and how energy transfer is associated with phenomena involving motion, heat, sound, light and electricity. They appreciate that concepts of force, motion, matter and energy apply to systems ranging in scale from atoms to the universe itself.

Science as a Human Endeavour

Through science, humans seek to improve their understanding and explanations of the natural world. Science involves the construction of explanations based on evidence and science knowledge can be changed as new evidence becomes available. Science influences society by posing, and responding to, social and ethical questions, and scientific research is itself influenced by the needs and priorities of society. This strand highlights the development of science as a unique way of knowing and doing, and the role of science in contemporary decision making and problem solving. It acknowledges that in making decisions about science practices and applications, ethical and social implications must be taken into account. This strand also recognises that science advances through the contributions of many different people from different cultures and that there are many rewarding science-based career paths.

The content in the Science as a Human Endeavour strand is described in two-year bands. There are two sub-strands of Science as a Human Endeavour. These are:

Nature and development of science: This sub-strand develops an appreciation of the unique nature of science and scientific knowledge, including how current knowledge has developed over time through the actions of many people.

Use and influence of science: This sub-strand explores how science knowledge and applications affect peoples' lives, including their work, and how science is influenced by

society and can be used to inform decisions and actions.

Science Inquiry Skills

Science inquiry involves identifying and posing questions; planning, conducting and reflecting on investigations; processing, analysing and interpreting evidence; and communicating findings. This strand is concerned with evaluating claims, investigating ideas, solving problems, drawing valid conclusions and developing evidence-based arguments.

Science investigations are activities in which ideas, predictions or hypotheses are tested and conclusions are drawn in response to a question or problem. Investigations can involve a range of activities, including experimental testing, field work, locating and using information sources, conducting surveys, and using modelling and simulations. The choice of the approach taken will depend on the context and subject of the investigation.

In science investigations, collection and analysis of data and evidence play a major role. This can involve collecting or extracting information and reorganising data in the form of tables, graphs, flow charts, diagrams, prose, keys, spreadsheets and databases.

The content in the Science Inquiry Skills strand is described in two-year bands. There are five sub-strands of Science Inquiry Skills. These are:

Questioning and predicting: Identifying and constructing questions, proposing hypotheses and suggesting possible outcomes.

Planning and conducting: Making decisions regarding how to investigate or solve a problem and carrying out an investigation, including the collection of data.

Processing and analysing data and information: Representing data in meaningful and useful ways; identifying trends, patterns and relationships in data, and using this evidence to justify conclusions.

Evaluating: Considering the quality of available evidence and the merit or significance of a claim, proposition or conclusion with reference to that evidence.

Communicating: Conveying information or ideas to others through appropriate representations, text types and modes.

Content Descriptions

The Australian Curriculum: Science includes content descriptions at each year level. These describe the knowledge, concepts, skills and processes that teachers are expected to teach and students are expected to learn. However, they do not prescribe approaches to teaching.

Retrieved from: <http://www.australiancurriculum.edu.au/Science/Content-structure>

APPENDICES

Planning and Report Worksheet for Science Investigations

Phase one: Planning

What is the problem you are investigating?

What do you know about this topic from personal experience and from science?

What variables may affect the phenomenon you are investigating?

Which of the variables are you going to investigate as your independent variable? (This is the variable you will change to see what affect it has on the dependent variable)

How will the independent variable be changed in the experiment?

What is the dependent variable? (ie the variable that responds to changes in the independent variable)

How will you measure the dependent variable?

What question are you investigating?

OR

What hypothesis are you testing? State your hypothesis as a relationship between the independent and dependent variables.

Predict what you think will happen. Explain why.

What variables are to be controlled (kept constant) to make it a fair test?

Describe your experimental set-up using a labelled diagram and explain how you will collect your data.

Are there any special safety precautions?

Phase two: Experimenting

Carry out some preliminary trials. Were there any problems?

How did you modify your experiment to fix the problems?

Collect and record the data you need to test your hypothesis. Draw your data table here.

Title _____ of _____ table:

How did you make sure your data were accurate?

Phase three: Data analysis

What is the best way to present your data? Is it appropriate to draw a graph? What type of graph is most suitable?

Remember to plot the independent variable on the horizontal axis.

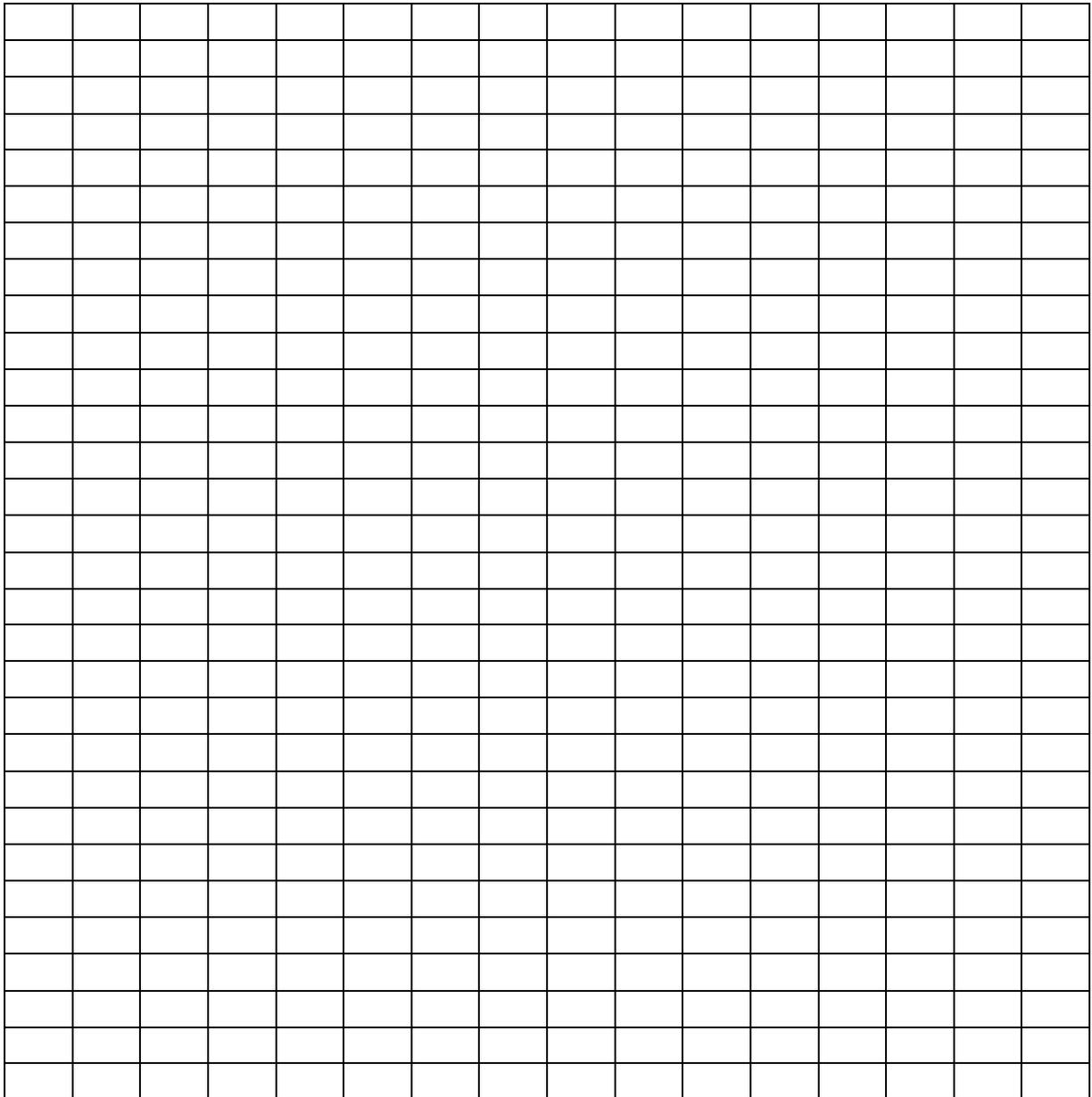
Remember that the title of the graph should mention both the independent and dependent variables.

Analyse your data. Are there any patterns or trends in your data? What is the relationship between the variables you have investigated? Is the hypothesis supported by the data?

Using science concepts explain the patterns, trends or relationships you have identified in your data. What is your conclusion?

Draw your graph on this page.

Title: _____



Phase four: Evaluation

What were the main sources of experimental error? (sample size and selection, measurement error, poor control of variables)

How confident are you with your conclusions? How much uncertainty/error is associated with your data?

How could the design of the experiment have been improved to reduce error?

What have you learned about the topic of your investigation? Was the outcome different from your prediction? Explain.

What have you learned about the methods of investigating in science?

The Six Steps of Investigation

First

Write a short statement that makes clear what the problem is that you have to solve. Also write a research question or hypothesis, and then a prediction. Give a reason for your prediction.

Second

Write a plan which says what you intend doing. Say what you will do to make any tests fair. Explain what measurements are to be made and how they will be made. Draw a diagram to show how the equipment will be used to conduct your tests.

Third

Carry out your investigation and record all your observations and measurements. If you found that you needed to change your plan write down what changes were made and why they were necessary. Present your data in a way that helps show the patterns or trends in your results.

Fourth

Write a couple of paragraphs in response to these questions: What patterns or trends were present in the results? How do you explain the patterns? What did your results show you about the question or hypothesis that you were investigating?

Fifth

Write a paragraph that evaluates your investigation. Were your findings what you expected? To what extent did you reduce the errors associated with measurements, controlling variables and sampling?

Sixth

How will you communicate your findings? Who is the 'audience' for your report? What will be the most appropriate means of communicating your findings – a formal written report, a poster, an oral report, a PowerPoint presentation?



the scientific endeavour, however, students have consistently been shown to possess inadequate understandings of several aspects of the NOS and scientific inquiry (Lederman & Niess, 1997).

An understanding of the NOS and scientific inquiry underlies the essence of effective science teaching as specified by the Australian Science Teachers' Association (ASTA) *National Professional Standards for Highly Accomplished Teachers of Science* (ASTA, 2002) among others. It is not at all difficult to argue that a teacher who lacks adequate conceptions of the NOS and scientific inquiry is likely to be an inadequate teacher. Without a functional understanding of how to teach these valued aspects of science it is difficult for teachers to orchestrate effective instructional activities, create an appropriate classroom atmosphere or assess students' progress. Indeed, a functional understanding of the NOS and scientific inquiry by teachers is clearly a prerequisite for high standards of science teaching and learning. In the following sections we will attempt to clarify the meanings of the NOS and scientific inquiry. These terms are used with little precision and high variability within educational circles and it is necessary to ensure that we share a similar understanding of these important educational outcomes. Finally, we will provide you with research-based recommendations on how to integrate the NOS and scientific inquiry into your teaching of 'traditional' science content.

WHAT IS THE NATURE OF SCIENCE?

The phrase 'the nature of science' typically refers to the values and assumptions inherent to scientific knowledge and the development of scientific knowledge. In short, the NOS refers to the characteristics of scientific knowledge that necessarily result from the conventional approaches (i.e. scientific inquiry) scientists use to develop knowledge. Although there are disagreements about specific aspects of the NOS, we have chosen to focus only on those that are generally agreed upon. We have left out the theoretical and esoteric arguments among philosophers, and focus on aspects that are accessible to secondary students as indicated by empirical research, and arguably important for all citizens to know.

Our criteria give rise to the following aspects of scientific knowledge: knowledge is tentative (subject to change), empirically based



(based on and/or derived from observations of the natural world), subjective (theory laden and a function of individuals' prior experiences/knowledge), necessarily involves human inference, imagination and creativity (involves the invention of explanations) and is socially and culturally embedded. Two additional important aspects are the distinction between observations and inferences and their necessary involvement in all aspects of scientific knowledge, and the functions of, and relationships between, scientific theories and laws. What follows is a brief discussion of these characteristics of science and scientific knowledge.

Observation and inference

First, students should be aware of the crucial distinction between observation and inference. Observations are descriptive statements about natural phenomena that are directly accessible to the senses (or extensions of the senses) and about which several observers can reach consensus with relative ease. For example, objects released above ground level tend to fall and hit the ground. By contrast, inferences are statements about phenomena that are not directly accessible to the senses. For example, objects tend to fall to the ground because of gravity. The notion of gravity is inferential in the sense that it can *only* be accessed and/or measured through its manifestations or effects.

Scientific laws and theories

Second, closely related to the distinction between observations and inferences, is the distinction between scientific laws and theories. Laws are *statements or descriptions of the relationships* between observable phenomena. Boyle's law, which relates the pressure of a gas to its volume at a constant temperature, is a case in point. Theories, by contrast, are *inferred explanations* for observable phenomena. The kinetic molecular theory, which explains Boyle's law, is one example. Scientists do not usually formulate theories in the hope that one day they will acquire the status of 'law'. Theories and laws are both very important to science and they are different types of knowledge. Theories do not mature into laws and laws do not mature into theories.



Empirically based knowledge

Third, all scientific knowledge is, at least partially, based on and/or derived from observations of the natural world (i.e. empirical). All of the theories and laws developed by scientists must be checked against what actually occurs in the natural world. If the empirical observations are not consistent with the predictions derived from our theories and laws, scientists begin to search for alternative descriptions and explanations (i.e. laws and theories).

Human inference, imagination and creativity

Fourth, although scientific knowledge is empirically based it nevertheless involves human imagination and creativity. Science involves the *invention* of explanations and this requires a great deal of creativity by scientists. This aspect of science, coupled with its inferential nature, entails that scientific concepts, such as atoms, black holes and species, are functional theoretical models rather than faithful copies of reality.

Subjective and theory-laden knowledge

Fifth, scientific knowledge is subjective or theory laden. Scientists' theoretical commitments, beliefs, previous knowledge, training, experiences and expectations actually influence their work. All these background factors form a *mindset* that affects the problems scientists investigate and how they conduct their investigations, what they observe (and do not observe) and how they make sense of or interpret their observations.

Socially and culturally embedded

Sixth, science affects and is affected by the various elements and contexts of the culture in which it is practised. These elements include, but are not limited to, social values, power structures, politics, socioeconomic factors, philosophy and religion. In short, we say that science is socially and culturally embedded.

Tentative and subject to change

Seventh, it follows from the previous discussions that scientific knowledge is never absolute or certain. This knowledge, including

facts, theories and laws, is tentative and subject to change. Scientific claims change as new evidence, made possible through advances in theory and technology, is brought to bear on existing theories or laws. Scientific claims also change as old evidence is reinterpreted in the light of new theoretical advances or shifts occur in the directions of established research programs.

WHAT IS SCIENTIFIC INQUIRY?

Although closely related to science processes, scientific inquiry extends beyond the mere development of process skills such as observing, inferring, classifying, predicting, measuring, questioning, interpreting and analysing data. Scientific inquiry includes the traditional science processes, but also refers to the combining of these processes with scientific knowledge, scientific reasoning and critical thinking to develop scientific knowledge. In addition to 'doing' inquiry, the phrase 'scientific inquiry' also refers to knowledge 'about' inquiry. It is expected that all students understand the rationale of an investigation and are able to analyse critically the claims made from the data collected. One important understanding about scientific inquiry is that the so-called fixed set and sequence of steps, known as the *scientific method*, is not an accurate representation of the multitude of approaches to inquiry followed by scientists. The contemporary view of scientific inquiry is that the questions guide the approach and the approaches vary widely within and across scientific disciplines and fields, for example ethnographic and case study research.

At a general level, scientific inquiry can be seen to take several forms. Descriptive research is the form of research that often characterises the beginning of a line of research. This is the type of research that derives the variables and factors important to a particular situation of interest. Whether descriptive research gives rise to correlational approaches depends upon the field and topic. If scientists are attempting to find relationships between variables in nature (e.g. pollutants and animal behaviour) the investigations are more correlational than descriptive. Finally, scientists may design experiments to directly assess the effect of one variable on another. This research is known as experimental. To distinguish briefly correlational from experimental research, the former identifies relationships



between variables noted in descriptive research and the latter involves a planned intervention and manipulation of variables related in correlational research in an attempt to derive causal relationships.

In addition to the various forms that inquiry takes, students should also understand that all investigations begin with a question, the conclusions must be consistent with data collected, it is common for scientists following the same procedures to get different results, and data and evidence are not the same. Regarding this last point, data are the information gathered during an investigation, but the interpretation of data as being supportive or contrary to a particular prediction or conclusion is evidence. In short, evidence is interpreted data.

In summary, inquiry can be perceived in three different ways. It can be viewed as a set of skills to be learned by students and combined in the performance of a scientific investigation. It can also be viewed as a cognitive outcome that students are to achieve (i.e. what students should know about inquiry). Finally, inquiry can be considered as a teaching approach that places students in situations very similar to those scientists experience during their daily work. In this sense, scientific inquiry is viewed as a teaching approach used to communicate scientific knowledge to students (or allow students to construct their own knowledge). Together, scientific inquiry and the NOS are intimately related. Inquiry is what scientists do to develop understandings of the natural world. The knowledge that results from this approach to knowing has certain unavoidable characteristics. These characteristics are what are commonly referred to as the NOS.

Teaching science

by John R. Staver

What is science?

Science is a way of knowing, a method of learning about nature. Rooted in common sense, its formal, systematic method is called scientific inquiry. In doing scientific inquiry, scientists use a variety of empirical approaches, techniques, and procedures to collect data from nature, examine and analyze that data, and construct knowledge based on it. This knowledge relates to living organisms, non-living matter, energy, and events that occur naturally. To analyse data scientists often, but not always, use mathematics, and they always apply logical arguments that obey strict empirical standards and healthy skepticism.

The product of scientific inquiry is the body of scientific knowledge. Scientific knowledge takes four forms: hypotheses, facts, laws, and theories. Hypotheses are tentative statements about relationships between variables in nature. Long ago the rotation of the earth on its axis and the orbit of the earth about the sun were hypotheses. Over time and through scientific inquiry, hypotheses may become facts. Facts are scientific observations that have been tested and confirmed repeatedly. The motion of a Foucault pendulum over a 24-hour period documents Earth's rotation on its axis. Observations of the shifting shadows of fixed objects over several weeks and the changing hours of daylight and darkness over several months help document Earth's revolution around the sun. Earth's rotation and orbit are now scientific facts. Hypotheses may also become laws. Laws describe the behaviour of specific aspects of nature under specific conditions. Boyle's Law states that the volume (one property) of an ideal gas varies inversely (behaviour) with its pressure (second property) when the temperature (third property) of the gas is constant (specific condition). Theories are explanations about broad aspects of nature that encompass large numbers of hypotheses, facts, laws, and events. These explanations are well tested and valued for their ability to predict new scientific knowledge and produce practical benefits. Evolutionary theory explains the extensive diversity across living organisms as well as the underlying unity. Scientists in health, agriculture, and industry use evolution to develop new medicines, hybrid crops, and new molecules that enhance the performance of systems and benefit individuals and societies.

Education in science serves three purposes. First, it prepares students to study science at higher levels of education. Second, it prepares students to enter the workforce, pursue occupations, and take up careers. Third, it prepares them to become more scientifically literate citizens. The relative priority and alignment of these three purposes varies extensively

across countries and cultures. Regardless of the setting, a sound education in science emphasizes that science is both a way of knowing and a body of knowledge; it also emphasizes integrating scientific inquiry with scientific knowledge. Much is known about teaching science effectively to learners of all ages. This knowledge comes from research and scholarship conducted in both developed and developing countries.

References

1. Abell & Lederman, 2007; Bransford, Brown, & Cocking, 1999; Gauch, 2003; National Academy of Sciences, 1998; National Academy of Sciences & Institute of Medicine, 2007; National Research Council, 1996, 2000, 2007; Project 2061, 1990.

A Case Study of Memory Loss in Mice

by

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Please read the following abstract of an article in the *New York Times* and prepare a short written response addressing each of the following questions.

Memory Loss in Mice

A biochemist, Eugene Roberts, and researchers at the City of Hope Medical Ctr. [in Duarte, California] discovered that injecting fragments of a brain protein called beta-amyloid into the brains of mice caused the mammals to forget chores they had just been taught [J.F.Flood et al. Amnestic effects in mice of four synthetic peptides homologous to amyloid B protein from patients with Alzheimer disease. *Proc. Nat. Acad. Sci.*, USA, 88(8):3363-6, Apr 91]. “This is really the first correlation between the presence of [beta-amyloid] in the brain and the loss of memory,” said Rachael Neve, a molecular biologist at U. California at Irvine.



Questions

1. State in concise terms the problem being investigated.
2. Describe the details if any of the experimental method apparently used in this study.
3. Describe any pertinent results that originate from the study.
4. What specific conclusions can you draw from this study?

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CHILDBED FEVER

A Nineteenth-Century Mystery

by
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PART I



Ignaz Semmelweis, a young Hungarian doctor working in the obstetrical ward of Vienna General Hospital in the late 1840s, was dismayed at the high death rate among his patients. He had noticed that nearly 20% of the women under his and his colleagues' care in "Division I" of the ward (that is, the division attended by physicians and male medical students) died shortly after childbirth. This phenomenon had come to be known as "childbed fever." Alarming, Semmelweis noted that this death rate was four to five times greater than that in "Division II" of the ward (that is, the division attended by female midwifery students).

Study Questions:

1. What were Semmelweis' initial observations?
2. What was the problem at hand?
3. What possible explanatory story might Semmelweis come up with?
4. How might Semmelweis test his suspicions?

PART II

One day, Semmelweis and some of his colleagues were in the autopsy room performing autopsies as they often did between deliveries. They were discussing their concerns about death rates from childbed fever. One of Semmelweis' friends was distracted by the conversation, and he punctured his finger with the scalpel. Days later, Semmelweis' friend became quite sick, showing symptoms not unlike those of childbed fever. His friend's ultimate death strengthened Semmelweis' resolve to understand and prevent childbed fever.

Study Questions:

1. What might Semmelweis now propose as an explanatory story?
2. How could Semmelweis test his new hypothesis?

PART III

In an effort to curtail the deaths in his ward due to childbed fever, Semmelweis instituted a strict handwashing policy amongst his male medical students and physician colleagues in "Division I" of the ward. Everyone was required to wash their hands with chlorinated lime water prior to attending patients. Mortality rates immediately dropped from 18.3% to 1.3% and, in fact, not a single woman died from childbirth between March and August of 1848 in Semmelweis' division.

Study Questions:

1. What conclusions can be drawn from Semmelweis' experiment?
2. How might Semmelweis revise his original hypothesis or his experiments to gain additional information?

PART IV

Despite the dramatic reduction in the mortality rate in Semmelweis' ward, his colleagues and the greater medical community greeted his findings with hostility or dismissal. Even after presenting his work on childbed fever (more technically referred to as puerperal sepsis) to the Viennese Medical Society, Semmelweis was not able to secure the teaching post he desired, and so he returned to Hungary. There, he repeated his successful handwashing attack on childbed fever at the St. Rochus hospital in Pest. In 1860, Semmelweis finally published his principal work on the subject of puerperal sepsis but this, too, was dismissed. It is believed that the years of controversy and repeated rejection of his work by the medical community caused him to suffer a mental breakdown. Semmelweis died in 1865 in an Austrian mental institution. Some believe that his own death was ironically caused by puerperal sepsis.

Study Questions

1. When presented with what appears to be unequivocal evidence in support of handwashing, why might Semmelweis' colleagues have dismissed his ideas?
2. How else might Semmelweis have approached the problem of disseminating his research findings in order to ensure their acceptance?
3. What, if any, role did serendipity play in Semmelweis' story of childbed fever?

Image Credit: Stamp of Ignaz Philipp Semmelweis, 1818-1865. Issued in Austria, 1965, on the 100th anniversary of Semmelweis' death.

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Salem's Secrets: A Case Study on Hypothesis Testing and Data Analysis*

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“Scientific research can reduce superstition by encouraging people to think and survey things in terms of cause and effect. Certain it is that a conviction, akin to religious feeling, of the rationality or intelligibility of the world lies behind all scientific work of a higher order.” —Albert Einstein

Part I—Salem's Secrets

There was a chill in the courtroom that day—a chill colder than could be explained by the unbearable winter. It was a cold that started at the back of the neck and lodged deep in the spine. Something evil was afoot. The question was: to whom did that evil belong?

“She killed Goodwife Betty’s baby. She killed it with those evil eyes. I saw her staring, as in a trance, at Betty’s house at sunset one evening last week. Then her cow and her baby died. She also makes poisons in her house. When people won’t take her poison, she sends her spirit to force them by choking them until they swallow it. I see her spirit here now. It is over near Abby. Oh Abby, Abby! Be careful Abby, she has pins and they are red hot! Stop her, she is pricking me! Help me, I am burning... Help me...”

The courtroom hummed with whispers as the spectators watched two young girls, Elisabeth, the speaker, and Abby, her best friend, tear and swat at their arms and legs as if swarmed by invisible bees. Their contortions escalated into convulsive fits, which were so grotesque and violent that witnesses agreed they could not be manufactured. Soon, as if on cue, other girls from Elisabeth and Abby’s circle of friends joined in. The girls collapsed in exhaustion. Dr. William Griggs, the village physician, examined the girls and, finding only bruised skin, made a diagnosis; “... the evil hand is upon them. They are bewitched.”

Hathorne, the magistrate, directed his attention to Sarah Good, the latest woman to be accused of witchcraft in Salem in 1692, and in a powerful voice demanded, “Goodwife, why do you torture these girls so?”

“Sir, I do not hurt them.”

“Who do you employ then to do it?”

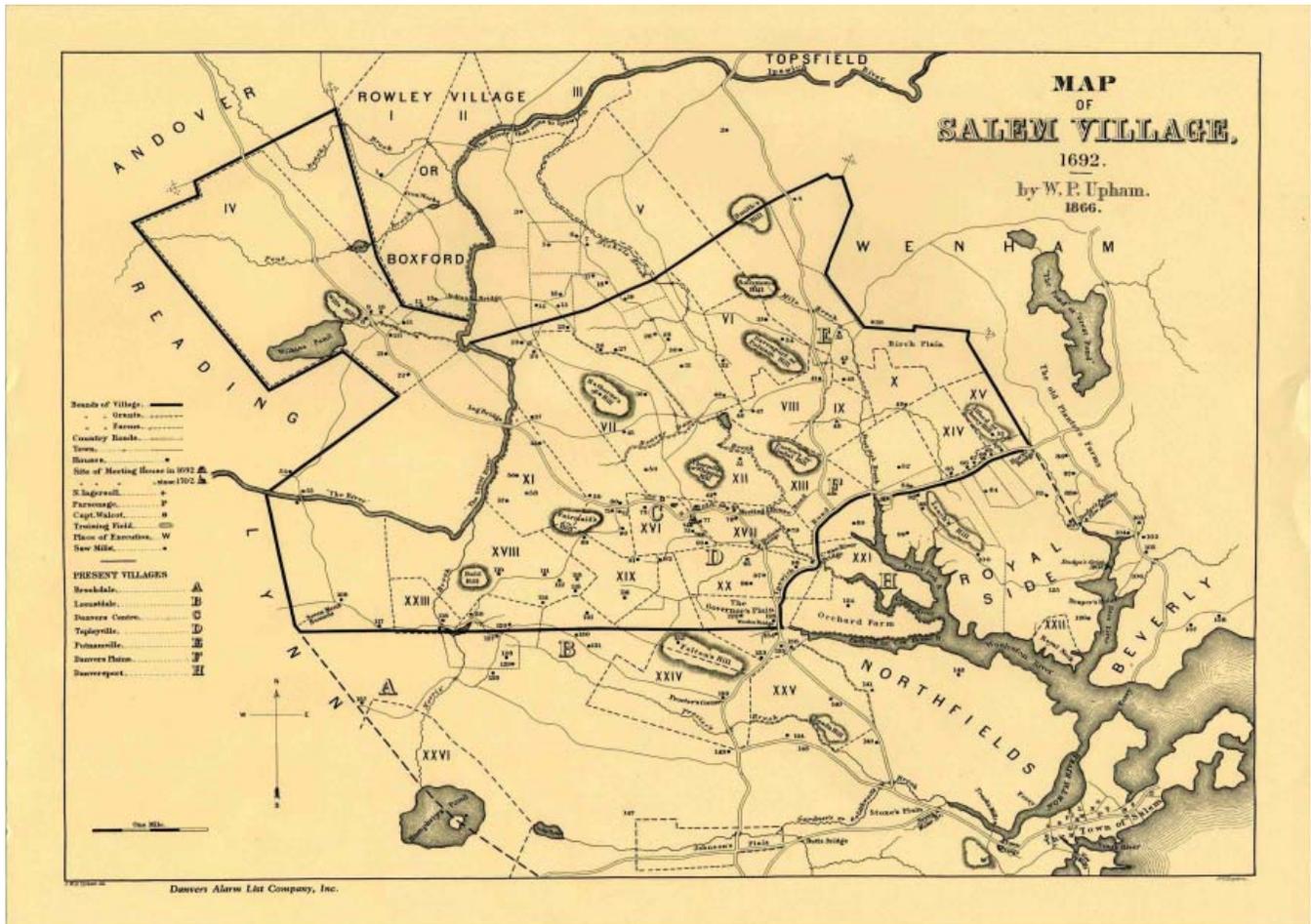
*Note: This case study, although based on an actual historical event, is fiction. The dialogue is fabricated by the authors from background material, in particular translations of actual depositions given in *The Salem Witchcraft Papers* (Boyer and Nissenbaum, 1977). Dr. William Griggs was the village physician at the time of the Salem witchcraft trials. Abigail Williams and Elisabeth Parris were among the first girls to be affected; Sarah Good was one of the first to be accused.

“I employ nobody.”

“And what say you of the poisons you keep at your home?”

“They are nothing more than good broths. When a child is to be born to a woman of this village... my broths bring them ease.”

Figure 1. Salem Village 1692.



“What evil spirit directs you in the making of these broths?”

“No spirit good sir, I am falsely accused.”

Scenes such as this were not uncommon in New England in the early colonial days. It is commonly known by most that a group of young girls in Salem were the initial catalyst that led to accusations of witchcraft against more than 200 people. These accusations resulted in the execution of twenty persons.

Question 1—What do you think caused the girls to behave this way?

To understand the phenomena at Salem, it is necessary to understand the culture and community of the time. In general, colonial life was hard. Rich farmable land was scarce, and any food it yielded was a result of strenuous physical labor. Diet was poor, deficient in essential nutrients and vitamins. Often colonists,

including children of a young age, worked from first light until after dark. Disease and death rates were high. It was not uncommon for families to suffer the loss of children.

The year spanning 1691–1692 was not a particularly good one for the Puritans, with an unusually severe winter and a rainy spring. As a result, the harvest that year was extremely poor. In addition, many families escaping the Indian Wars of Maine had moved into the northwest side of the area known as Salem, an area called Salem Village. This situation forced farmers to “utilize their swampy, sandy, marginalized land” (Matossian, 1982) for rye production and families in the community to share crops. Compounding these ills was a perceived imbalance in social status and power, the “haves” of the east side of town in direct conflict with the “have nots” of the village. Salem Villagers were disgruntled by having to pay taxes to, and serve in, the militia for Salem Town without receiving any direct benefit, namely a church of their own. In addition, Salem was factionalized by the leadership of two strong men (Parris of the Village and Proctor of the Town). The original/core group of girl accusers was kin of the Parris family.

Puritans were fervently religious and believed strongly in the balance of good and evil. To them, the devil was “a physical being who was incarnate, there to seduce them from the path of righteousness” (Woolf, 2000). When the march to the gallows struck Salem in 1692, it struck hard. The litmus test for bewitching was not substantial: the mere accusation of spectral evidence (victims would “see” a witch touching, pinching, or otherwise harming them) was sufficient to place a citizen in jeopardy. Likewise, one could earn the title of witch when the “passing by” of a person’s house or the “fixing a gaze” upon someone correlated with the stillbirth of a child or the death of a domestic animal.

Question 2—In the opening passage, what “evidence” did the girls provide for the presence of witches/witchcraft? (List this information in column 1 of your data management sheet—see page 10.)

Question 3—Assume you are living in Salem in 1692. Develop a hypothesis based on your observations. (Remember that a hypothesis must be supported by scientific evidence.)

Question 4—Reflect for a moment on this concept of evidence. How do we define “evidence” in science? Does the girls’ evidence pass scientific muster?

Part II—Mass Hysteria

For over 100 years, the prevailing belief was that the Salem tragedy was a direct result of mass hysteria, a condition in which a large group of people exhibit similar physical or emotional symptoms not attributable to any physiological cause. The Salem girls as a group experienced an array of unusual symptoms. In the absence of a clear medical diagnosis, and based on the limited technology of the time, the doctor who examined the girls pronounced them bewitched.

Collective human behaviors, however, are more common than many people realize. Some are simply the crazes and fads that often affect teenagers and other social groups. Others are bizarre, such as the example given below that occurred in the early 1900s when several students were convinced their penises were shrinking. Many, though, are less innocuous, and involve severe symptoms of illness. Below are listed some selected examples of mass hysteria events spanning several centuries.

Table 1. Mass Hysteria Events Throughout History

| Mass Hysteria Event | Year | Summary |
|-----------------------------------|-------------|--|
| Southern Europe, especially Italy | 1200s–1800s | Symptoms such as headache, giddiness, twitching, and delusions, culminating in frenzied dancing, in response to perceived bites from a tarantula spider. |
| Milan, Italy | 1630 | Several people executed after being pronounced guilty of spreading poison throughout the city in cooperation with the Devil. |
| Szechwan, China | 1907 | Twenty students convinced their penises were shrinking. |
| Newark, NJ | 1938 | Following radio broadcast of H.G. Wells' <i>War of the Worlds</i> dramatizing a "gas raid from Mars," mass panic occurred, involving thousands. Several were treated at hospitals for shock. |
| West Bank, Jordan | 1983 | Nearly a thousand people, mostly young females, afflicted with headaches, fainting, dizziness, and abdominal pain. Initially attributed to poison gas. |
| Kosovo, Yugoslavia | 1990 | Outbreak of flu-like symptoms such as headache, dizziness, and respiratory distress that persisted for weeks among thousands of mostly adolescent Albanians. Initially attributed to poisoning by Serbs. |
| Central Falls, RI | 1991 | Seventeen middle school students and four teachers with rapid onset of an array of symptoms such as dizziness, pain, vomiting, and chills. Initially attributed to chemical spill or toxic gas exposure. |
| A large midwestern university | 1996 | Sixty-nine college students and workers treated for shortness of breath, eye and skin irritation, and general feelings of illness. Initially attributed to a dusty substance in the snack bar. |
| McMinnville, TN | 1998 | Following a "gasoline-like" smell detected in a classroom, close to 200 students and staff members experienced headache, nausea, shortness of breath, and dizziness. |
| Amman, Jordan | 1998 | More than 800 students in 1 st –10 th grades displayed a variety of symptoms such as fever, chest tightness, chills, and feeling faint following tetanus-diphtheria vaccination. |

Have your thoughts regarding the events at Salem changed after examining this table? Reflect on the observations you listed in column 1 of your data management sheet.

Part III—Ergot: A Toxic Fungus

Question 1: Incidences of witchcraft are found universally among cultures of this time, but none had the devastating impact that Salem's had. What other factors may have contributed to the phenomena at Salem?

Claviceps purpurea is the genus and species name of a toxic fungus that grows as a parasite on many grains, particularly rye. In rainy, wet weather, all plants become more vulnerable to fungi. Because rye also grows best in damp weather, it is particularly susceptible to fungal growth. When *Claviceps* spores germinate, they form distinct dark, hard structures called sclerotia. These sclerotia are commonly known as ergots, thus the term ergot poisoning, or ergotism. Within the ergots is produced a poisonous brew of fungal toxins, ingestion of which can lead to severe illness or death. Ergot fungal toxins are particularly stable and are not destroyed by boiling or baking (Bennett and Bentley, 1999).

Two forms of ergotism exist: convulsive and gangrenous. The convulsive form has the greatest effect on the central nervous system, leading to seizures, insomnia, and insatiable appetite. In the gangrenous form, blood flow to the extremities is restricted; in severe cases, this can lead to blackened tissue and subsequent bloodless limb loss. Either form of ergotism may cause tingling, itching, alternating perception of hot and cold temperatures, hallucinations, perceptual disturbances, and gastrointestinal upset. In addition, people under the influence of ergot derivatives are known to be highly suggestible (Matossian, 1982).

Several factors play a role in the severity of ergot poisoning. Nutritional status, in particular vitamin A deficiency, is one such factor (Bennett and Klich, 2003). Age and sex play a role as well, and ergotism preferentially seems to affect teenage females (Bennett and Bentley, 1999; Caporael, 1976). Humans are not the only species to suffer from ergot poisoning; farm animals can be affected as well.

Question 2: In column 2 of your data management sheet, list evidence that the events at Salem could have been caused by ergot poisoning.

Question 3: After reading Parts II and III of the case study, develop a second hypothesis, different from your first, explaining the events at Salem. Record this hypothesis on your data management sheet.

Figure 2. Ergot



Part IV—Data Interpretation

Table 1 is extracted from an article written by Nicholas Spanos and Jack Gottlieb on ergotsim and the Salem witch trials published in 1976 in *Science*. Spanos and Gottlieb collected these data by reading through the *Records of Salem Witchcraft* (Woodward, 1864; reprinted 1969) and making note of the frequency of symptoms suffered by witnesses outside of the original group of girls. At the time of the trials, the adult population of Salem was estimated to be 215 persons; no estimate is provided for the child population.

Table 2. Frequency of Symptoms

| Reported sufferers | RSW vol. & page* | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Total |
|--------------------|------------------|---|---|---|---|---|---|---|---|---|---|----|---|---|---|---|---|-----------|
| W. Allan | I:38 | o | o | o | o | o | o | o | o | o | o | 1 | o | o | o | o | o | 1 |
| J. Bayley | I:113 | o | o | o | o | o | o | o | o | o | o | 1 | o | 1 | 1 | o | 1 | 4 |
| S. Bittford | I:108 | o | o | o | o | o | o | 1 | o | o | o | 1 | o | o | o | o | o | 2 |
| A. Booth | II:180 | o | o | o | o | o | o | o | o | o | o | 1 | o | o | o | o | o | 1 |
| J. Childen | I:92 | o | o | o | o | o | o | o | o | o | o | 1 | o | o | o | o | o | 1 |
| G. Cory | I:55 | o | o | o | o | o | o | o | o | o | o | o | o | o | o | o | 1 | 1 |
| J. Doritch | I:262 and II:179 | o | o | o | o | o | o | o | ? | o | o | 1 | o | 1 | o | o | o | 3 |
| B. Gould | II:178 | o | o | o | o | 1 | o | o | o | o | o | 1 | o | 1 | o | o | o | 3 |
| J. Holton | I:71 | o | o | o | o | o | o | o | ? | o | o | o | o | o | o | o | o | 1 |
| J. Hughes | I:38 | o | o | o | o | o | o | o | o | o | o | 1 | o | o | o | o | o | 1 |
| J. Indian | I:64 | o | o | o | o | o | o | o | 1 | o | o | 1 | o | o | o | o | o | 2 |
| T. Indian | I:44 | o | o | o | o | o | o | o | ? | o | o | 1 | o | o | o | o | o | 2 |
| E. Keysar** | ** | o | o | o | o | o | o | o | o | o | ? | 1 | o | o | o | o | o | 2 |
| M. Pope | I:59 | o | o | o | o | o | o | o | 1 | o | o | 1 | o | o | 1 | o | o | 3 |
| H. Putnam | I:275 | o | o | o | o | o | o | o | o | o | o | 1 | o | o | o | o | o | 1 |
| J. Putnam | I:95 | o | o | o | o | o | o | o | ? | o | o | o | o | o | o | o | o | 1 |
| W. Putnam | I:96 | o | o | o | o | o | o | 1 | o | o | o | o | o | o | o | o | o | 1 |
| D. Wilkins | II:7 | o | o | o | o | o | 1 | o | o | o | o | o | o | o | o | 1 | o | 2 |
| R. Wilkins | II:5 | o | o | o | o | o | o | o | ? | o | o | 1 | o | o | o | 1 | o | 3 |
| S. Wilkins | II:3 | o | o | o | o | 1 | o | o | o | o | o | 1 | o | o | 1 | o | o | 3 |
| E. Woodwell | II:178 | o | o | o | o | o | o | o | o | o | o | 1 | o | o | o | o | o | 1 |
| Total | | o | o | o | o | 2 | 1 | 2 | 7 | o | 1 | 16 | o | 3 | 3 | 2 | 2 | 39 |

Key: Symptoms of witnesses (other than the afflicted girls) who testified against the accused witches.

A: vomiting; B: diarrhea; C: livid skin; D: permanent contractures; E: pain in extremities; F: death; G: temporary muscle stiffness; H: convulsions; I: ravenous appetite; J: perceptual disturbances (not including apparitions); K: apparitions; L: sensations of hot and cold; M: skin sensations (biting and pinching); N: stomach pain; O: choking sensations; P: temporary inability to speak; 1: symptom reported; o: symptom not reported; ?: symptom questionable.

* RSW stands for *Records of Salem Witchcraft*, compiled by W.E. Woodward in 1864–85.

** This testimony comes from Boyer & Nissenbaum, 1972, page 75.

After reviewing the data from this table, use the information it provides and your observations from columns 1 and 2 of your data management sheet to prepare an argument in support of either one of your hypotheses. Consider the following questions:

Question 1: What do the data suggest? What symptoms are reported in high frequency? In low frequency? What patterns exist?

Question 2: Consider who was afflicted; what other health information was reported in 1692?

Question 3: Why did the idea of witchcraft occur here and now? Is this situation unique?

Part V—The Societal Frame: What Is the Secret of Salem?

Review the data from your data management sheet and then answer the questions below.

Question 1. In the beginning, did you think the girls at Salem were bewitched? Faking?

Question 2. Did your group acknowledge or dismiss the idea of mass hysteria with respect to Salem? Did you consider the social dynamics of the time in your thinking?

Question 3. After reading about the events of Salem, did your thinking about what happened change as you progressed through the material? How many times?

Question 4. If a similar set of symptoms was presented today, do you think the result would be similar? Why or why not? In other words, how does who we are and what we know change what we interpret?

Question 5. What questions still remain? What other information would help you decide what happened at Salem?

Part VI—Classroom Extension

Further research one of these topic extensions to this case study. Choose one of the following questions to develop into a one-page essay.

Question 1. How does public health reporting differ today from reporting in the 1600s?

Question 2. What can you infer from this case about the general safety of the world's food supply in 1692? Today?

Question 3. If you, as a member of the Department of Public Health, were informed of a group of people seemingly afflicted with a similar set of symptoms, what might be your initial thoughts and course of action?

Question 4. Ergot derivatives today are used to treat migraine headaches and alleviate bleeding after childbirth. How is it possible that such toxic substances can have therapeutic uses?

Question 5. If Salem had had a well-defined government in 1692, would the “March to the Witches Gallows” have occurred?

Question 6. The testimony of the children at Salem was accepted without question. Children often make accusations of many kinds of abuse by adults. Should such accusations be accepted at face value?

Question 7. Will it ever be possible to prove that the events at Salem were attributable to a specific cause? Why or why not? What is the difference between correlation and causation?

Further Reading

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Image credits: Woodcut in title block from a pamphlet for the witchcraft trial in 1591 of a Scottish woman, Agnes Sampson. Map in Figure 1 by W.P. Upham, 1866. Illustration detail in Figure 2 from a plate in *Medizinal-Pflanzen in naturgetreuen Abbildungen mit kurz erläuterndem Texte* by H. A. Köhler (1887), Gera-Untermhaus.

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Data Management Sheet

| | |
|----------------------------------|------------------------------------|
| Observations from Part I: | Observations from Part III: |
| Data Interpretation: | |
| Hypothesis 1: | |
| Hypothesis 2: | |
| Final Conclusion: | |

An Antipodal Mystery

by

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Part I—A Letter from Down Under

... The river was very still on the curve where the eucalyptus dips towards the water. The light shaded near late afternoon and twilight would soon darken the outline of the wooded bank and the flat landscape stretching to the horizon. Bubbles broke the surface of the water. A small brown head, its sleek furred cap glided silently in the river's flow.

As you can imagine, my esteemed colleague, I wondered what the aborigine was spearing in the lake near Hawkesbury River close to Sidney. I soon discovered the answer. A small creature fought for its life with such force that it caught its assailant with its spur and seemed to cause much pain. I have taken the liberty of posting the skin of the specimen to you for your study. It is preserved in a keg of spirits with another antipodal beast. I send it to your keeping for the Literary and Philosophical Society of Newcastle-upon-Tyne.

I remain your servant,
John Hunter, Governor
New South Wales

Thomas Bewick looked at the letter closely, pursing his lips. He gingerly unfolded the pages of notes and drawings that spilled from the governor's weathered envelope, addressed months ago. With each passing moment his surprise increased; this creature was nothing like any animal seen before. What would he write in his next edition of *General History of Quadrupeds*? What could he possibly say? The animal seemed hardly real. Is it a mammal, he mused, or ...?

Questions

Hunter's drawings seem unbelievable. Bewick suspects that this is not going to be a simple problem in classification. How should he decide what the creature is? What is the definition of a mammal?

1. Predict in as much detail as possible exactly what features a mammal would be expected to have. Consider the external as well as internal anatomy of a mammal; list all characteristics you can think of. Indicate which of these are exclusive to mammals and which are found in other vertebrates such as fish, amphibians, reptiles, and birds.





Part II—“A Three-Fold Nature”

“The cask containing the two specimens ... reached Newcastle late in 1799, transported from quayside to the Society’s rooms by a woman servant. She carried it on her head and, by mischance, the bottom of the cask gave way, dousing her with pungent spirits. But her dismay was reportedly the greater when, looking down, she saw not only the small chunky wombat, but the remains of ‘a strange creature, half bird, half beast, lying at her feet.’”

Thomas Bewick was to write that the creature “seems to be an animal *sui generis*; it appears to possess a three-fold nature, that of a fish, a bird and a quadruped, and is related to nothing that we have hitherto seen.” It was about the size of a “small cat,” with a bill “very similar to that of a duck,” with four short legs, “the forelegs ... shorter than those of the hind and their webs spread considerably beyond the claws.” Bewick concluded “it resisted any attempt to arrange it in any of the useful modes of classification.”

Dr. George Shaw, a Fellow of the Royal Society and Assistant Keeper of Natural History at the British Museum, also obtained a dried specimen in 1799. He wondered if it was a hoax, an animal stitched together by clever Chinese or Japanese taxidermists to deceive credulous sailors. He wrote: “I almost doubted the testimony of my own eyes.” But he could not find any deception.

A specimen found its way into the hands of Professor Johann Blumenbach, a comparative anatomist of the University of Göttingen in Germany, who christened the creature *Ornithorynchus paradoxus*. “In every way a paradox,” the Australian arrival raised a host of questions. Was it, as its brown fur suggested, a mammal? But where were its mammary glands? Where were its nipples? And how could a young animal suckle with that duckbill? Or was it a reptile, among which amphibians were then grouped, for this beast was surely aquatic? Or perhaps it was avian; its duck-like bill indicated an affinity with warm-blooded birds. Blumenbach was stumped. *Ornithorynchus* did not fall into any of the major classes of vertebrates—the mammals, fish, birds, and reptiles.

Other specimens were forwarded to the distinguished British anatomist Everard Home at the Royal College of Surgeons in London. The mystery deepened, for Home made a series of wonderful discoveries published in papers written from 1800–1802. The “duck-bill” beak was an exploratory organ for touching and tasting the muddy bottom of rivers as the animal searched for its food, small crustaceans and insects underwater. The beak was not hard like that of a bird; rather it was moist, soft, and highly flexible. And the reproductive organs were a surprise!

Questions

1. Examine the drawings on the following page showing the reproductive systems of animals. What conclusions do you make? Which seems most similar to *Ornithorynchus*?
2. What does this imply about evolution?
3. Think about how young *Ornithorynchus* are likely born. Are they born alive (viviparous)? Or are eggs laid, incubated, and then hatched (oviparous)? Or are eggs produced and then held in the body for a time and then hatched inside the mother as in some snakes (ovoviviparous)? All of these opinions of *Ornithorynchus* development were firmly held by some of the great anatomists of the time.

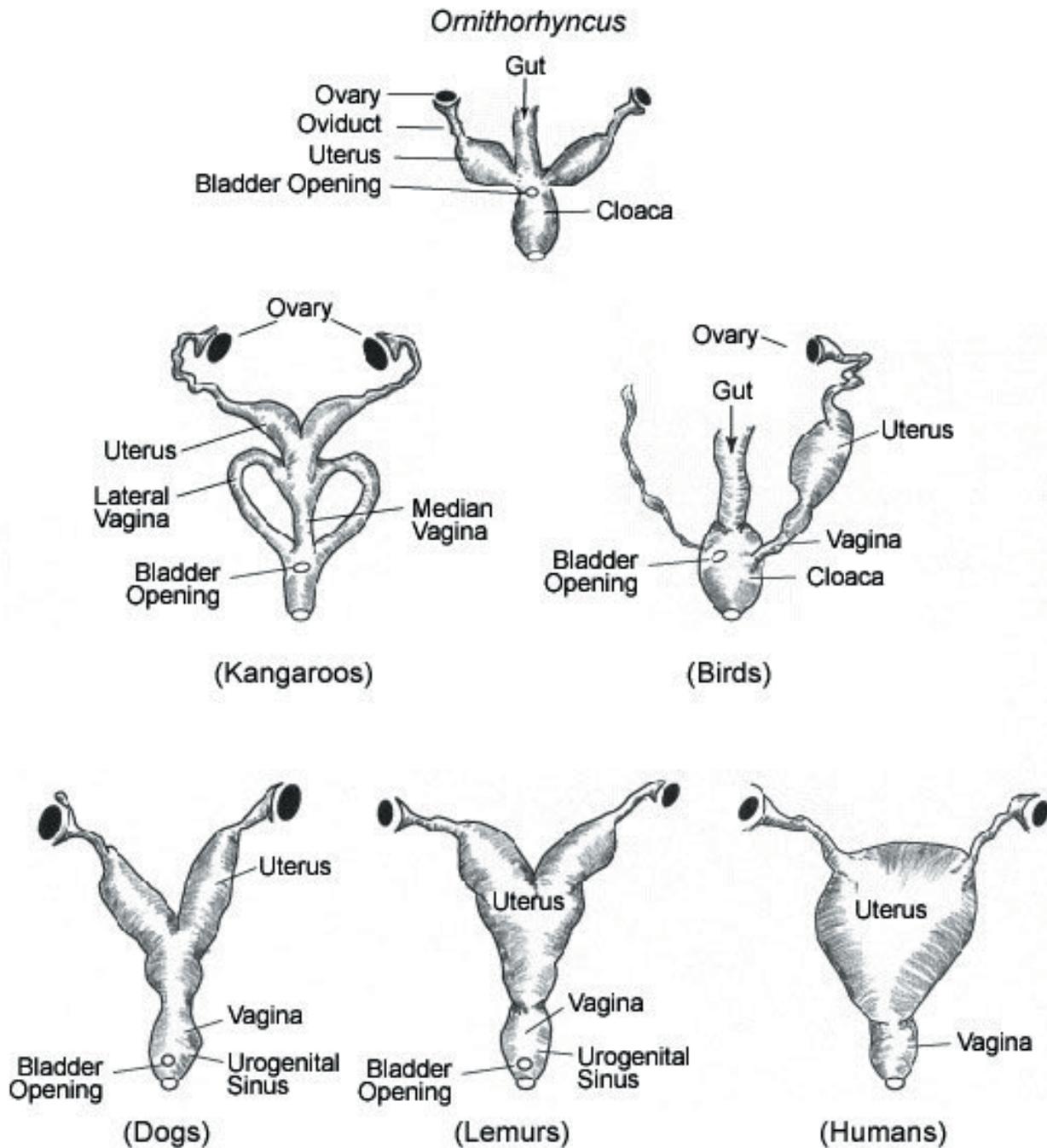


Figure 1: The female reproductive systems of six vertebrates. All dissections are depicted as if the animal were lying on its back facing the reader. All of the systems are bilaterally symmetrical except for the bird where only the left side is functional; the right side degenerates during development. The term *cloaca* is used for a chamber that receives the contents of the *digestive, urinary, and reproductive tracts*. The term *urogenital sinus* is a chamber that receives products from the *urinary and reproductive tracts*; the digestive tract empties separately via its own final chamber, the *rectum* (not shown). (Redrawn by Jim Stamos, based on various sources).



Part III—“This Highly Interesting Novelty”

Sir Joseph Banks, who had traveled with James Cook on his first voyage, ventured this in 1802: “Our greatest want here is to be acquainted with the manner in which the Duck Bill Animal [platypus] and the Porcupine Ant Eater [spiny echidna] which I think is of the same genus, breed, their internal structure is so very similar to that of Birds that I do not think it impossible that they should lay their Eggs or at least as Snakes and some Fish do Hatch Eggs in their Bellies.”

The French zoologist Etienne Geoffroy St-Hilaire, reading Home’s anatomical works, declared that both animals should be placed in a new animal class, the Monotremata, which means “one hole” to designate that the animal has a single opening (cloaca) through which it eliminates digestive and urinary wastes and reproductive products (eggs or sperm). There were three central questions about *Ornithorhyncus* that emerged from the foment of the times:

1. First, how can we fit this strange beast into the classification and taxonomic schemes that had worked so well in the Northern Hemisphere?
2. Second, how does *Ornithorhyncus* produce its young?
3. Third, what relevance does this anomalous animal have for the old ideas of a perfectly created world? What is the relevance of *Ornithorhyncus* to the idea of evolution, which was beginning to be whispered about?

Questions

Let’s consider the first question: how should we classify such an animal? Classification experts like John Ray and Carl von Linneaus said that reproduction was the essential criterion for classification. Linneaus set the presence of mammary glands and the suckling of the young as the defining characteristic for the class of animals he named “Mammalia.” He said that warm-blooded quadrupeds (four-legged beasts) with a four chambered heart and double circulation were viviparous and mammiferous.

Henri Marie Ducrotay de Blainville said mammals could be arranged by decreasing complexity from the primates down through the marsupials to the monotremes. He was the first to note many resemblances between platypus and echidna and the marsupials. He said that regardless of the apparent absence of mammary glands, the monotremes belonged as mammals in their own distinct order, Ornithodelphia. France’s scientific leader, Georges Cuvier, pronounced they were indeed mammals but put the monotremes squarely in the order Edentata that included other toothless mammals, anteaters, and sloths.

Not everyone agreed. Although the platypus was warm-blooded, had a four chambered heart, and double circulation (two different sides of the heart, one pumping to the lung and the other to the rest of the body), birds had these traits too. And it had a duck-like bill! Everard Home reported in his 1802 paper that the structure of the ear and shoulder girdle combined both mammalian and reptilian features. The presence of a cloaca was clearly a reptilian and avian feature. The absence of a well-formed uterus and the apparent absence of nipples persuaded Home that the “duck-billed mole” was related to ovoviviparous reptiles.

Lamarck said the platypus and echidna could not be mammals without mammary glands. He placed them in a separate vertebrate class called Prototheria.

1. So what is the best solution for classification for this unusual animal? If birds, reptiles, fishes, and mammals are placed in separate classes, where should an animal like *Ornithorhyncus* be classified?
2. What is the best logic for predicting how the young platypus is born: viviparous, oviparous, or ovoviviparous? What seems to be the most probable reproductive method and least probable method? And once produced, how will they be fed?



Part IV—Solving the Mystery

How do platypuses reproduce? In 1821, there was a breakthrough when Patrick Hill, a naval surgeon, wrote to the Linnean Society saying he had talked to an Aboriginal elder and “it is a fact well known to them that the animal lays two eggs about the size, shape, and colour of those of a hen; that the female sits for a considerable time on the eggs in a nest which is always found among the reeds on the surface of the water.”

More importantly, in 1824, the German anatomist Johann Meckel reported that he had found mammary glands in the platypus! They appeared primitive and opened directly onto the skin without any sign of nipples. Monotremes would represent a transitional form between reptiles and mammals. Geoffrey St-Hilaire rejected this view and said the structures described by Meckel couldn’t be mammary glands because the absence of nipples would make feeding difficult with a duck-bill. He stated that the monotremes belonged in their own separate mammalian order, Monotremata.

In 1831, the Hon. Lieutenant Maule, who was stationed in Australia, reported to the Zoological Society of London that he found several nests of platypus with fragments of eggshell and in one nest he found a female and two young. Two weeks later when the female died, he reported: “on skinning her while yet warm, it was observed that milk oozed through the fur on her stomach.” No teats were visible.

Richard Owen, England’s great comparative anatomist, received two baby platypuses from Lieutenant Maule in New South Wales, and determined in 1834 that the suckling infant’s mouth was designed to take milk in the normal manner. In addition, he clearly determined that there was milk in the babies’ stomachs.

Not until 1884 was the picture clear. The Scottish embryologist, William Caldwell of Cambridge, arrived in Australia and gathered a group of 150 aborigines to search the Burnett River for the elusive monotremes. He shot a platypus in the act of laying eggs: her first egg had been laid and her second was still in the partially dilated mouth of the uterus. He claimed victory. Platypus was oviparous. It laid soft-shelled eggs with large yolks that were gradually absorbed by the growing young, just as in birds and reptiles! In contrast to birds, where the calcified egg does not change in shape or size, the monotreme egg increases in size during its time in the uterus. Its flexible shell is stretched as nutrients are absorbed from the uterus.

Question

1. Do these discoveries change your view about how to classify the platypus?



Part V—The Big Picture

Turning to the third question: How does the platypus fit into the doctrine of creation? Recall that Aristotle's view of a ladder of nature (*Scala Naturae*, or Great Chain of Being) suggested that species were fixed in a position on an ascending ladder leading toward humans at the top. This may have made sense a couple of thousand years ago when only 500 species of animals were known, but as new species were discovered, with more and more intermediate or hybrid characteristics, this static view of the world seemed less and less tenable. For example, in 1803 French expeditions returned from Australia with 100,000 animal specimens; 2,500 were species new to science. Trumpeted France's scientific leader, Georges Cuvier, they had collected: "more new creatures than all traveling naturalists of recent times put together." Robert Brown, who traveled extensively around Australia's coasts, collected 465 genera and 2,000 species of plants in 1811, all new to science. Classification schemes that had been created for Europe were completely inadequate for the Southern Hemisphere. The platypus was only one of a thousand new riddles, albeit the most spectacular.

Another problem was emerging: fossils were being discovered everywhere. Many were of animals no longer alive. This suggested that some species had gone extinct. If extinction occurred, then what had happened to the ladder of life? Are there even more missing steps?

How do scientists solve this problem? Throw out the *Scala Naturae* concept altogether? France's Georges Cuvier did. He argued physical catastrophes periodically occur and destroy organisms. They were replaced after each disaster by successive creations of new and more complex unrelated species. Revise it? Cuvier's compatriot, Jean-Baptiste de Lamarck, believed there was a linear order of living organisms from simple to complex, and that organisms could move upward on the ladder via evolution—rather like an escalator. He thought extinction was impossible.

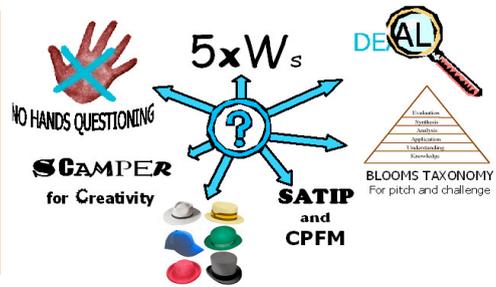
Questions

1. When Charles Darwin came into the picture, he had his own view of the *Scala Naturae*. What do you think was his view?
2. Today, we have DNA evidence as well as that from the traditional fields of comparative anatomy and physiology. Based upon everything that you know, draw a likely phylogenetic tree showing the evolutionary relationships among birds, marsupials, monotremes, placental mammals, and reptiles.

Image Credit: Ferdinand Bauer, Natural History Museum, London.
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Effective Questioning

to promote learning, foster higher order thinking, develop imagination, creative thinking and pitch challenge



Asking questions is natural and intuitive. As teachers, we ask questions as soon as the lesson starts and continue until the end. Asking questions forms part of any lesson because it invites the student to think, and even within a 'lecture' style lesson, rhetorical questions are used to invite silent agreement or begin the organisation of ideas to present a response.

Teachers use questions to engage the students and sustain an 'active' style to the learning. The teacher also uses questions as part of the assessment of learning in order to determine how they best structure, organise and present new learning. However, research has found that most teachers only wait 0.7seconds for an answer. Developing questioning, requires much greater emphasis on the time provided for students to think individually, collaboratively and deeply to develop and share better answers.

Historically, teachers have asked questions to check what has been learnt and understood, to help them gauge whether to further review previous learning, increase or decrease the challenge, and assess whether students are ready to move forward and learn new information. This can be structured as a simple 'teacher versus the class' approach, where the teacher asks a question and accepts an answer from a volunteer, or selects/conscripts a student to answer. These approaches are implicit in any pedagogy, but teachers need a range of questioning strategies to address different learning needs and situations.

This paper encourages teachers to plan their questioning approaches, prepare the most important questions and pre-determine the level of challenge they wish to set.

How and why do we use Questions in the classroom?

Teachers use questioning as part of their teaching for many reasons, but often to:

- **maintain the flow** of the learning within the lesson
- **engage** students with the learning
- **assess** what has been **learned**
- **check** that what has been **learnt** is **understood** and can be used
- **test** student **memory** and comprehension
- **seek** the **views and opinions** of pupils
- **provide an opportunity** for pupils to share their opinions/views and seek responses from their peers
- **encourage creative thought** and **imaginative** or **innovative thinking**
- **foster speculation, hypothesis** and **idea/opinion forming**
- **create** a sense of **shared learning** and avoid the feel of a 'lecture'
- **challenge** the level of thinking and possibly mark a change to a **higher order** of thinking
- **model** higher order thinking using examples and building on the responses of students

All the following examples and many others are useful and necessary within different classroom situations. They help teachers move students from simple responses, to engage in more developed complex thinking. This helps them apply what they understand, to bridge learning from other times and different situations, to think more actively in lessons and learn from each other's answers.

Questioning approaches e.g. 'thinking time', the 'no hands' rule and 'phone a friend'



| Strategy/approach | Process | Gains and benefits |
|---|---|--|
| Thinking Time: Consciously waiting for a pupil or class to think through an answer (before you break the silence) e.g 15-30secs | Provide time between setting the question and requiring an answer. Sometimes alerting pupils to the approach and the time available to develop an answer. | Prompts depth of thought and increases levels of challenge. Ensures all pupils have a view or opinion to share before an answer is sought. |
| No Hands Questioning: Using the 'no hands up' rule Ref. AfL publication - Working Inside the Black Box. | Pupils aware that those required to give an answer, will be selected by the teacher. Teachers alert them to this as questions are asked. Linked to 'thinking time'. | Improves engagement and challenges all pupils to think. When linked to Thinking Time, pupils share ideas and 'position' their own views in relation to others. |
| Basketball questioning: Move questions and discussions between pupils | Teacher establishes movement of ideas and responses around the class. Builds on other pupils' ideas and comments. Accepts 'half-formed' ideas. NB not 'ping-pong' | Engages more pupils. Stops teacher being focus for all questioning. Develops connected thinking and development of ideas. |
| Conscripts and Volunteers: Using a planned mix of 'conscripts' and 'volunteers' | Teacher selects answers from those who volunteer an answer and an equal amount of those who do not. | Enhances engagement and challenge for all. |
| Phone a friend: Removes stress to enable those who cannot answer to participate | Those who cannot answer are allowed to nominate a fellow pupil to suggest an answer on their behalf, but they still have to provide their own answer, perhaps building on this. | Encourages whole-class listening and participation. Removes stress and builds self-esteem. |
| Hot-seating: | A pupil is placed in the 'hot-seat' to take several questions from the class and teacher. | Encourages listening for detail and provides challenge |
| Mantle of the expert: | A wears the cloak of the expert to answer questions from the class. | Builds self-esteem through opportunity to share detailed knowledge. |
| Preview: Previewing questions in advance | Questions are shared/displayed before being asked, or the start of the lesson. | Signals the big concepts and learning of the lesson |
| Pair rehearsal: of an answer or a question | Pairs of pupils are able to discuss and agree responses to questions together. | Encourages interaction, engagement and depth |
| Eavesdropping: Deploying specific targeted questions | Listen in to group discussions and target specific questions to groups and individuals. | Facilitates informed differentiation. |
| 5Ws: Modeling simple exploratory questions to gather information | Teacher models the use of Who, What, Where, When and Why to set out a simple information gathering response based on the information provided. | Encourages students to rehearse enquiry and comprehension, can extend into reasoning and hypothesis. Creates an inquisitive disposition and a thinking/self reflective approach to learning. |

| Strategy/approach | Process | Gains and benefits |
|--|---|---|
| High Challenge: Phrasing questions carefully to concentrate on Bloom's Taxonomy higher challenge areas | Questions must be pre-planned, as very difficult to invent during a lesson. Focus questions to address analysis, synthesis, evaluation and creativity, based on Bloom's Taxonomy. | Provides high challenge thinking, requiring more careful thought, perhaps collaborative thinking and certainly longer more detailed answers. For Able, Gifted and Talented. |
| Staging or sequencing: questions with increasing levels of challenge | Increasing the level of challenge with each question, moving from low to higher-order questioning | Helps pupils to recognise the range of possible responses and to select appropriately. |
| Big questions: The setting of a substantial and thought provoking question | Big questions cannot be easily answered by students when the question is posed. They are often set at the beginning of the lesson and can only be answered by the end of the lesson, using all of the thinking based on all of the contributions to the lesson. | These questions develop deeper and more profound thinking. Big Questions are often moral issues or speculative questions such as, Where are we from? How big is the universe? What is the meaning of life? They require extended answers and usually rely on collaborative thinking and a personal interpretation of the information provided. |
| Focus questioning: This will help students to answer bigger questions | When students struggle to answer bigger or more complex questioning, the teacher can model or lead the thinking by asking Focus questions to lead the student through the steps of the thinking. | Develops confidence and the sequencing of small steps in thinking and response. Allows students to reveal the stages in their thinking. |
| Fat questions: Seeking a minimum answer | Pupils are not allowed to answer a question using less than e.g. 15 words or using a particular word or phrase. They must give an extended answer or make a complete sentence/phrase. | Develops speaking and reasoning skills, the correct use of critical and technical language . |
| Skinny questions A traditional approach to Q&A asking everyday questions with a fixed or specific answer | In its simplest form, students can answer yes or no to a skinny question, or give a number or knowledge based response. | Challenge level is low in skinny questions that do not seek and extended answer or reasons for the answer. Mostly knowledge and comprehension based. Does not develop thinking or reasoning. |
| Signal questions: | Providing signals to pupils about the kind of answer that would best fit the question being asked. Teacher responds to pupils attempt to answer, by signaling and guiding the answers. | The essence of purposeful questioning, moving pupils from existing knowledge or experience (often unsorted or unordered knowledge) to organized understanding, where patterns and meaning have been established. |
| Seek a partial answer: | In the context of asking difficult whole class questions, deliberately ask a pupil who will provide only a partly formed answer, to promote collective engagement. | Excellent for building understanding from pupil-based language. Can be used to lead into 'Basketball questioning'. Develops self-esteem. |

Many of these teaching approaches are taken from the National Secondary Strategy for School Improvement 'Questioning' Unit of the Foundation Strand materials and Assessment, or from the work of members of the AFL team including Paul Black and Christine Harrison.

5xWs

The Five Ws, also known as the Five Ws (and one H), is a concept used in journalism, research and in Police Investigations that most people consider to be fundamental when examining any new learning situation. It is a formula for getting the "full" story on something. The maxim of the Five Ws (and one H) is that in order for an analysis of basic facts and information to be considered complete it must answer a checklist of six questions, each of which comprises an interrogative word:

Who? What? Why? Where? When? & How?

The principle underlying the maxim is that each question should elicit a factual answer — facts that it is necessary to include for a report to be considered complete. Importantly, none of these questions can be answered with a simple "yes" or "no".

The technique uses basic question generating prompts provided by the English language. The method is useful at any level from a formal checklist to complete informality.

For example:

- For informal 'rough-book' use as a quick-aide checklist, as a private checklist to keep in mind when in an on going discussion, as quick points scribbled down in a lesson, to generate further questions for yourself or to raise in the lesson with your group/whole class.
- To generate data-gathering questions in any subject, during the early stages of problem solving when you are gathering data, the checklist can be useful either as an informal or systematic way of generating lists of question that you can try to find answers for.
- To generate idea-provoking questions, whilst brain-storming, brain-writing or some other such similar technique, the checklist could be used as a source of thought provoking questions to help build on existing ideas.
- To generate criteria, the checklist could help in generating criteria for evaluating options.
- To check plans, the checklist is a useful tool for planning implementation strategies.

Adding **IWWM** – In What Way Might

NB: The 5xWs and How 'question words' owe their strength to their fundamental place in the English language, and can conceal some of the assets of nature that our language copes less well with. The responses to these questions in the checklist are usually facts, rather than actions or conclusions. You may well need to link these questions to Blooms Taxonomy if you want to achieve the correct level of challenge or use IWWM.

- For example, the answer to 'Who does X?' in a History lesson context could be 'King ...'. To use this answer in a problem-solving or conclusion finding context you may have to take this to another level of challenge.
- For example 'OK – if King ... does X, in what way might we conclude this was a wise action by him and his court?'
- This 'in what way might' (**IWWM**) stage is crucial if the facts are to come alive and contribute to the creative thinking process.

| Questions | Conclusions / Hypothesis |
|-------------------------|--------------------------|
| Who ... ? | |
| What ... ? | |
| Why ... ? | |
| When ... ? | |
| Where ... ? | |
| How ... ? | |
| In What Way Might ... ? | |

“Dialogic teaching harnesses the power of talk to stimulate and extend children’s thinking, and to advance their learning and understanding. It also enables the teacher to diagnose and assess. Dialogic teaching is distinct from the question-answer-tell routines of so-called ‘interactive’ teaching, aiming to be more consistently searching and more genuinely reciprocal and cumulative.”

Robin Alexander

Dialogic Teaching

Dialogic teaching provides a strategy for managing and assimilating many aspects of the other approaches to developing classroom talk, identified elsewhere in this paper.

Dialogic teaching harnesses the power of talk to engage children, stimulate and extend their thinking, and advance the learning and understanding. Not all classroom talk secures these outcomes, and some may even discourage them. Dialogic teaching, therefore, is:

- **Collective:** teachers and children address learning tasks together, whether as a group or as a whole class;
- **Reciprocal:** teachers and children listen to each other, share ideas and consider alternative viewpoints;
- **Supportive:** children articulate their ideas freely, without fear of embarrassment over ‘wrong’ answers; and they help each other to reach common understandings;
- **Cumulative;** teachers and children build on their own and each others’ ideas and chain them into coherent lines of thinking and enquiry;
- **Purposeful:** teachers plan and steer classroom talk with specific educational goals in view.

Most teachers use a basic repertoire of three kinds of classroom talk:

- **rote**
- **recitation**
- **instruction/exposition**

These provide the bedrock of repertoire of teaching by direct instruction, but some teachers also use:

- **discussion**
- **scaffolded dialogue**

These all have their place in a thinking classroom, but Dialogic talk is part of a larger repertoire, needed to ensure children are empowered both in their learning now and later as adult members of society.

As part of their cognitive development, children need to acquire the capacity to:

- narrate,
- explain
- instruct,
- ask different kinds of questions,
- receive, act and build upon answers
- analyse and solve problems
- speculate and imagine
- explore and evaluate ideas
- discuss
- argue, reason and justify
- negotiate

and, in order that they can do this effectively with others:

- listen
- be receptive to alternative viewpoints
- think about what they hear
- give others time to think.

As part of a comprehensive classroom approach to talk for learning and empowerment, teachers will need to engage with both of these repertoires, through:

Teacher-pupil interaction, Pupil-pupil interaction, Teacher-pupil one-to-one monitoring, Questioning, Responses to questioning, Feedback on responses, Pupil talk.

Tools for questioning to engage and encourage the exploration of ideas to develop a particular thinking

Pose, Pause, Pounce & Bounce

A strategy for structuring questioning in the classroom, to ensure thinking time, selection of students to answer and collaborative sharing of ideas and response.

Pose – Teacher poses the question as a big question for all to consider and form a response to.

Pause – Teacher gives thinking time and possibly discussions/thinking together.

Pounce – Teacher selects who will provide and answer (no hands and not hands up).

Bounce – Teacher ‘bounces’ the answers from student to student developing the ideas/encouraging all to add their views or extend the e.g. depth and breadth of answers.

DEAL

DEAL is often used in science to explore:

- ideas about what is seen (experiments or phenomenon)
- to develop the thinking and analyse these perceptions
- make links with previous learning and convey understanding
- develop the ability to apply what has been learnt
- make connections with other areas of previous learning.

| | | |
|----------|-----------------|--|
| D | Describe | Describe what you see, experience and can measure |
| E | Explain | Explain what you know or understand, what you experienced or think happened |
| A | Analyse | Analyse the information or evidence to draw conclusions or determine what you believe is happened and why |
| L | Link | Link with previous knowledge or make connections with other phenomenon or outcomes where these connections bring further conclusions or lead to hypothesis |

SATIP

A strategy for beginning to engage with ‘Reading’ any text. This develops in the reader, further questions in order that they then form a sense of meaning from the text, to develop understanding and before the teacher might use Blooms Taxonomy to set more challenging questions.

1. **Sense** – or meaning – what is it about?
2. **Audience** – or tone – who is it intended for?
3. **Technique** – what are the techniques that have been used - what is their effect?
4. **Intentions** – What was the writer’s purpose?
5. **Personal opinion** – what is your reaction – what do you start to conclude?

C P F M - Content, Process, Form and Mood

| | | |
|----------|---------------------|--|
| C | Content | Analyse and describe the Content. This refers to much more than the subject matter of a work of art. It can manifest itself in three overlapping ways. What the piece of work represents or symbolises, what story or event is portrayed (referred to as narrative content), and what idea the artist is attempting to pursue. |
| P | Process | Analyse and describe the Process. This refers to the way in which media and materials have been used to formulate and create a particular piece of work. This could refer to a single process or a sequence of processes that have been combined to create the final outcome or work of art. |
| F | Form | Analyse and describe the use of the artistic, ‘formal’ elements or elements that make up that artform. These can be described in simple terms as the building blocks for the artform, e.g in Art and Design: line, tone, colour, pattern, texture, shape, form and space |
| M | Mood/emotion | Analyse and describe the Mood. This refers to the way in which the artist has handled form and subject matter to create an emotionally affective piece of work. How the piece of work makes the person experiencing the artform feel, and the viewer being able to find evidence in the piece of work to support this feeling. |

A guide to Critical Studies and how to look at, think and talk about objects, images and works of art, craft and design. Rod Taylor (Educating for Art -Critical Response and Development, SCDC Publications 1986)

The Six Thinking Hats

developed by Edward de Bono

“Thinking is a skill, intelligence is not enough.”

“Within the information age – using the Internet to find information is not enough, you have to think about what you find.”

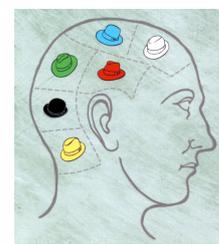
Edward de Bono



When using the six thinking hats, we move thinking away from an emphasis on criticism and judgement, towards the direction of creative or constructive thinking. This is achieved by considering six different modes of thought, each shared by the thinkers together at the same time. They do not each consider different modes at the same time. Hence, the thinking is in parallel.

The six hats represent six modes of thinking and are directions to think rather than labels for thinking. That is, the hats are used proactively rather than reactively.

The method promotes fuller input from more people. In de Bono's words it "separates ego from performance". Everyone is able to contribute to the exploration without denting egos as they are just using the yellow hat or whatever hat. The six hats system encourages performance rather than ego defence. People can contribute under any hat even though they initially support the opposite view.



The Six Thinking Hats system has four specific uses:

1. It's a critical meeting facilitation tool
2. It's an outstanding team productivity/communication tool
3. It's a creativity enhancer
4. It's a control mechanism used to maximize and organize a person's thoughts (help make decisions and solve problems).

Thinking is separated into six distinct categories. Each category is identified with its own coloured metaphorical "thinking hat." By mentally wearing and switching "hats," you can easily focus or redirect thoughts, the conversation, or the meeting. The difference between brilliant and mediocre teams and group activity, lies not so much in their collective mental equipment, but in how well they use it and how well they work together. It artificially allows people to switch thinking quickly.

There is a range of methodology:

- There are six metaphorical hats and the thinker can put on or take off one of these hats to indicate the type of thinking being used.
- When done in-group, everybody wears the same hat at the same time.
- The hats must never be used to categorize individuals, even though their behaviour may seem to invite this.
- This putting on and taking off is essential.
- Hats can be used individually – as symbols to request a particular type of thinking i.e. ... "I think we need some green hat thinking here."
- Hats can be used in a sequence e.g. Blue, Any, Any, Any, Any, Any, Blue – any hat can be used as often as you like, There is no need to use every hat; the sequence can be made up of two, three, four or more hats; there are two broad types of sequence: evolving and pre-set.
- Evolving – facilitator chooses first hat and when this hat is completed, the next hat is chosen and so on (but this process needs to avoid manipulation and users need to be very experienced)
- Pre-set sequences - is set up at the beginning of the meeting, under an initial blue hat. Minor variations can be permitted, depending on output.



The White Hat

The White Hat calls for information known or needed.

This covers facts, figures, information needs and gaps. "I think we need some white hat thinking at this point..." means Let's drop the arguments and proposals, and look at the data base."



The Yellow Hat

The Yellow hat symbolizes brightness and optimism, benefits, value sensitivity. This is the logical positive. Why something will work and why it will offer benefits. It can be used in looking forward to the results of some proposed action, but can also be used to find something of value in what has already happened.



The Black Hat

The Black hat is judgment—the devil's advocate or why something may not work, risk assessment, caution. It is most useful, but can be over used.

This is a most valuable hat. It is not in any sense an inferior or negative hat. The black hat is used to point out why a suggestion does not fit the facts, the available experience, the system in use, or the policy that is being followed. The black hat must always be logical.



The Red Hat

The Red Hat signifies feelings, intuition, hunches, and emotion – gut feelings.

The red hat allows the thinker to put forward an intuition without any need to justify it. "Putting on my red hat, I think this is a terrible proposal." Usually feelings and intuition can only be introduced into a discussion if they are supported by logic. Usually the feeling is genuine but the logic is spurious. The red hat gives full permission to a thinker to put forward his or her feelings on the subject at the moment.



The Green Hat

The Green hat focuses on creativity: the possibilities, alternatives, and new ideas, growth, energy, hypothesis. (Too little time is spent on this at present). This hat explores what is interesting, provocations and changes.



The Hat

The Blue Hat is used to manage the thinking process (metacognition). This is the overview or process control hat. It looks not at the subject itself but at the 'thinking' about the subject.

"Putting on my blue hat, I feel we should do some more green hat thinking at this point." In technical terms, the blue hat is concerned with meta-cognition.

Using the six hats in the classroom

The six hats are used by teachers to structure a sequence of questions and discussions between small groups of students or a whole class. Teacher's best lead the discussions by wearing the blue hat and managing the sequence in the wearing of the hats. You may use the following sequence of hats to help you phrase your questions.

1. It is typical to begin the process of discussions by asking students a question that asks them to wear the red hat and share their emotional response to the issue under discussion. The question may encourage them to share their 'gut feelings' or intuition.
2. This first phase is often followed by a white hat question, which calls for the sharing of information or data that can inform the students and make them more aware of any information pertinent to the issue under discussion. This builds on their emotional response.
3. The next phase of questioning usually uses the green hat to ask students to explore creative possibilities.

4. This is then followed by either the black hat which explores potential problems with the green hat suggestions.
5. Alternatively, a yellow hat question might explore optimistic ideas or explore the value of the green hat ideas already suggested.
6. The blue hat can be called for by the students or the teacher can offer the blue hat to the students to invite them to suggest whether any of the hats should be worn again, to focus any further questions.

Creative questioning using **SCAMPER** *R*

SCAMPER, devised by American Bob Eberle, is a useful technique to extend all pupils' thinking and can provide real imaginative opportunities to all pupils to extend their work. The SCAMPER technique uses a set of directed questions which pupils answer in order to come up with new ideas. The stimulus comes from answering questions that you (as a teacher) and pupils (as learners) would not usually ask. It helps pupils to ask questions that require them to think 'out of the box', helping to develop their critical thinking skills. It's also a useful tool for creative writing and a stimulus for role play.

- Remember, you don't have to use **all** the steps in SCAMPER.
- Use it to spark off creative development and then let pupils work on their own. If they get stuck, they can return to the SCAMPER framework.

Scamper is reproduced from issue 14 of the Primary focus G&T Update magazine

Other uses for SCAMPER

SCAMPER makes a good starter activity for all sorts of lessons.

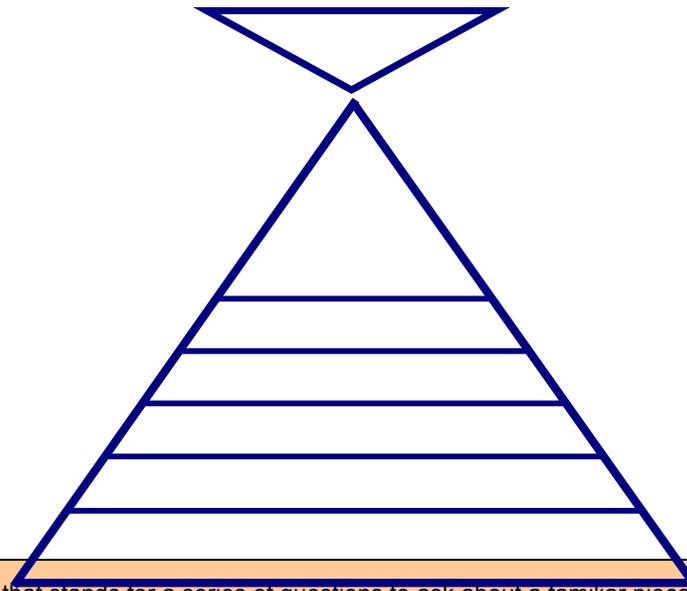
1. Show pupils an object (probably from a school or museum collection) and ask them to use the SCAMPER technique to come up with uses for the object.
2. Show or project in large scale for pupils an image (probably taken from the web or an illustration from a book) and ask them to use the SCAMPER technique to come up with descriptions of alternative images relating to the SCAMPER technique

Bloom's Taxonomy

Higher order questioning in the context of looking at works of art and reading

In 1956, Benjamin Bloom headed a group of educational psychologists who developed a classification of levels of intellectual behaviour important in learning. Bloom found that over 95 % of the test questions students encounter require them to think only at the lowest possible level...the recall of information.

Bloom identified six levels within the cognitive domain, from the simple recall or recognition of facts, as the lowest level, through increasingly more complex and abstract mental levels, to the highest order, which is classified as evaluation. Very examples that represent intellectual activity on each level are listed below.



SCAMPER is an acronym that stands for a series of questions to ask about a familiar piece or work or process:

| | | |
|----------|------------------------------------|--|
| S | Substitute | Substitute one aspect of your product/process What else instead? Who else instead? Other ingredients? Other material? Other power? Other place? |
| C | Combine | Combine two or more parts with something else How about a blend, an alloy, an ensemble? Combine purposes? |
| A | Adapt | Adapt or alter one aspect What else is like this? What other idea does this suggest? Does past offer parallel? What could I copy? |
| M | Modify (distort or Magnify) | Change part/all of the current situation Order, form, shape? What to add? More time? Greater frequency? Higher? Longer? Thicker? |
| P | Put to other purpose | How could you put your current item/process to another use? What else could I use this for? New ways to use as is? Other uses I modified? Other places to use? |
| E | Eliminate | Delete one aspect What would happen if I got rid of something? What difference would this make? What to subtract? Smaller? Condensed? Miniature? Lower? Shorter? Lighter? Omit? Streamline? Understate? |
| R | Reverse | Reverse one thing What if I did it the other way round? What if I reverse the order it is done or the way it is used? How would I achieve the opposite effect? Other sequence? Transpose cause and effect? Change pace? Transpose positive and negative? How about opposites? Turn it backwards? Turn it upside down? Reverse roles? |

1. **Knowledge:** arrange, define, duplicate, label, list, memorize, name, order, recognize, relate, recall, repeat, reproduce state.
2. **Comprehension:** classify, describe, discuss, explain, express, identify, indicate, locate, recognize, report, restate, review, select, translate,
3. **Application:** apply, choose, demonstrate, dramatize, employ, illustrate, interpret, operate, practice, schedule, sketch, solve, use, write.
4. **Analysis:** analyze, appraise, calculate, categorize, compare, contrast, criticize, differentiate, discriminate, distinguish, examine, experiment, question, test.
5. **Synthesis:** arrange, assemble, collect, compose, construct, create, design, develop, formulate, manage, organize, plan, prepare, propose, set up, write.
6. **Evaluation:** appraise, argue, assess, attach, choose compare, defend estimate, judge, predict, rate, core, select, support, value, evaluate.

Creativity: imagine, invent, resolve, investigate, explore, create, originate, innovate

This guidance is intended to help teachers to order and phrase suitably challenging questions when using works of art, craft and design to inform and develop pupils thinking and response, to inform the development of their ideas, imagination and creativity. Creativity has been added above Evaluation as a higher order thinking activity, since Bloom first developed the taxonomy. This has been proposed also by the national secondary strategy as a suitable addition.

As teachers we tend to ask questions in the "knowledge" category 80% to 90% of the time. These questions are not bad, but using them all the time is. Try to utilize a higher order level of questions. These questions require much more "brain power" and a more extensive and elaborate answers. On the next page are the six question categories as defined by Bloom.

| BLOOMS TAXONOMY | | |
|--------------------------------------|--|---|
| Competence | Skills Demonstrated | Question Cues: |
| Knowledge | <ul style="list-style-type: none"> • observation and recall of information • knowledge of dates, events, places • knowledge of major ideas • mastery of subject matter | list, define, tell, describe, identify, show, label, collect, examine, tabulate, quote, name, who, when, where, etc. |
| Comprehension (understanding) | <ul style="list-style-type: none"> • understanding information • grasp meaning • translate knowledge into new context • interpret facts, compare, contrast • order, group, infer causes • predict consequences | summarize, describe, interpret, contrast, predict, associate, distinguish, estimate, differentiate, discuss, extend |
| Application | <ul style="list-style-type: none"> • use information • use methods, concepts, theories in new situations • solve problems using required skills or knowledge: | apply, demonstrate, calculate, complete, illustrate, show, solve, examine, modify, relate, change, classify, experiment, discover |
| Analysis | <ul style="list-style-type: none"> • seeing patterns • organization of parts • recognition of hidden meanings • identification of components | analyze, separate, order, explain, connect, classify, arrange, divide, compare, select, explain, infer |
| Synthesis | <ul style="list-style-type: none"> • use old ideas to create new ones • generalize from given facts • relate knowledge from several areas • predict, draw conclusions | combine, integrate, modify, rearrange, substitute, plan, create, design, invent, what if?, compose, formulate, prepare, generalize, rewrite |

| | | |
|---|--|---|
| Evaluation | <ul style="list-style-type: none"> • compare and discriminate between ideas • assess value of theories, presentations • make choices based on reasoned argument • verify value of evidence • recognize subjectivity | <p>assess, decide, rank, grade, test, measure, recommend, convince, select, judge, explain, discriminate, support, conclude, compare, summarize</p> |
| <p>Adapted from: Bloom, B.S. (Ed.) (1956) Taxonomy of educational objectives: The classification of educational goals: Handbook I, cognitive domain. New York ; Toronto: Longmans, Green.</p> | | |

Example of the use of Bloom's Taxonomy for planning questions - Looking at, thinking and responding to a work of art and design

| | |
|--------------------|--|
| PURPOSE | <p>To apply Bloom's theory of developing higher levels of thought processes to looking at, thinking and talking about works of art, craft and design.</p> |
| EXPLANATION | <p>Typically when learning about art and design, students are encouraged to look at works of art, to develop their understanding of the artist, the period or movement and an understanding of process, technique, content the artistic form and emotional response or mood evoked by the work. Judgements are often subjective and operate principally at a level of knowledge and understanding. Students are encouraged to evaluate their views, but are more rarely taken beyond comprehension and through the intermediate stages of application, analysis and synthesis. This focus is limiting because the purpose of looking at works of art is principally twofold.</p> <ul style="list-style-type: none"> ▪ Firstly, we wish to enrich and enhance the quality of life of students, to develop their cultural understanding. ▪ Secondly, we hope to develop students own visual literacy skills and their ability to look and think, to develop their own response to art works which will in turn inform their own imagination and ideas for their own art making. This should assist students in their learning about technique, process, composition, use of mark, shape, colour, organisation of content and elements, the use of signs and symbols or cultural references and ultimately meaning. <p>Questions that teachers ask can direct students to the realisation that visual literacy has a greater purpose than just acquiring facts about an artist. It is hoped that students can learn to 'read' a work of art and make connections between the work they are viewing and other art works they</p> |

| | |
|------------------|--|
| | have seen at different times, or between other art forms and other areas of learning. Higher order questioning can lead pupils to make these 'connections' leading to a more developed or imaginative response, which will in turn establish it as a life-long habit and enrich the experience of looking at works of art. |
| PROCEDURE | <p>For any identified visual literacy activity, develop questions that reflect the progression of thinking and responding from the literal (descriptive) level to the evaluative. Not all levels need to be developed for every art work. Consider a range that will lead the pupil to the greater purpose of looking and responding.</p> <p>Each level of Bloom's original taxonomy has been restated for clarity and simplification. Examples of appropriate questions or directives are given to illustrate each level. The familiar portrait <i>Anna Christina</i> by Andrew Wyeth has been used to assist understanding and enable the exemplification.</p> |



Anna Christina by Andrew Wyeth

1967

Tempera

21 1/4 x 23 1/2 in

Museum of Fine Arts, Boston

Wyeth has remained visually and emotionally attached to the real world, a world all but forgotten by his contemporaries and the 20th Century. The importance of this cannot be over-estimated. In this way, Wyeth has served as a link with the great tradition of artists responsive to life and humanity that was essentially severed following the Post-Impressionists, and which is now in the early stages of resumption.

Wyeth reacts to and expresses the character of the people whose lives he has passed through and shared. He searches out the pose, the look in the eye, the set of the mouth, the significant facial wrinkle, the sweater out at the elbow, the signals a dress gives when it has been worn a thousand times, retaining the form and postures of the wearer.

He sees significance in the simplest objects, implements, animals and landscapes of a rural life. A basket, a stump, a hound, an egg-scale, a hillside painted by Wyeth contain a meaning, rising to the level of symbol, which is a blend of the meaning -- poetic and divine -- inherent in all things in life, and the depth of Wyeth's emotional response and visual commitment to them. Wyeth's sensitivity, perception and symbolic intensity elevated him, above the run-of-the-mill illustrator-artist.

Another version of Christina Olson, the painting "Anna Christina," 1967, depicting her sitting against a foggy background, is a marvelous character study emphasizing a prominent, hooked nose, eyes that pull against each other as one looks toward the viewer, a jutting lower lip and weathered cheek. But it just doesn't hold up as a solid head. It is again the extraordinarily talented illustration of a head, rather than the three-dimensional re-creation of a head in the sense of Rembrandt, Vermeer, Cezanne, etc.

These questions are designed to develop higher order thinking in response to this painting and several others by the artist Andrew Wyeth, in preparation by pupils who are planning to make a painting of an elderly relative.

| | |
|----------------------|--|
| Knowledge | <p><i>the recall of specific information</i></p> <ul style="list-style-type: none"> • Who was Andrew Wyeth? • Where did he live? And what country do his paintings depict? • Who is the person in the painting? • What is Tempera? |
| Comprehension | <p><i>an understanding of what has been viewed and of other work by the artist</i></p> <ul style="list-style-type: none"> • What sorts of scenes are depicted in the Andrew Wyeth paintings you have seen? • What kind of painting is this? • Where might this picture have been painted or where did the sitter pose? • What can you tell us about the person in the picture, just by looking and thinking? • Can you suggest what Anna Christina might do? |
| Application | <p><i>the converting of abstract content to concrete situations – applying what is know and understood to real situations</i></p> <ul style="list-style-type: none"> • Can you describe the way in which the artist will have organised the room for the portrait to be painted? • If you were to use the same pose in your painting of an elderly relative, then what would you include in your painting to tell us about your relative? • How might your painting be different? • How long do you think the sitter had to pose for the portrait? Could you sit still for that amount of time? How do you think the artist might have organised the blocks of time for each sitting? • Can you describe the stages the artist may have gone through from start to finish to complete this painting? |

| | |
|-------------------|---|
| Analysis | <p><i>the comparison and contrast of the content to personal experiences</i></p> <ul style="list-style-type: none"> • What kind of person do you think Anna Christina is? • How would you react if you met her? • Can you compare Anna Christina to a member of your own family? • Do you think the painting is an honest description of the person? • Do you know anyone who this painting reminds you of? Describe that person? • If you heard Anna Christina talking – what would she sound like? |
| Synthesis | <p><i>the organization of thoughts, ideas, and information from the content</i></p> <ul style="list-style-type: none"> • What do you think the sitter (Anna Christina) is thinking? • If you were to pose for a portrait, what would you think about, to pass the time? • Draw a selection of compositional studies to show how you would use a similar informal pose if you were planning to make a painting of an elderly relative. Try to include the actual chair they would sit in and the background of the room where they would pose and where you would make the painting. • Make a list of the things you would want to include in your painting. • Describe what your posing figure would look like if viewed from several different viewpoints around them. Make some sketches if this would help you. • What other way could you make a portrait, that tells us more about the person in the picture? |
| Evaluation | <p><i>the judgment and evaluation of characters, actions, outcome, etc., for personal reflection and understanding</i></p> <ul style="list-style-type: none"> • Do you think Anna Christina is a real person? • Why do you think Andrew Wyeth wanted to paint this portrait? • What does the style of painting tell you about Anna Christina? • What do you think the clothes she is wearing and the chair she is sitting in, tell you about her? • Do you think this is an honest painting? • Would you want to make your painting of an elderly relative like this painting by Andrew Wyeth? or how would you make it different ? • How does this portrait compare with others you have seen? • Why do artists make portraits and not just take photographs of people to exhibit? |

HEALTH WARNING

Mumps alert as cases surge

■ **Cathy O'Leary**
Medical Editor

WA doctors are alarmed by a surge in cases of mumps, a highly infectious viral illness that is rarely seen today but can cause fatal complications such as meningitis and miscarriage.

Health Department figures show 19 cases have been reported in WA since late December compared with just two cases in the same period last year, with most occurring in older teens and young adults aged in

their early 20s living in Perth. The department said yesterday it was concerned by the spike in cases that did not appear to be linked, suggesting the virus was in wide circulation and there were many other cases not being detected.

Mumps is rarely seen because of the widespread use of the measles, mumps and rubella vaccine given to children.

"The department is not aware of any serious outcomes among these cases, although mumps infection can be associated with meningitis,

encephalitis, hearing loss, pancreatitis and miscarriage," a spokeswoman said.

"Most of the cases have not been vaccinated against mumps, although a few received vaccine many years ago. Immunity to mumps vaccine can wane over time but most vaccinated people remain well-protected."

Australian Medical Association WA president Richard Choong said many young doctors would never have seen a case of mumps.

"This could almost be considered

an old disease, so to have such a high number of cases in a short period is very unusual," Dr Choong said.

"What is really alarming is that it's not a cluster but seems to be floating out there in the wider community.

"It's a concern that in half of these cases the people have either never been vaccinated or only partially, so it reinforces the need for us to have very high rates of vaccination."

Symptoms of the mumps include swollen salivary glands behind and

below the jaw, fever, headache, aching muscles, lethargy and painful testicles in men.

The department said people with symptoms should avoid contact with other people and see their GP.

It advised parents to ensure their children were up to date with their mumps vaccinations which were usually given as part of the MMR vaccine at 12 months and four years.

Young adults who had not received the MMR vaccine should see their GP.

A steal at



Questions

From *Imported malaria cases and death, United Kingdom 1992 – 2011*

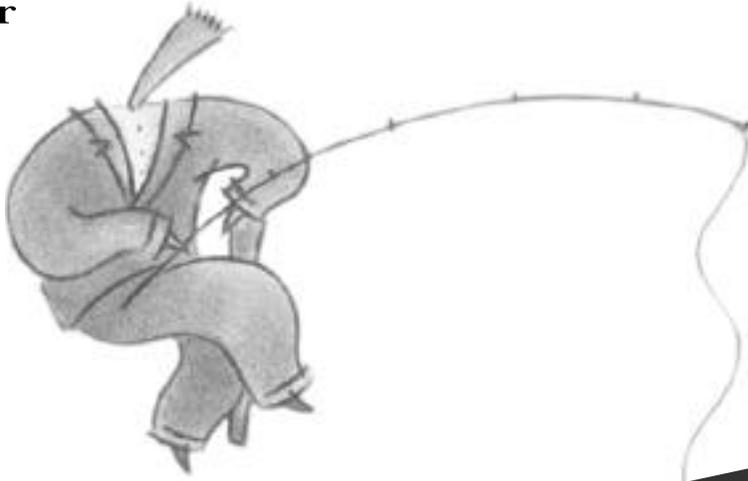
- 1) Which year had the most deaths in the UK as a result of Malaria?
- 2) Which year had the most recorded cases of Malaria and how many cases were there?
- 3) Describe the trend of Malaria cases in the UK from 2000 to 2011.
- 4) Do you feel that there is an overall meaningful reduction in the number of Malaria cases in the UK over the years the data has been recorded? Explain
- 5) Research Malaria and describe how it is spread. From your newly acquired knowledge do you think Malaria is spread in the UK or are all the cases imported from overseas? Explain your answer.

From *Imported malaria cases by species and region of travel, United Kingdom 2007 – 2011*

- 6) Use the data in the table from 2011 only to plot the number of cases of malaria in the UK from the different parts of Africa. (Hint will this be a bar graph or a line graph). Include your hand drawn graph with these questions.
- 7) Which continent has the greatest cases of Malaria?
- 8) Why is Europe not included?
- 9) Australia has the climate but not Malaria can you find out 2 mosquito borne infectious diseases in Australia.

From *Salmonella by age group and year, United Kingdom 2000 – 2011*

- 10) What is salmonella, what symptoms does it cause and how is it spread?
- 11) Which age group has the highest numbers of Salmonella infection? Speculate as to why?
- 12) What do you think are our numbers of infection in Australia? This data only looks at pure numbers of infections it does not at the infection rate per 100 or 1000 people. What difference do you think this makes? Comment



Teaching Media Literacy in the Age of the Internet

The online world is quickly becoming a source of primary information for both teachers and students. Considering the enormous amount of information available online and that about 75% of all K-12 schools have Internet access, students and teachers need to be able to critically evaluate Web pages for authenticity, applicability, authorship, bias, and usability.

Unlike the media center, there are no media specialists to sort out the valuable information from the substandard information. With more than 350 million documents available on the Web alone, finding relevant information online can be daunting. Therefore, the ability to critically evaluate information is an invaluable skill in this information age.

The acquisition of digital literacy skills is dependent upon the student's ability to find information, determine its usefulness and accuracy, and utilize it effectively. What follows are 26 criteria that enable teachers and students to assess every Web page the Net has to offer.

Authority When we look at Internet information with a critical eye, we want to know the basis of the author's authority. Some filters we can employ are:

- Is the author a well-regarded name you recognize?
- Does the online document contain a biography and an email address?
- Did you link to this site from a site you trust?
- Are you led to additional information about the author?

<http://www.amazon.com>

Bias Biased sites contain words that try to persuade rather than inform. Some of these words include over-generalizations and simplifications and may also contain games, giveaways, contests, or celebrity endorsements intended to persuade. Some things to think about include:

- Is it clear what organization is sponsoring the page?
- Is there is a link to the sponsoring organization's Web site?
- Is the page actually an ad disguised as information?

Citations If the author of a site includes a source bibliography, students can consult these sources to find additional information about the topic and compare the author's content

The ABCs of Web Site Evaluation

with other works. If the author leads the user to related sources, it allows the student to evaluate the author's scholarship. Citations should be full citations to allow students to locate the book or periodical at the library.

Dates Every credible Web site includes the date that it was created and the date of last update. Another date that may be important to your students is the date the data was collected. Students need to ask themselves if the information they are looking for is from an area that demands more current information. In this case, the date of last update is an important feature to look for.

Efficiency If you plan to use a site with a large group of students, it is important to try it at all times of day. Some sites get very busy at midday and may slow down your lesson. If there are large graphics on the page, make sure the page resides in your cache to speed up the download time. If you are planning a major lesson around a site, the best idea is to ask permission from the site's author and use WebWhacker or WebBuddy to retrieve the entire site or a portion of it to your computer.

<http://www.bluesquirrel.com/whacker/>

<http://www.dataviz.com/products/webbuddy/>

Fallacy As with print material, one thing that may happen on a Web site is that the information presented may be used out of context. Citations allow students to research the original

document and become familiar with the surrounding text. Another event that occurs on the Web that is unique to hypertext systems is the ability to jump into a Web site at any point. Students should be encouraged to find the “top” of the Web site and read the author’s purpose and rationale for providing the information.

Graphics As bandwidth shrinks and becomes a precious commodity, more attention needs to be focused on the graphics that are included on a Web site. A clearly labeled graphic is worth a thousand words when illustrating a point. Graphics should aid students in reaching the desired objectives for using the site and should serve a clear purpose for the intended audience.

Handicapped Access In this day of the graphical browser, the statement that a page should be usable via a text-based browser is often disregarded. Visually impaired users may utilize a screen reader to read the Web page, and it is important that there be text available and text alternatives for the graphics software to “read.”

Information Availability Tell students that a particular piece of information might not be available online because firms who pay to create and disseminate information are unlikely to provide this information free of charge. Also tell students that keeping information up-to-date is costly.

Jerry-Built *Webster’s Dictionary* defines jerry-built as “built poorly, of cheap materials.” When evaluating a site, students need to understand that a page that contains multiple spelling and grammatical errors may have been thrown together. There is one exception: If the native language of the Web site designer is not English, spelling and grammar inconsistencies should be overlooked.

Knowledge Before researching online, students should have working knowledge of the topics they are pursuing. This allows students to relate how the new information compares with what they already know about the subject.

Links Students should also try to find out if a site is meant to be comprehensive in scope or is just an overview or sampler of links. The links should be appropriate for the site’s intended audience and also offer something that is not available at any other online destination.

Misinformation Students need to realize some of the sources of misinformation on the Net, which include the fact there is nothing to stop a Web page author from modifying the text at any time; the use of opinion verbs and appeals to emotion may indicate bias; and there are many jokes and pranks on the Net.

Navigability A Web page should be designed for easy navigation. Links should be easy to identify and grouped in

some type of logical order. Students should be able to tell at first glance how a site is organized and the options available. An added bonus is the inclusion of a keyword search function.

Online Research Models There are numerous research models available that are applicable to the online research process. They all have things in common including the formation of the research question, the planning of the search strategy, the gathering of information, and more.

Pertinent Central to the online research model is the need for students to know when to disregard information. With the amount of information available, it is imperative that students learn how to evaluate whether the information that they find is pertinent to their purpose. This begins by having students clarify their objectives before they begin the research process.

Quantity of Information Some Web sites continue to grow in size every day. With the interactive nature of the Internet, some sites solicit input, examples, and stories from others. If this type of site meets the students’ needs, they should be reminded to visit it regularly to keep up-to-date. Having students practice extensive searches on topics that they are familiar with will help them realize the most effective way to

find information and help them eliminate some of the frustrations of the overabundance of information.

Requirements Some sites have certain requirements for use. Students should learn to exercise caution if they are asked to submit registration information at a site. Another annoyance is the use of proprietary software (plug-ins or players) that forces the user to access the site using a specific Internet browser. When evaluating a Web site to use for instruction, be aware that, if it was

designed for one browser or the other, it may not be presented properly. All Web pages should be designed with the world’s two most popular browsers in mind: Netscape Navigator and Internet Explorer. (See our October 1998 Newsletter cover story for more information.)

Scholastic Reviews There are many Web review columns in professional periodicals that list and describe Web sites of value. Use these reviews to choose sites to support instruction. There are many awards given on the Net, and you should use caution when choosing sites because they have won awards. Oftentimes, awards are created to build up visits to the site of the awarding page. One way to determine if a site is scholarly in nature is to see what type of sites have linked to it. This type of Internet search can be conducted using both HotBot and AltaVista.

<http://www.hotbot.com>

<http://www.altavista.com>

“Digital literacy is the ability to understand and use information in multiple formats from a wide range of sources when it is presented via computers.”

— Paul Gilster

HotBot employs a drop-down menu to search for links to individual sites, while AltaVista allows users to type **link:<URL>** in its search box. Try this example with AltaVista. In the search box at the top of the home page, type the following:

link:<http://www.classroom.com>

Theorists The major educational tenets of noted theorists still remain viable in the online world. Whether it is Eisenberg and Bekowitz (The Big Six), Robert Marzano (Dimensions of Learning), or Bernie Dodge (WebQuests), sound educational theory should be the basis of all learning, including online research.

<http://big6.syr.edu>

<http://www.mcrel.org/products/dimensions/whathow.html>

<http://edweb.sdsu.edu/webquest/webquest.html>

By having students take the information that they find and make conscious, educated decisions about what to use and how to structure it, they gain the higher-order thinking skills necessary for lifetime learning in an information-rich society.

Uniqueness The Web has many unique characteristics that are not present in the print world. Marsha Tate and Jan Alexander describe marketing-oriented Web pages, Web pages that blend entertainment, information, and advertising, and software requirements that limit access to information as some of these unique characteristics.

<http://www.science.widener.edu/~withers/webeval.htm>

Verifiable Whenever possible students need to verify Internet information in a reputable print source. If no citations are included, the student needs to conduct further research to determine the validity of the site's content.

Evaluation Web Sites

Critical Evaluation Surveys

<http://www.capecod.net/schrockguide/eval.htm>

Evaluating Internet-Based Information: A Goals-Based Approach

<http://www2.ncsu.edu/unity/lockers/project/meridian/feat2-6/feat2-6.html>

WWW CyberGuide Ratings for Content Evaluation

<http://www.cyberbee.com/guide1.html>

Evaluating the Quality of Internet Information Sources

<http://itech1.coe.uga.edu/faculty/gwilkinson/criteria.html>

Evaluation of World Wide Web Sites: An ERIC Digest

<http://ericir.syr.edu/ithome/digests/edoir9802.html>

Bibliography on Evaluating Internet Resources

<http://refserver.lib.vt.edu/libinst/critTHINK.HTM>

ED's Oasis Evaluation Guidelines

<http://www.edsoasis.org/guide2.html>

The Five W's As with any investigative reporting, students can easily apply the five W's to simply evaluate a Web site: Who wrote the pages and are they an expert in the field? What does the author say is the purpose of the site? When was the site created, updated, last worked on? Where does the information come from? Why is the information useful?

Xtra information Tate and Alexander have also designed evaluation instruments for different types of Web pages. They contend that different criteria need to be examined for the different types of pages.

<http://www.science.widener.edu/~withers/webeval.htm>

Yahoo! Information in a general-purpose directory such as Yahoo! has been filtered and organized to produce a browsable, keyword-searchable index of a portion of the Net's Web destinations. Students should take advantage of these directories to get an overview of what is available on the Net as they formulate their search strategies.

<http://www.yahoo.com>

Search engines are useful only when students have gained their background knowledge, identified key terms, and learned effective search strategies. There is much more information available through search engines than directories, and as long as students have a clear strategy in mind, the number of results returned should not be overwhelming.

<http://www.search.com>

Zen In a 1995 issue of *Computers in Libraries*, Kirk Doran writes about what the Internet is not. He contends that, since the Internet cannot be searched all at once or seen in its entirety, the usual method of matching one type of question with one type of source does not work. He feels, due to the fact that the Net is not run by one company, it lacks the organization and consistency we are accustomed to in print, and the navigation is not consistent.

<http://www.stlcc.cc.mo.us/lstdocs/internet.htm>

Finally, Paul Gilster's definition of digital literacy can be summed up in a single phrase: "the ability to understand and use information in multiple formats from a wide range of sources when it is presented via computers."

<http://www.december.com/cmc/mag/1997/oct/bunz.html>

If we strive to teach students the best way to critically evaluate the information that they find in relation to the purpose at hand, we will produce a generation of digitally literate adults who are equipped to learn throughout their lifetimes. In the end, is this not the greatest lesson we can teach today's students?

by Kathy Schrock

<kschrock@capecod.net>

<http://www.capecod.net/schrockguide/>

Evaluating websites to establish credibility and authenticity

| | 1 | 2 | 3 | 4 | 5 |
|---------------------------|---|---|---|--|--|
| <i>Dimension</i> | <i>Poor</i> | <i>Below Average</i> | <i>Average</i> | <i>Above Average</i> | <i>Excellent</i> |
| Design | Poorly organized; contains obvious errors; loads slowly | Organization somewhat confusing; some errors; loads slowly | Organization acceptable; no obvious errors; loads adequately | Good organization; no errors; loads quickly | Excellent organization; clear and free of errors; loads quickly and completely |
| Navigability | Difficult to find and follow site navigation links | Navigation links visible but somewhat confusing | Navigation links clear and readily available | Navigation links clear and logical; site map included | Navigation logical and clear; site map and search engine available |
| Authority | Unclear who authored the site | Author name and contact information included; but credentials lacking | Author name, contact information, and some credential info included | Author name, contact information, full credentials included | Well-regarded author provides all necessary information; site is linked to by others |
| Bias | Site attempts to persuade or sell views | Site presents facts, but some bias is evident | Site is mostly neutral; selling pages are segregated | Site contains no attempts to sell or persuade | Site presents multiple viewpoints with no bias |
| Citations | No citations are evident | Citations are included on some sources but not all | All sources include brief citations, but site lacks bibliography | All sources are properly cited with site bibliography | All sources properly cited, full bibliography, with active links |
| Dates | No dates evident | Site contains creation date but no dates for update information | Site contains both creation and dates for update information | Site contains dates for creation and update information and some dates relating to data collection | Site contains creation, update, and data collection dates for all key information |
| Content | Data quality is questionable, and quantity is limited | Data quality appears adequate, limited quantity | Data is adequate in quality and quantity | Data quality is established, and quantity is sufficient for coverage | Data quality is unquestioned, and quantity provides excellent coverage |
| Links | Few relevant working links included | Adequate number of links, but many no longer functional | Sufficient number of links, and all are functional | A good variety of useful, active links | Active links to wide variety of excellent sites |
| Handicapped access | No options available for handicapped | Some pages on site offer text-only option | Site offers text-only option on all pages | Site offers clear options for handicapped | Site includes handicapped options on all pages and links to support software |
| Relevance | Site does not meet instructional objectives | Site meets some aspects of instructional objectives | Instructional objectives are adequately met | Site exceeds most objectives requirements | Site exceeds all instructional objectives |

Use the rubric above to evaluate four of the websites that were cited. Place a numeric value for each of the criteria (except column one where you are to record the URL of the website).

| | Website 1 | Website 2 | Website 3 | Website 4 |
|--|------------------|------------------|------------------|------------------|
| URL source www.nmfs.noaa.gov | | | | |
| Authority | | | | |
| Bias | | | | |
| Citations | | | | |
| Last updated | | | | |
| Content | | | | |
| Links | | | | |
| Relevance | | | | |
| | | | | |

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Imported malaria cases and deaths, United Kingdom: 1992 - 2011

Data from the HPA Malaria Reference Laboratory

View data as a [graph](#)

View 2007 - 11 data by [region of travel](#) and *Plasmodium* species

View 2007 - 11 data by [reason for travel](#) and *Plasmodium* species

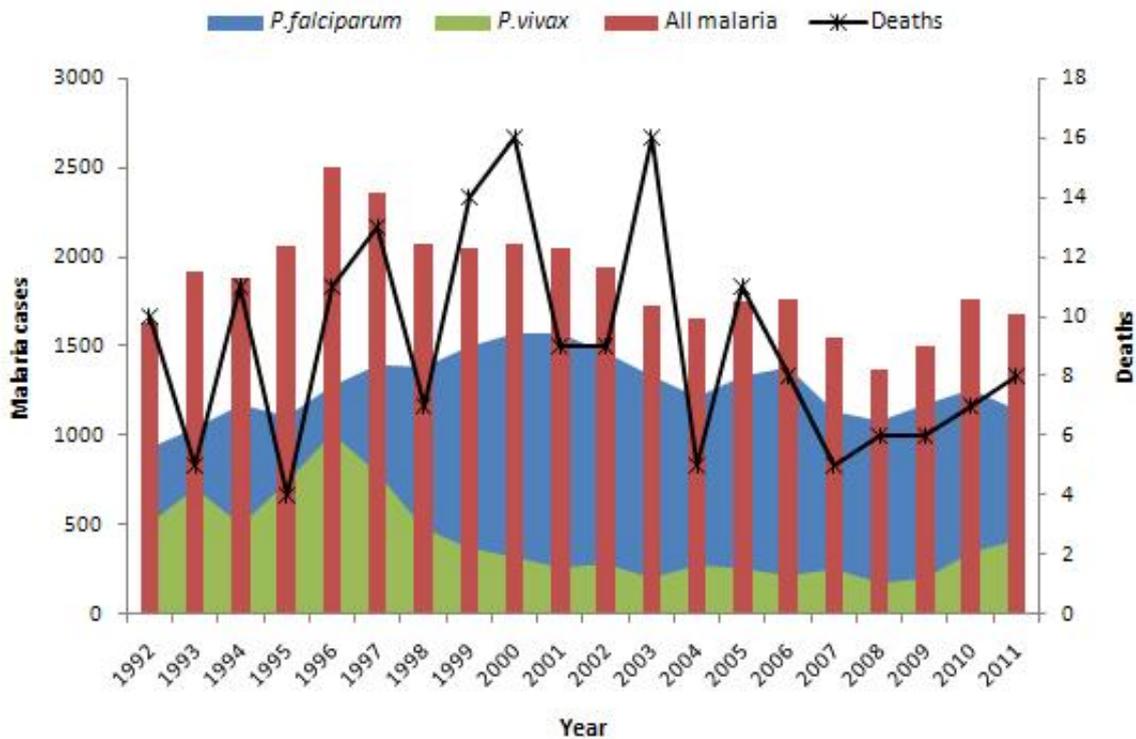
| Year | * <i>P.falciparum</i> | <i>P.vivax</i> | <i>P.ovale</i> | <i>P.malariae</i> | Mixed | <i>P</i> unspecified | Total | Deaths |
|------|-----------------------|----------------|----------------|-------------------|-------|----------------------|---------|--------|
| 2011 | 1149 | 416 | 77 | 31 | 4 | - | 1677 | 8 |
| 2010 | 1263 | 350 | 99 | 37 | 12 | - | 1761 | 7 |
| 2009 | 1179 | 205 | 69 | 36 | 6 | - | 1495 | 6 |
| 2008 | 1087 | 177 | 76 | 20 | 9 | 1 | 1370 | 6 |
| 2007 | 1139 | 256 | 108 | 30 | 15 | - | 1548 | 5 |
| 2006 | 1386 | 219 | 106 | 26 | 20 | - | 1758(†) | 8 |
| 2005 | 1338 | 258 | 116 | 29 | 10 | 3 | 1754 | 11 |
| 2004 | 1221 | 278 | 121 | 28 | 12 | - | 1660 | 5 |
| 2003 | 1339 | 206 | 134 | 27 | 15 | 1 | 1722 | 16 |
| 2002 | 1469 | 284 | 134 | 43 | 13 | 2 | 1945 | 9 |
| 2001 | 1576 | 263 | 157 | 37 | 16 | 1 | 2050 | 9 |
| 2000 | 1576 | 322 | 124 | 30 | 16 | 1 | 2069 | 16 |
| 1999 | 1504 | 374 | 113 | 41 | 11 | 2 | 2045 | 14 |
| 1998 | 1388 | 484 | 157 | 26 | 17 | 1 | 2073 | 7 |
| 1997 | 1401 | 790 | 125 | 27 | 20 | 1 | 2364 | 13 |
| 1996 | 1283 | 1014 | 134 | 35 | 33 | 1 | 2500 | 11 |
| 1995 | 1112 | 742 | 143 | 29 | 29 | - | 2055 | 4 |
| 1994 | 1178 | 501 | 125 | 44 | 39 | - | 1887 | 11 |
| 1993 | 1048 | 708 | 116 | 20 | 30 | - | 1922 | 5 |
| 1992 | 935 | 512 | 120 | 24 | 38 | - | 1629 | 10 |

* *P* is *Plasmodium*

† In April 2006, there was one report of *Plasmodium knowlesi* reported in a traveller who had been to Brunei. *P. knowlesi*

is an extremely rare cause of malaria in humans; it is a primate malaria parasite whose hosts include crab-eating macaques, pig-tailed macaques, and leaf monkeys. It is transmitted by mosquitoes of the *Anopheles leucosphyrus* group. Natural infection in humans, in whom it resembles *P. malariae*, was first reported in 1965. Occasional sporadic cases have occurred since then. So far, *P. knowlesi* has been found in humans in Malaysia, Malaysian Borneo, and Thailand [Jongwutiwes S, Putaporntip C, Iwasaki T, Sata T, Kanbara H. Naturally acquired *Plasmodium knowlesi* malaria in a human, Thailand. *Emerg Inf Dis* 2004; **10** (12): 2211-3. Available at <http://www.cdc.gov/ncidod/eid/vol10no12/04-0293.htm>.

Imported malaria cases and deaths, United Kingdom: 1992 - 2011



Last reviewed: 24 April 2012

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Imported malaria cases by species and region of travel, United Kingdom: 2007 to 2011

View same data for [2010](#), [2009](#), [2008](#), [2007](#)

Imported malaria cases by species and region of travel, United Kingdom: 2011

| Geographic area | <i>*P.falciparum</i> | <i>P.vivax</i> | <i>P.ovale</i> | <i>P.malariae</i> | Mixed | <i>P</i> unspecified | Total |
|-----------------------|----------------------|----------------|----------------|-------------------|----------|----------------------|-------------|
| West Africa | 743 | - | 47 | 20 | 1 | - | 811 |
| East Africa | 114 | 4 | 10 | 5 | 1 | - | 134 |
| Central Africa | 62 | - | 6 | 2 | - | - | 70 |
| Southern Africa | 53 | - | 2 | - | - | - | 55 |
| North Africa | - | - | - | - | - | - | - |
| Africa - unspecified | 17 | - | 2 | 1 | - | - | 20 |
| Asia§ | 9 | 331 | 1 | - | 2 | - | 343 |
| Far East/SE Asia | 1 | 7 | - | - | - | - | 8 |
| Central/South America | 2 | 2 | - | - | - | - | 4 |
| Middle East | 1 | - | - | - | - | - | 1 |
| Oceania | - | 2 | - | - | - | - | 2 |
| Not given | 147 | 70 | 9 | 3 | - | - | 229 |
| Total | 1149 | 461 | 77 | 31 | 4 | - | 1677 |

**P* is *Plasmodium*

§ Asia includes: India, Pakistan, Bangladesh, Nepal, Sri Lanka, Bhutan, Myanmar (Burma), Afghanistan

Imported malaria cases by species and region of travel, United Kingdom: 2010

| Geographic area | <i>*P.falciparum</i> | <i>P.vivax</i> | <i>P.ovale</i> | <i>P.malariae</i> | Mixed | <i>P</i> unspecified | Total |
|-----------------------|----------------------|----------------|----------------|-------------------|-------|----------------------|-------|
| West Africa | 806 | 1 | 61 | 13 | 5 | - | 886 |
| East Africa | 111 | 11 | 13 | 11 | 2 | - | 148 |
| Central Africa | 48 | - | 5 | 2 | 2 | - | 57 |
| Southern Africa | 42 | - | 7 | 1 | - | - | 50 |
| North Africa | - | - | - | - | - | - | - |
| Africa - unspecified | 22 | 2 | 3 | 2 | - | - | 29 |
| Asia | 24 | 250 | - | - | 2 | - | 276 |
| Far East/SE Asia | 1 | 4 | - | - | - | - | 5 |
| Central/South America | 2 | 5 | - | - | - | - | 7 |

| | | | | | | | |
|-------------|------|-----|----|----|----|---|------|
| Middle East | - | - | - | - | - | - | - |
| Oceania | - | 4 | - | - | - | - | 4 |
| Not given | 207 | 73 | 10 | 8 | 1 | - | 299 |
| Total | 1263 | 350 | 99 | 37 | 12 | - | 1761 |

Imported malaria cases by species and region of travel, United Kingdom: 2009

| Geographic area | <i>*P.falciparum</i> | <i>P.vivax</i> | <i>P.ovale</i> | <i>P.malariae</i> | Mixed | <i>P unspecified</i> | Total |
|-----------------------|----------------------|----------------|----------------|-------------------|-------|----------------------|-------|
| West Africa | 750 | 2 | 42 | 17 | 2 | - | 813 |
| East Africa | 98 | 9 | 8 | 6 | - | - | 121 |
| Central Africa | 30 | - | 1 | 2 | 1 | - | 34 |
| Southern Africa | 33 | - | 4 | 4 | - | - | 41 |
| North Africa | - | - | - | - | - | - | - |
| Africa - unspecified | 25 | - | 1 | 1 | - | - | 27 |
| Asia | 15 | 133 | - | - | - | - | 148 |
| Far East/SE Asia | 3 | 4 | - | - | - | - | 7 |
| Central/South America | - | 5 | - | - | 1 | - | 6 |
| Middle East | 1 | - | - | - | - | - | 1 |
| Oceania | 1 | 8 | - | - | - | - | 9 |
| Not given | 223 | 44 | 13 | 6 | 2 | - | 288 |
| Total | 1179 | 205 | 69 | 36 | 6 | - | 1495 |

Imported malaria cases by species and region of travel, United Kingdom: 2008

| Geographic area | <i>*P.falciparum</i> | <i>P.vivax</i> | <i>P.ovale</i> | <i>P.malariae</i> | Mixed | <i>P unspecified</i> | Total |
|-----------------------|----------------------|----------------|----------------|-------------------|-------|----------------------|-------|
| West Africa | 763 | 1 | 38 | 10 | 6 | - | 818 |
| East Africa | 73 | 10 | 7 | 5 | - | - | 95 |
| Central Africa | 23 | - | 6 | - | - | - | 29 |
| Southern Africa | 27 | 2 | 4 | - | - | - | 33 |
| North Africa | - | - | - | - | - | - | - |
| Africa - unspecified | 20 | - | 5 | - | - | - | 25 |
| Asia | 8 | 118 | - | - | 1 | - | 127 |
| Far East/SE Asia | 1 | 3 | - | - | 1 | - | 5 |
| Central/South America | - | 3 | - | - | - | - | 3 |
| Middle East | 1 | - | - | - | - | - | 1 |
| Oceania | - | 10 | - | - | 1 | - | 11 |
| Not given | 171 | 30 | 16 | 5 | - | 1 | 223 |
| Total | 1087 | 177 | 76 | 20 | 9 | 1 | 1370 |

Imported malaria cases by species and region of travel, United Kingdom: 2007

| Geographic area | <i>P.falciparum</i> | <i>P.vivax</i> | <i>P.ovale</i> | <i>P.malariae</i> | Mixed | <i>P unspecified</i> | Total |
|----------------------|---------------------|----------------|----------------|-------------------|-------|----------------------|-------|
| West Africa | 719 | 2 | 67 | 11 | 9 | - | 808 |
| East Africa | 92 | 8 | 11 | 10 | 2 | - | 123 |
| Central Africa | 23 | - | 2 | 2 | - | - | 27 |
| Southern Africa | 31 | 1 | 1 | 1 | - | - | 34 |
| North Africa | - | - | - | - | - | - | - |
| Africa - unspecified | 12 | 1 | 1 | - | - | - | 14 |
| Asia | 22 | 169 | 1 | - | 2 | - | 194 |
| Far East/SE Asia | 1 | 4 | - | - | - | - | 5 |

| | | | | | | | |
|-----------------------|------|-----|-----|----|----|---|------|
| Central/South America | 2 | 11 | 1 | - | - | - | 14 |
| Middle East | 1 | - | - | - | - | - | 1 |
| Oceania | 1 | 14 | - | - | - | - | 15 |
| Not given | 235 | 46 | 24 | 6 | 2 | - | 313 |
| Total | 1139 | 256 | 108 | 30 | 20 | - | 1548 |

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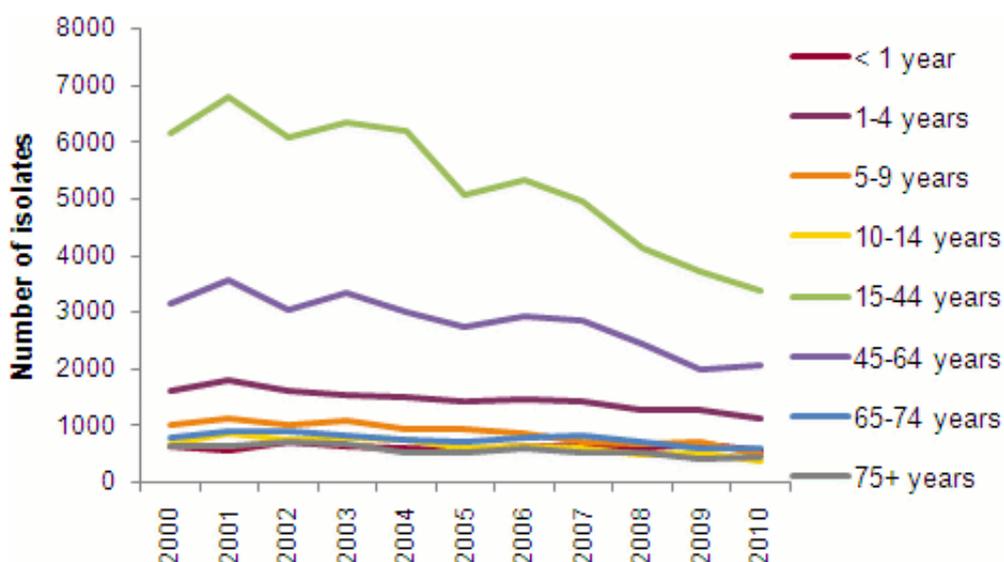
Salmonella by age group and year

All human isolates reported to the Health Protection Agency Centre for Infections. England and Wales, 2000-2010

| Year | <1 | 1-4 years | 5-9 years | 10-14 years | 15-44 years | 45-64 years | 65-74 years | 75+ years |
|------|-----|-----------|-----------|-------------|-------------|-------------|-------------|-----------|
| 2000 | 633 | 1622 | 1017 | 678 | 6160 | 3139 | 788 | 628 |
| 2001 | 580 | 1811 | 1135 | 861 | 6809 | 3574 | 888 | 633 |
| 2002 | 699 | 1617 | 1000 | 737 | 6078 | 3039 | 885 | 699 |
| 2003 | 643 | 1533 | 1106 | 789 | 6353 | 3343 | 810 | 656 |
| 2004 | 594 | 1500 | 937 | 762 | 6190 | 3017 | 768 | 522 |
| 2005 | 578 | 1433 | 934 | 606 | 5090 | 2746 | 730 | 525 |
| 2006 | 652 | 1468 | 864 | 648 | 5345 | 2913 | 774 | 581 |
| 2007 | 625 | 1428 | 708 | 606 | 4965 | 2860 | 809 | 540 |
| 2008 | 602 | 1258 | 679 | 500 | 4144 | 2423 | 695 | 528 |
| 2009 | 656 | 1280 | 721 | 520 | 3707 | 2008 | 592 | 396 |
| 2010 | 552 | 1144 | 482 | 390 | 3394 | 2063 | 612 | 434 |

Source: HPA Salmonella Dataset (Labbase2). Please note, numbers may be higher than previously reported due to the inclusion of all isolates of Salmonella, rather than only faecal, and lower gastrointestinal tract isolates.

Graph of this data



[View epidemiological data for other gastrointestinal infections](#)

Last reviewed: 25 March 2011

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BEFORE you begin, please note:

- This brief guide is primarily for students doing assignments at Curtin University, not for those publishing using the APA 6th style.
- If you are publishing in the APA 6th style, please consult the APA publication manual:

American Psychological Association. (2009). *Publication manual of the American Psychological Association* (6th ed.). Washington, DC: Author.

For more details see the [APA Style Blog](#)

- It is important that you check the assignment guide of your Department or School as details may vary from the guidelines on this sheet. You may be penalised for not using the referencing style that is required by your School/Department.

What is Referencing?

Referencing is a standardised method of acknowledging sources of information and ideas that you have used in your assignment in a way that uniquely identifies their source. Direct quotations, facts and figures, as well as ideas and theories, from both published and unpublished works, must be referenced.

Why Reference?

Referencing is necessary to avoid plagiarism, to verify quotations, and to enable readers to follow-up and read more fully the cited author's arguments.

Steps Involved in Referencing

1. Collecting Bibliographic Details

Note down the full bibliographic details of the source from which the information is taken, including the relevant page number(s). This information is the basis of a **citation or reference**.

In the case of a **book**, 'bibliographical details' refers to: author/editor, year of publication, title, edition, volume number, place of publication and publisher as found on the front and back of the title page. (Not all of these details will necessarily be applicable).

In the case of a **journal article** the details required include: author of the article, year of publication, title of the article, title of the journal, volume and issue number of the journal, and page numbers.

For all **electronic information**, in addition to the above you should note the DOI (Digital Object Identifier) if one exists, and if one does not exist, the web address (URL) of the database you found the article in. [For more details see the DOI Information Sheet.](#)

2. In-Text Citations

A citation inserted at the appropriate place within the text of the document is called an **in-text citation**. This usually takes the form of the name of the author, followed by the year of publication.

Two acceptable forms of in-text citations are:

Miller and Collins (2009) - use **and** when family names are outside parentheses
(Miller & Collins, 2009) - use **&** when family names are inside parentheses

If two or more authors are cited at the same point in the text then they are included in the same in-text citation, separated by a semicolon, e.g., (Brown, 1991; Smith, 2003).

Short quotes

For fewer than 40 words incorporate the quote into the text and use double quotation marks.

“.....” (Brown & Brown, 2008, p.112).

Brown and Brown (2008) suggested “.....” (p. 112), and this would provide...

When paraphrasing, the APA 6th manual (p.171) encourages you to provide page or paragraph numbers to help the reader locate the information.

Use paragraph number for .html documents (e.g. British Empire 1922, 2009, para.4)

Page Numbers

Use p. for a single page and pp. for double pages.

Long Quotes

If the quotation is 40 or more words use a freestanding block of text

- start on a new line
- indent the block about half an inch from the left
- use double spacing
- omit quotation marks

3. Reference List

A reference list includes books, journal articles etc that you have cited in the text of your essay whereas a bibliography is a list of sources consulted as well as cited.

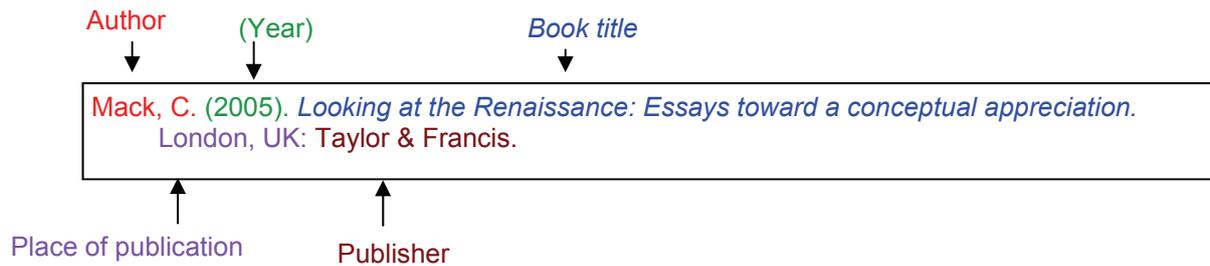
- The reference should appear at the end of your work on a separate page
- The reference list is arranged alphabetically by author
- Where an item has no author it is cited and listed by its title
- The second and subsequent lines of each reference need a hanging indent
- Use double spacing between references

[Example of a Reference List in the APA style](#)

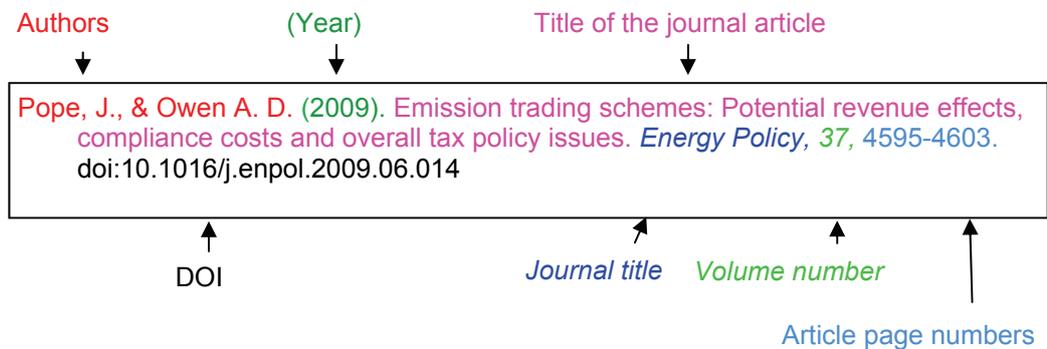
Elements of a Reference

A reference or citation consists of elements that allow the reader to trace the original book, article or website you have consulted and cited.

Book:



Journal article from a database:



Web Page:



Underlined hyperlink in URL

This can be removed if required. APA has no rule regarding the inclusion of a hyperlink and they provide no guidance. This is at the discretion of the respective lecturers. For more information see the [APA Style Blog FAQ](#)

Examples of Referencing:

For Reference Types to use with EndNote, click [here](#) for the EndNote X5 LibGuide

| Books | In-Text Example | Reference List Examples |
|--------------------------|---|--|
| <i>Single author</i> | The theory was first considered in 2000 (Pash, 2008) OR Pash (2008) claimed that... | Pash, C. (2008). <i>The last whale</i> . North Fremantle, W.A.: Fremantle Press. |
| <i>2 authors</i> | Roitman and LaFontaine (2012) ... OR "... to achieve consistency" (Roitman & LaFontaine, 2012, p. 45) | Roitman, J. L., & LaFontaine, T. P. (2012). <i>The exercise professional's guide to optimizing health: Strategies for preventing and reducing chronic disease</i> . Philadelphia, PA: Wolters Kluwer Health. |
| <i>3,4,5 authors</i> | Conking, Alley, Broecker, and Denton (2011) Cite all authors the first time the reference occurs. In subsequent citations, include only the surname of the first author followed by et al. Conking et al. (2011) suggested that ... OR (Conking et al., 2011) | Conking, P. W., Alley, R. B., Broecker, W. S., & Denton, G. H. (2011). <i>The fate of Greenland: Lessons from abrupt climate change</i> . Cambridge, MA: MIT Press. |
| <i>6,7 authors</i> | Bulliet et al. (2011) found that... OR (Bulliet et al., 2011) Cite only the surname of the first author followed by et al. | Bulliet, R. W., Crossley, P. K., Headrick, D. R., Hirsch, S. W., Johnson, L. L., & Northrup, D. (2011). <i>The earth and its peoples: A global history</i> (5th ed.). Boston, MA: Wadsworth. |
| <i>8 or more authors</i> | (Gradel et al., 2007, p. 35) OR Gradel et al. (2007, p. 35) stated... Cite only the surname of the first author followed by et al. | Gradel, E., Kolaitis, P. G., Libkin, L., Marx, M., Spencer, J., Vardi, M. Y., ... Weinstein, S. (2007). <i>Finite model theory and its applications</i> . Berlin, Germany: Springer. For works with 8 or more authors, list the first 6 authors, followed by 3 full stops (...) then spell out the last author's name. |
| <i>No author</i> | <i>(Employment the Professional Way, 2000)</i> OR the book <i>Employment the Professional Way</i> (2000) Shorten title | <i>Employment the professional way: A guide to understanding the Australian job search process for professionally qualified migrants</i> . (2000). Carlton, Vic: Australian Multicultural Foundation. |

| | | |
|---|--|--|
| <i>Multiple works by same author</i> | University research (Martin, 2008, 2010) has indicated that... | Martin, G. (2008). <i>Essentials of terrorism: Concepts and controversies</i> . Los Angeles, CA: Sage Publications. Martin, G. (2010). <i>Understanding terrorism: Challenges, perspectives, and issues</i> . Thousand Oaks, CA: Sage Publications. Order chronologically in the reference list. |
| <i>Multiple works published in the same year by the same author</i> | In recent reports (Napier, 1993a, 1993b) ... Use a/b etc. to differentiate between works in same year. | Napier, A. (1993a). <i>Fatal storm</i> . Sydney, NSW: Allen & Unwin. Napier, A. (1993b). <i>Survival at sea</i> . Sydney, NSW: Allen & Unwin. Order alphabetically by title in the reference list. |
| <i>Works by different authors with same surname</i> | (L. Green, 2010) OR L. Green (2010) (R. Green, 2008) OR R. Green (2008) | Green, L. (2010). <i>The internet: An introduction to new media</i> . New York: Berg. Green, R. (2008). <i>Global warming</i> . Ann Arbor, MI: Cherry Lake Publishing. |
| <i>Editor</i> | (Kasdorf, 2003, p. 15) | Kasdorf, W. E. (Ed.). (2003). <i>The Columbia guide to digital publishing</i> . New York, NY: Columbia University Press. |
| <i>Different Editions</i> | (Renton, 2004, p. 51) OR (<i>Merriam-Webster's collegiate dictionary</i> , 2005) | Renton, N. (2004). <i>Compendium of good writing</i> (3rd ed.). Milton Keynes, UK: John Wiley & Sons. OR <i>Merriam-Webster's collegiate dictionary</i> (11th ed.). (2005). Springfield, MA: Merriam-Webster. An edition number is placed after the title of the work - this is not necessary for a first edition. |
| <i>Encyclopedia or Dictionary or multi-volume work</i> | <i>The new Grove dictionary of music and musicians</i> (1980, p.85) defined it as... | Sadie, S. (Ed.). (1980). <i>The new Grove dictionary of music and musicians</i> (6th ed., Vols. 1-20). London, UK: Macmillan. |
| <i>Article or chapter in a book</i> | As discussed by Friedl (2003)... | Friedl, E. (2003). Society and sex roles. In J. P. Spradley & D. W. McCurdy (Eds.), <i>Conformity and conflict: Readings in cultural anthropology</i> (11th ed., pp. 261-289). Boston, MA: Allyn and Bacon. |
| <i>Article or chapter in a book – no author</i> | ("Solving the Y2K Problem," 1997) Put title in quotation marks. | Solving the Y2K problem. (1997). In D. Bowd (Ed.), <i>Technology today and tomorrow</i> (p. 27). New York, NY: Van Nostrand Reinhold. |
| <i>Image in a book</i> | The poster "The 3 dark years" (Sexton, 2005, p. 184) | Sexton, M. (2005). <i>The great crash: The short life and sudden death of the Whitlam government</i> . Melbourne, Vic: Scribe Publications. |

| Electronic Sources | In-Text Example | Reference List Examples |
|--|---|---|
| <i>Full text journal from an electronic database - DOI available</i> | (Pope & Owen, 2009) OR As Pope and Owen (2009) state... | Pope, J., & Owen, A. D. (2009). Emission trading schemes: Potential revenue effects, compliance costs and overall tax policy issues. <i>Energy Policy</i> , 37, 4595-4603. doi:10.1016/j.enpol.2009.06.014 Where the page numbers in the entire volume run consecutively, do not use issue number after the volume number. |
| <i>Full text journal from an electronic database - DOI not available</i> | (Marshall & Anderson, 2008, p.464) OR As Marshall and Anderson (2008, p.464) state... If the article is in .pdf format, cite the page number. If it is in .html format, cite the paragraph number. | Marshall, K., & Anderson, J. (2008). The Emperor's new clothes: A meta-study of education technology policies in Ireland, North and South (1996-2006). <i>Computers & Education</i> , 50(2), 463-474. Retrieved from http://www.sciencedirect.com APA recommends using the journal homepage. However, for practical reasons the University has adopted the gateway URL as this will be easier for students. Shorten URL. Include the issue number if the journal is paginated by issue. |
| <i>Full text journal from an electronic database – no author</i> | The Internet has had a huge impact on the Australian economy (“Mobile Phone Addiction,” 2010)... Put title in quotation marks. | Mobile phone addiction: A point of issue. (2010). <i>Addiction</i> , 105, 373-374. Retrieved from http://proquest.umi.com Where the page numbers in the entire volume run consecutively, do not use issue number after the volume number. Shorten URL |
| <i>Full text newspaper, newswire or magazine from an electronic database – no author</i> | ("Call to Save Indigenous Languages," 2009) Put title in quotation marks. Shorten title if necessary. | Call to save indigenous languages. (2009, October 31). <i>The Canberra Times</i> . Retrieved from http://global.factiva.com Shorten URL |
| <i>Full text from Internet – more than 7 authors</i> | (Keogh et al., 2009, p.256) If an article is in .pdf format, cite the page number. If it is in .html format, cite the paragraph number. | Keogh, L. A., van Vliet, C. M., Studdert, D. M., Maskiell, J. A., Macrae, F. A., St John, D. J., ... Jenkins, M. A. (2009). Is the uptake of genetic testing for colorectal cancer influenced by knowledge of insurance implications? <i>Medical Journal of Australia</i> , 191(5), 255-258. Retrieved from http://www.mja.com.au/public/issues/191_05_070909/keo11470_fm.pdf For works with more than 7 authors, list the first 6 authors, followed by 3 fullstops (...) then spell out the last author's name. For other author variations refer to page 3. |

| | | |
|---|--|---|
| <i>Article from Curtin E-Reserve</i> | (Flahvin, 1997, p.12) | Flahvin, A. (1997). Sattin and the spectre of media liability for negligence. <i>Communications Law Bulletin</i> , 16(4), 11-14. Retrieved from http://edocs.library.curtin.edu.au/eres_display.cgi?url=dc60209184.pdf |
| <i>Cochrane Review</i> | (Leach & Morris, 2006) | Leach, A. J., & Morris, P. S. (2006). Antibiotics for the prevention of acute and chronic suppurative otitis media in children. <i>Cochrane Database of Systematic Reviews</i> 2006, Issue 4. Art. No.: CD004401. doi :10.1002/14651858.CD004401.pub2 |
| World Wide Web | In-Text Example | Reference List Examples |
| <i>Document on WWW</i> | (Steel, 2008) | Steel, W. (2008). Hints for web authors. Retrieved from http://www.mcsr.olemiss.edu/~mudws/webhints.html |
| <i>Document on WWW – No author</i> | ("British Empire 1922," 2009, para.4) Use paragraph numbers for .html documents. | British Empire 1922 and other empires. (2009). Retrieved from http://www.angelfire.com/mac/egmatthews/worldinfo/europe/empire.html |
| <i>Document on WWW – No date</i> | (Royal Institute of British Architects, n.d.) | Royal Institute of British Architects. (n.d.). Becoming an architect. Retrieved from http://www.architecture.com/EducationAndCareersBecomingAnArchitectBecominganarchitect.aspx |
| <i>Image on the web</i> | The photo "Autumn Ivy" (Curtin University Library, 2007)..... | Curtin University Library. (2007). Autumn ivy [Image]. Retrieved from http://www.flickr.com/photos/curtinuniversitylibrary/1440410713/ |
| <i>Entire Website not specific document</i> | Give the URL of the site in the text Kidspsych is a children's website (http://www.kidspsych.org). | No entry required in the reference list |
| Secondary Sources | In-Text Examples | Reference List Examples |
| <i>Book</i> | ... including neuralgia (Carini & Hogan, as cited in Thibodeau & Patton, 2002, p. 45) OR Carini and Hogan's study (as cited in Thibodeau & Patton, 2002, p. 45) | Thibodeau, G. A., & Patton, K. T. (Eds.). (2002). <i>The human body in health and disease</i> . St. Louis, MO: Mosby. Record the book that you actually used. |
| <i>Journal article</i> | Carini and Hogan's study (as cited in Patton, 2002) OR "... origins of neuralgia" (Carini & Hogan, as cited in Patton, 2002, p. 2154) | Patton, K. T. (2002). Neuralgia and headaches. <i>Science</i> , 400, 2153-55. Record the journal that you actually used. |

| Government Publications | In-Text Example | Reference List Examples |
|--|--|--|
| <i>Acts of Parliament (including bills)</i> | The Commonwealth's <i>Copyright Act 1968</i> ... (In future references, omit date) | Legislation is included in a list of references only if it is important to an understanding of the work. Set the list apart from the main body of the reference under the subheading 'Legislation'. Essential elements: Short Title of Act (Jurisdiction) eg: Copyright Act 1968 (Cth) When using a section in an Act, you can do a pinpoint reference eg: Criminal Code WA, s. 348 If legislation is obtained from an electronic database, add a retrieved statement as for electronic journal articles. |
| Case | <i>(John Fairfax Publications Pty Ltd v Gacic, 2007)</i> | <i>John Fairfax Publications Pty Ltd v Gacic</i> [2007] HCA 28 If case is obtained from an electronic database, add a retrieved statement as for electronic journal articles. |
| <i>Australian Bureau of Statistics Bulletin</i> | (Australian Bureau of Statistics, 2008) OR (Australian Bureau of Statistics [ABS], 2008) and for subsequent citations use (ABS, 2008) | Australian Bureau of Statistics. (2008). <i>Childhood education and care</i> (No. 4402.0). Canberra, ACT: Author. The word 'Author' is used as the publisher when the author and publisher are the same |
| <i>Statistics from the Australian Bureau of Statistics website</i> | (Australian Bureau of Statistics, 2008) See above | Australian Bureau of Statistics. (2008). <i>Childhood education and care</i> (No. 4402.0). Retrieved from http://www.abs.gov.au |
| <i>Census Information</i> | (Australian Bureau of Statistics, 2006) See above | Australian Bureau of Statistics. (2006). <i>Census of population and housing: B01 selected characteristics (First release processing) postal area 6050</i> . Retrieved http://www.censusdata.abs.gov.au |
| <i>Government Report</i> | (Bureau of Infrastructure, Transport and Regional Economics, 2010) | Bureau of Infrastructure, Transport and Regional Economics. (2010). <i>Aircraft movements through capital city airports to 2029-30</i> (Report 117). Retrieved from http://www.bitre.gov.au/publications/55/Files/Report%20117.pdf |
| <i>Patent</i> | U.S. Patent No. 66991798-B1 (2004) OR (U.S. Patent No. 66991798-B1, 2004) | Lindsay, S. J. (2004). <i>U.S. Patent No. 66991798-B1</i> . Derwent Innovations Index: United States Patent Office. |
| <i>Standard</i> | (Standards Australia, 1997) | Standards Australia. (2010). Child restraint systems for use in motor vehicles (AS/NZ 1754:2010). Retrieved from http://www.saiglobal.com Shorten URL |

| Other Sources | In-Text Example | Reference List Examples |
|--|---|--|
| <i>Thesis or Dissertation—unpublished</i> | (Ciccarelli, 2008, p. 89) | Ciccarelli, M. L. (2008). <i>Variation of posture and muscle activity during information and communication technology use by adults and school children</i> . (Unpublished doctoral dissertation). Curtin University of Technology, Bentley, W. A. |
| <i>Thesis or Dissertation—published available from an institutional database</i> | (Dwyer, 2009, p. 152) | Dwyer, R. (2009). <i>Agency and exchange: An ethnography of heroin marketplace</i> . (Doctoral dissertation). Retrieved from http://espace.library.curtin.edu.au Shorten URL |
| <i>Conference paper in Proceedings</i> | (Prayag & Ramjee, 2009) OR As discussed by Prayag and Ramjee (2009) | Prayag, I. L., & Ramjee, R. (2009). The impact of Newcastle disease control on smallholder poultry production in Mauritius. In R. G. Alsters, P. B. Spadbrow, & M. P. Young (Eds.), <i>Village chickens, poverty alleviation and the sustainable control of Newcastle disease: Proceedings of an international conference held in Dar es Salaam, Tanzania, 5-7 October 2005</i> (pp. 132-134). Canberra, ACT: Australian Centre for International Agricultural Research. In the case of conference proceedings available electronically, replace publisher and location details with the DOI where available or URL in the absence of DOI. |
| <i>Brochure</i> | (Research and Training Centre on Independent Living, 2008, p. 2) | Research and Training Centre on Independent Living. (2008). <i>Guidelines for reporting and writing about people with disabilities</i> (11th ed.) [Brochure]. Melbourne, Vic: Author. Add Author for the publisher when the author and publisher are the same. |
| <i>Personal communication, e-mail and discussion lists with no web archive</i> | It was confirmed that an outbreak occurred in London (S. Savieri, personal communication, April 24, 1999) | Not included in reference list as they cannot be traced by the reader. |
| <i>Lecture notes</i> | (Brieger, 2005) | Brieger, B. (2005). <i>Lecture 3: Recruitment and involvement of trainees</i> [PowerPoint slides]. Retrieved from http://ocw.jhsph.edu/courses/TrainingMethodsContinuingEducation/lectureNotes.cfm These are treated like books if they are published, but like personal communication if they are your own notes or unpublished. Lecture notes are considered published if they have been copied and distributed in print or on the web with the instructor's permission. |

| Other Sources | In-Text Example | Reference List Examples |
|--|---|---|
| <i>Films and videorecordings of films.</i> | (Scorsese & Lonergan, 2000) | Scorsese, M. (Producer) & Lonergan, K. (Writer/Director). (2000). <i>You can count on me</i> [Motion picture]. Hollywood, CA: Paramount Pictures. |
| <i>DVDs and videorecordings</i> | <i>(American Psychological Association, 2000)</i> | American Psychological Association. (Producer). (2000). <i>Responding therapeutically to patient expressions of sexual attraction</i> [DVD]. Washington, DC: Author. The word 'Author' is used as the publisher when the author and publisher are the same |
| <i>Video file (e.g. YouTube video)</i> | (markapsolon, 2011) | markapsolon. (2011, September 9). <i>Real ghost girl caught on Video Tape 14</i> [Video file]. Retrieved from http://www.youtube.com/watch?v=6nyGCbxD848 Use the screen name markapsolon as it appears online. If the user's real name is available list it first, followed by the screen name in brackets [markapsolon] |
| <i>Web streaming video</i> | Fukuyama (2006) recalled that... | Fukuyama, M. (2006). <i>At the corner of me and myself: Voices of multiple social identities</i> [Streaming video]. Hanover, MA: Microtraining Associates. Retrieved from http://ctiv.alexanderstreet.com.dbgw.lis.curtin.edu.au/View/535741 |
| <i>Television and radio programmes -single episode in a series</i> | (Thomason, Rudd, & Fineri, 2007) | Thomason, M., Rudd, P., & Fineri, W. (Writers/Directors). (2007). North West Passage [Television series episode]. In T. Wright (Supervising Producer), <i>Captain Cook: Obsession and discovery</i> . Melbourne, Vic: Film Australia. |
| <i>Television and radio programmes -series or single programme</i> | Leonard and de Pieri (2009) | Leonard, D. (Producer), & de Pieri, S. (Presenter). (2009). <i>A gondola on the Murray</i> [Television series]. Melbourne, Vic: ABC Television. A single programme is called a Television broadcast. Specify the broadcast date for a single programme. |
| <i>Podcast</i> | (Seega & Swan, 2005) | Seega, B. (Producer), & Swan, N. (Presenter). (2005, November 28). <i>Adult ADHD</i> [Audio podcast]. Retrieved from http://www.abc.net.au/rn/talks/8.30/healthrpt |

| | | |
|---|--|--|
| <i>Blog post and reply</i> | McDonald (2010) suggests that... (the smart one, 2010) Use the screen name for the author of a blog post, if the author has adopted one. | McDonald, S.(2010, September 27). Noise in the library. [Web log post]. Retrieved from http://blogs.curtin.edu.au/library/2010/09 the smart one. (2010, October 3). Re: Noise in the library. [Web log comment]. Retrieved from http://blogs.curtin.edu.au/library/2010/09 Include full URL |
| <i>Computer Software</i> | (Miller, 1993) | Miller, M. E. (1993). The interactive tester (Version 4.0) [Computer software]. Westminster, CA: Psytek Services. Instead of author use the Programmer or Rightsholder |
| <i>ERIC document (microfiche)</i> | Davis and Lombardi (1996) put forward the proposal that... | Davis, R. K., & Lombardi, T. P. (1996). The quality of life of rural high school special education graduates. In <i>Rural goals 2000: Building programs that work</i> [Microfiche]. (ERIC Document No. ED394765). |
| <i>E-mail discussion list – web archive</i> | (cindiann, 2009) | cindiann. (2009, July 23). Re: Recommended photography books [Online discussion group comment]. Retrieved from http://www.flickr.com/groups/365libs/discuss/72157621780867836/ Use the screen name (or nickname) the author adopts if this is used in the discussion group entry. |
| <i>Twitter</i> | (BarackObama, 2009) To cite a Twitter feed as a whole or to discuss it in general give the site URL in text, inside parentheses. There is no need for a reference list entry. | BarackObama. (2009, July 15). Launched American Graduation Initiative to help additional 5 mill. Americans graduate college by 2020: http://bit.ly/gcTX7 [Twitter post]. Retrieved from http://twitter.com/BarackObama/status/2651151366 |
| <i>Facebook</i> | (Barack Obama, 2009) To cite a Facebook feed as a whole or to discuss it in general give the site URL in text, inside parentheses. There is no need for a reference list entry. | Barack Obama. (2009, October 9). Humbled. http://my.barackobama.com/page/community/post/obamaforamerica/gGM45m [Facebook update]. Retrieved from http://www.facebook.com/posted.php? |



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Getting Started Guide

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www.endnote.com/training

EndNote®

Version X5 for Macintosh and Windows

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EndNote gives you the capability to import references from online databases and store them in your personal EndNote libraries. Some producers of online reference databases expressly prohibit such use and storage of their data, others charge an extra fee for a license to use the data in this way. Before you download references from a database, be sure to carefully check the copyright and fair use notices for the database. Note that different databases from the same provider may have varying restrictions.

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About this Guide

This guide provides a basic overview of installing and using EndNote. It assumes that you know how to use your word processor and the Macintosh or Windows operating system. For help on these topics, consult the documentation that comes with these products.

For additional information about using EndNote, consult EndNote Help. From EndNote's Help menu, select EndNote Help (Macintosh) or Contents (Windows) to view help topics. While using EndNote, press Help (Macintosh) or F1 (Windows) to view a help topic about the current window.

Introduction: Welcome to Thomson Reuters EndNote X5

EndNote—your complete reference solution!

- ◆ EndNote is an online search tool—you can search online bibliographic resources and retrieve references directly into your EndNote library. You can also export references to EndNote from your favorite online resource (see “Direct Export Providers” in EndNote Help).
- ◆ EndNote is a reference and full text organizer with a collaborative Web tool—your personal reference library will save you countless hours of organizing your research. Group references according to your research projects and attach up to 45 files per record for managing related materials. EndNote can locate full text PDF files for you or create a reference when importing a PDF file. Transfer references, and now file attachments, to your EndNote Web account to share groups with other EndNote users easily and manage your ResearcherID publication list.
- ◆ EndNote is a bibliography maker—Cite While You Write™ takes the pain out of citing and formatting references in Apple Pages ‘09, Microsoft® Word, and OpenOffice.org Writer 3 for Windows. You can also create bibliographies for other word processors using Format Paper (RTF files). There is simply no better tool than EndNote for handling diverse bibliographic style requirements.

EndNote and EndNote Web are collaborative tools to simplify working with colleagues.

See “What’s New in EndNote X5” on page 9 for a list of the most recent features added to EndNote.

For late-breaking news and updates, please go to:
<http://www.endnote.com/support>.

About the Demonstration Version of EndNote and the EndNote Viewer

If you are working with the demonstration version of EndNote, you have 30 days after you first use the program to evaluate EndNote and all of its features. After those 30 days are up, the

demonstration version reverts to a feature-restricted EndNote Viewer.

NOTE: While you can see the entire list of Microsoft Word templates available with the full version of EndNote, the demonstration version includes only the Nature manuscript template specifications. Any of the manuscript templates you choose will launch the Nature manuscript template.

After the program reverts to an EndNote Viewer, you can still open EndNote libraries, search, sort, and print references.

With the EndNote Viewer you **will not** be able to:

- ◆ Add or edit references in a library that has 10 or more references already in it.
- ◆ Format more than 10 citations in a paper.
- ◆ Retrieve more than 10 references from a remote database.
- ◆ Import more than 10 references.
- ◆ Export more than 10 references at one time.

To purchase an unrestricted version of the EndNote program, open your trial version, and then click the Yes button when the EndNote dialog appears with the message:

Would you like to activate the full version of EndNote?

You will need to purchase a product key in order to activate the unrestricted version of EndNote.

If you are upgrading from a previous version of EndNote, then you need to supply the product key and provide your name in the Name field.

About this Getting Started Guide

This guide provides a basic overview of installing and using EndNote. It is not a complete user's guide, but rather is intended as a guided tour to show you the highlights of the EndNote program.

This guide assumes that you know how to use your Macintosh or Windows operating system and your word processor. For help on these topics, consult the documentation that comes with these product.

Because this guide serves both Macintosh and Windows users, screen representations alternate between the Macintosh and

Windows versions. While the two platforms are essentially the same, there may be slight differences between the pictures shown in this guide and the windows that appear on your computer screen.

Often there is more than one way to select a command in EndNote. A single command may be available from one of the main menus, from a context-sensitive Control+click (Macintosh) or right-click (Windows) menu, from a toolbar, or with a keyboard command. In most cases, this manual gives instructions for selecting commands from the main menus. If a menu command has a keyboard equivalent, the keyboard command appears next to the menu item.

Customer Services

Register Your Copy of EndNote

You can register your software by either 1) creating or upgrading your EndNote Web account the first time that you start EndNote X5, or 2) by going to <http://www.endnote.com/register>.

Registered users receive:

- ◆ Free technical support
- ◆ Special upgrade offers
- ◆ Notification of new EndNote versions that are compatible with the latest version of your word processor

NOTE: Even if you purchased EndNote directly from Thomson Reuters, do not assume that you are registered.

EndNote Online Help

Online Help: From EndNote's Help menu, select EndNote Help (Macintosh) or Contents (Windows) to view the various topics. For context-sensitive help, click the Help or ? button found on various windows and dialogs or press the F1Help key on your keyboard.

The EndNote Manual: The online Help file is made available as a printable PDF file and is available from the "Overview of Thomson Reuters EndNote" topic in EndNote Help.

Release Notes: For documentation updates and correction notes for this release, refer to the Readme.txt file installed in the EndNote folder.

Late Breaking News: For late-breaking news and updates, go to <http://www.endnote.com/support>.

Customer Service

Contact Sales for general product information, pricing, quantity discounts, and referrals to dealers.

Contact Customer Service to order new copies or upgrades of EndNote, to check billing/shipping status, and to register your software.

Sales Information

Phone: 1 800 722 1227 (Toll Free)

Phone: 760 438 5526 (country code is 01)

Fax: 760 438 5573 (country code is 01)

Web/Email: <http://www.endnote.com/contact>

Customer Support (Orders, Billing, and Shipping)

Phone: 800 336 4474 (country code is 01)

Fax: 215 386 2911 (country code is 01)

Web/Email: <http://www.endnote.com/contact>

Support

Contact Technical Support if you encounter problems while using EndNote. When you contact us, please have a clear description of the problem and know the version of your Windows operating or Macintosh system, EndNote, and word processor. To find the EndNote version and serial number, start EndNote and select About EndNote from the EndNote menu (Macintosh) or the Help menu (Windows).

For web/email or phone contact, including hours and holiday closures, please go to:

<http://www.endnote.com/contact>

Technical support tips are also available from the www.endnote.com/support Web site and the EndNote Discussion Forum.

International Customer and Technical Support

For customer support or technical support outside of North America, visit our Web site to check for a local distributor.

Go to <http://www.endnote.com/distributors> to find contact information for your local EndNote support.

Online Support

EndNote Web Site

The EndNote Web site (<http://www.endnote.com>) contains free training options including online videos and Web classes, a

technical support knowledge base, and information on the latest versions of EndNote. You can also find updated styles, filters, and connection files available for download.

EndNote Discussion Forums

If you wish to join an ongoing forum of EndNote users like yourself, go to <http://www.endnote.com/forum>. You can browse several EndNote message lists, easily search for topics, and join to add messages.

Join the EndNote social network at:

- ◆ www.facebook.com/EndNote
- ◆ www.twitter.com/EndNoteNews
- ◆ www.youtube.com/endnotetraining

ADA VPAT

Thomson Reuters is dedicated to developing software products that are usable for everyone, including those with physical challenges and disabilities. EndNote was designed to adhere to the ADA (Americans with Disabilities Act) Section 508 accessibility standards.

Visit our Web site at <http://www.endnote.com/vpat> to access the VPAT (Voluntary Product Accessibility Template) document that describes the accessibility features that address the Section 508 Standards.

The VPAT is an informational tool developed by industry and government to help facilitate the understanding of compatibility issues under Section 508.

What's New in EndNote X5

The current release of EndNote includes the following new features:

- ◆ Add and transfer file attachments to references in your EndNote Web account for greater mobility. Upgrade or create your Web account with your EndNote X5 license to receive this expanded feature.
- ◆ View and annotate PDF files in the EndNote library new PDF & Quick Edit tab.
- ◆ Find Reference Updates on the Record Edit window to retrieve additional online data such as the PMCID required for NIH grants.

- ◆ Select a new citation option – Author (Year) – within the Find & Insert My References dialog in Cite While You Write.
- ◆ Save time with new conditional formatting – substitute empty fields with alternates such as “Volume and Pages” with DOI. Support includes DOI, PMCID, and Editor/Translator conditions.
- ◆ Review duplicate references quickly with new auto-highlights for each field where differences are found.
- ◆ View the new Music reference type as well as new fields for NIHMSID and Article Number.
- ◆ Select from an expanded set of bibliographic styles, import filters, and connection files installed by default – or add more through customizing.

NOTE: Thomson Reuters recommends that you view our What's New video at www.endnote.com/training or on your EndNote X5 CD.

Chapter 1: Macintosh EndNote Installation

Before You Install EndNote

Please read this section before you proceed with the installation.

If you are installing the full version of EndNote (not the Demo version), you will need a valid EndNote product key to install the program. If you are upgrading from a previous version, you will also need your previous EndNote product key or serial number.

Program Requirements

Both the full EndNote program and the EndNote Demo are available on CD or by downloading. If you have a CD you need a CD-ROM drive to install the program.

System Requirements

EndNote runs under Macintosh OS X (Intel only) versions 10.5.x (Leopard), 10.6.x (Snow Leopard), and 10.7 (Lion).

In the Finder, select About This Mac from the Apple menu to find your system version.

See the readme file on our Web site at <http://www.endnote.com> for the latest compatibility information about EndNote and released Apple operating systems.

Hardware Requirements

EndNote requires the following hardware:

- ◆ A Macintosh OS X (Intel only) 450 MHz or higher
- ◆ A hard drive with at least 400 MB of free space
- ◆ A minimum of 256 MB of available memory (RAM)
- ◆ In order to use EndNote's Connect command, an Internet connection is required. To use the Open Link command to access a Web site, you also need a Web browser installed.

NOTE: Make sure that your computer meets the system and hardware requirements before continuing. If necessary, contact the distributor, dealer, or store where you purchased EndNote to arrange for a full refund. If you have any problem obtaining a refund, contact Thomson Reuters directly. You must do so within 30 days of purchase.

NOTE: For Mac, check www.endnote.com/enmac.asp for the latest compatibility requirements.

Word Processor Compatibility

As of September 2011, EndNote for Macintosh is compatible with:

- ◆ Microsoft Word 2008 (SP1) and 2011
- ◆ Apple iWorks Pages '09 versions 1, 2.x, 3.x, and 4.x
- ◆ RTF files created with most word processors, including: Microsoft Word, WordPerfect, OpenOffice.org Writer, StarOffice, Nisus Writer, TextEdit, Mellel, and Scrivener.

NOTE: Endnote can also scan RTF documents created by Mariner Write if the documents are saved in Word's RTF and not Mariner Write's RTF.

Cite While You Write in Microsoft Word

EndNote's Cite While You Write commands are available for Microsoft Word 2008 and 2011.

These Cite While You Write functions put an EndNote submenu of commands on Word's Tools menu. They also allow EndNote to format citations and create a bibliography for the document that is open in Word. You can format, unformat, and reformat a single document without ever exiting your word processor.

If Microsoft Word 2008 or 2011 is installed on your computer, the appropriate Cite While You Write files are installed automatically when you run the EndNote installation.

Keep in mind that in order for Cite While You Write to install properly:

- ◆ Microsoft Word must be correctly installed on your computer prior to installing EndNote.
- ◆ All applications, including Microsoft Word, must be closed during the installation of EndNote.
- ◆ The EndNote installer must be able to locate the Word startup folder. You need to have full read and write access to Word's startup folder in order to install EndNote commands.

Cite While You Write in Apple iWorks Pages '09

EndNote commands are available on the Insert and Edit menus in Pages '09.

RTF and ODT Documents

For word processors other than Word, write your paper, insert in-text citations, and then save to an RTF or ODT file to use EndNote's Format Paper feature to format the citations and bibliography.

EndNote Installation

Follow these instructions to install the EndNote program.

If you are upgrading from a previous version of EndNote, please see "Upgrading from an Earlier EndNote Version" on page 14 before installing EndNote X5.

If you have purchased a Volume/Site License version of EndNote, please see "Networks and Volume Installations" in EndNote Help.

Installing EndNote

To install EndNote:

1. Make sure no applications are running—including virus protection software and Microsoft Word.
2. Start the EndNote installation program.

If you downloaded the EndNote installer: Double-click the disk image to display an EndNote X5 folder.

If you received EndNote on a CD: Insert the EndNote CD into your CD-ROM drive. If the installer does not launch immediately, double-click the EndNote X5 Site Installer to display an EndNote X5 folder.

3. Drag the EndNote X5 folder to the Applications folder on your hard drive.

NOTE: The EndNote folder must reside in the Applications folder in order to use the Services menu from EndNote and Spotlight searching.

4. Double-click on the Applications folder, then the EndNote X5 folder, then the EndNote X5 application icon in order to launch EndNote and a Customizer program.

5. Follow the instructions on the screen to complete the installation. Click the Next button to move forward as needed through the installation dialogs:

Welcome: Thank you for purchasing EndNote!

Registration Key: If you are installing the full version of EndNote, enter your EndNote product key. You must enter a valid product key to continue with the installation of the full version of EndNote. The product key can be found in the EndNote X5 CD packaging or on the order confirmation of your digital product.

If you are installing the Demo version, select the button to evaluate EndNote. You do not need a product key or serial number to install the Demo version of EndNote.

User Information: Enter your name and organization.

If you are upgrading from a previous version, you will also need your previous EndNote product key or serial number.

Read Me: Read late-breaking news about this version of EndNote.

License Agreement: You must select “I accept the license agreement” in order to continue with the installation.

Product Registration: Please register your copy of EndNote!

When you start EndNote, a Customizer automatically installs Cite While You Write files for Microsoft Word 2008 and 2011 if any of them are found on your computer.

To make sure the EndNote program is installed correctly, see “Checking Your Installation” on page 17.

NOTE: If you use a non-English version of Word, see page 18.

Upgrading from an Earlier EndNote Version

While it is not strictly required, we recommend that you uninstall older versions of EndNote before installing your new version of EndNote.

Back up your files

Before you begin, it is important to back up your EndNote libraries (including corresponding .DATA folders), custom styles,

import filters, connection files, and spell check dictionaries, as well as any Word documents that use Cite While You Write.

Uninstall the older version of EndNote

It is best to check the uninstall instructions supplied with your old version of EndNote, as the instructions below are not valid for all older versions of EndNote.

1. Start the older version.
2. From the EndNote menu, select Customizer.
3. Select all of the options, and then click Uninstall.
4. Click Next and follow the prompts.

Install EndNote X5

Install the upgrade just as you would a new installation. See “EndNote Installation” on page 13. During installation, you will need to enter both your new EndNote X5 product key and your old EndNote product key or serial number. EndNote X5 is installed into an EndNote X5 folder.

After installing EndNote X5, you may have two folders with each containing EndNote files.

If you have backed up customized styles, filters, or connection files, you should also copy them to the Styles, Filters, or Connections folders in the EndNote X5 folder. EndNote includes a full collection of updated files, so unless you have specially customized a file for your needs, there is no reason to copy the old files.

To copy custom dictionaries from EndNote X or earlier versions to the new Mac OS spell checker, see “Importing Dictionaries” in EndNote Help.

Once you have copied your customized files and libraries to the EndNote X5 folder, and EndNote X5 is up and running, you can drag any remaining items in the old EndNote folder to the Trash. Be careful not to delete any libraries, papers, or other items that you need.

To make sure that EndNote is using the most recent set of files:

1. Start EndNote.
2. Go to the EndNote menu and select Preferences.
3. Click on the Folder Locations item.

4. If the folder paths do not include an EndNote X5 folder, click EndNote Defaults to update the paths.

Cite While You Write Users

If you have a Microsoft Word document that was formatted with an earlier version of EndNote, we recommend that you first make a backup of the file.

If the file was created with EndNote 5-X2, use the new version of EndNote to format the document again. From Word's Tools menu, select EndNote X5, and then select Format Bibliography. This updates the document to work with EndNote X5.

If the file was originally created with an even older version of EndNote, you will need to unformat the citations with the old version of Word and the original EndNote Add-in before the document can be used by EndNote X5. If you no longer have access to the older version of Word or the old EndNote Add-in for Word, please contact Technical Support.

Opening and Converting Old EndNote Libraries

EndNote X5 opens and uses libraries created with EndNote 8 and later. It converts libraries created with even earlier versions of EndNote to the latest file format.

To convert an older EndNote library:

1. Start EndNote.
2. From the File menu, select Open, and then select Open Library.
3. On the file dialog, locate and highlight the old library, and then click Open.

EndNote will warn you that the selected library was created with an older version, and will ask for permission to convert it.

4. Click OK to convert the library. Name the new library and click Save. The conversion makes a copy of the original library in the latest file format and leaves the original library intact.

NOTE: Once you have opened and used a library with EndNote X5, you should use the library only with version X or later.

Using Old Style, Filter, and Connection Files

You may have created custom content files with an earlier version of EndNote. EndNote X5 can use your custom styles, filters, and connection files that were created with EndNote versions 4.0.1-X2. Once you edit and save one of these files with EndNote X5, it is converted to the latest format, which can be used with EndNote versions 8 to X5.

All of the styles, filters, and connection files supplied with EndNote X5 have been updated to the latest format. The new filter and connection files can be used by previous versions of EndNote, with new fields simply ignored. However, the updated styles *cannot* be used with versions of EndNote prior to version 8.

Customized reference types, temporary citation markers, and display fonts are all carried over from earlier versions of EndNote for use with EndNote X5.

Checking Your Installation

To Begin Using EndNote

To run EndNote, double-click the EndNote X5 icon found in the EndNote X5 folder.

If this is the first time you have started EndNote, a Customizer will attempt to install Cite While You Write files for Word.

Next, a dialog may ask whether you want to open a new EndNote Web account. For information about EndNote Web, see “Transferring References between EndNote Web and EndNote” in EndNote Help.

Then, a dialog will ask you to open a reference library file. You can create or open an EndNote library, or select Close. A Sample Library is provided in an Examples folder to help you get familiar with EndNote.

To check the EndNote version number, go to the EndNote menu and select About EndNote. Click the splash screen to clear it.

Checking Support for Microsoft Word

To see whether Cite While You Write is correctly installed:

Start EndNote, then start Microsoft Word, and then select the Tools menu.

You should see EndNote’s Cite While You Write commands on an EndNote X5 submenu in Word.

If you do not see these commands, Word support was not correctly installed. Try these three ways to install CWYW (after each attempt, start EndNote and then Word to check for an EndNote submenu on the Tools menu in Word):

1. Use the Customizer:
 - a. Make sure no applications are running—including virus protection software and Microsoft Word.
 - b. Start the EndNote program.
 - c. From the EndNote menu, select Customizer.
 - d. On the Component Selection dialog, select the components you want to install (or keep installed) and click Next.
2. Try reinstalling EndNote as described under “EndNote Installation” on page 13.
3. Install the files manually as described in EndNote Help.

Non-English Versions of Word

The EndNote installer uses English terms for the various target folders in the installation (such as “Word Startup Folder”). If you are running a version of Word localized for a different language, you may need to install Word support manually as described in EndNote Help.

Additional Topics

The installation chapter in EndNote Help includes these additional topics:

- ◆ Installed Files
- ◆ Custom Installations/Adding Content Files

The EndNote team has developed thousands of content files (output styles, filters, and connection files). Because installing all of these files can slow performance, a typical EndNote installation includes only the most popular of each type of file. It is easy to find and install additional content files!

- ◆ Manually Installing Support for Word 2008 or 2011
- ◆ Updating EndNote Files
- ◆ Uninstalling EndNote

Chapter 2: Windows EndNote Installation

Before You Install EndNote

If you are installing the full version of EndNote (not the Demo version), you will need a valid EndNote product key to install the program. If you are upgrading from a previous version, you will also need your previous EndNote product key or serial number.

Program Requirements

Both the full EndNote program and the EndNote Demo are available on CD or by downloading. If you have a CD you need a CD-ROM drive to install the program.

System Requirements:

EndNote runs under the following operating systems:

- ◆ Windows 7 (32 or 64 bit versions)
- ◆ Windows Vista (32 or 64 bit versions)
- ◆ Windows XP with at least Service Pack 3 installed

Hardware Requirements:

- ◆ A minimum of 256 MB of available RAM
- ◆ A hard drive with at least 400 MB of free space
- ◆ An Internet connection is required to access online databases using the EndNote Online Search feature, to run the Find Full Text feature, and to transfer references to and from EndNote Web. You will also need a Web browser to use the OpenURL Link and Open URL commands.
- ◆ Unicode compliant

NOTE: Make sure that your computer meets the system and hardware requirements before continuing. If necessary, contact the distributor, dealer, or store where you purchased EndNote to arrange for a full refund. If you have any problem obtaining a refund, contact Thomson Reuters directly. You must do so within 30 days of purchase.

NOTE: For Windows, check www.endnote.com/enwin.asp for the latest compatibility requirements.

Word Processor Compatibility

As of June 2011, EndNote for Windows is compatible with:

- ◆ Microsoft Office Word 2003, 2007, or 2010 (32 or 64 bit versions) for Windows
- ◆ Open Document Format (ODT) documents created with OpenOffice.org Writer 3
- ◆ RTF files created with most word processors, including: Microsoft Word, WordPerfect, OpenOffice.org Writer, StarOffice, and WordPad
- ◆ Wolfram Mathematica 8

Microsoft Word

EndNote installs Cite While You Write commands in Microsoft Word.

- ◆ Word 2003 displays an EndNote submenu of commands on Word's Tools menu.
- ◆ Word 2007 and 2010 displays Cite While You Write commands on an EndNote tab.

Cite While You Write allows EndNote to format citations and create a bibliography for the document that is open in Word. You can format, unformat, and reformat a document without exiting your word processor.

In order for Cite While You Write to install properly, Microsoft Word 2003, 2007, and 2010 must be correctly installed on your computer *prior to* installing EndNote. Please make sure that you close Word and all applications before attempting to install Cite While You Write.

If a supported version of Microsoft Word is installed on your computer, the appropriate Cite While You Write files are installed automatically for the current user when you run the EndNote installation. This feature can be used with a shared copy of Word or on a network.

OpenOffice.org Writer

EndNote installs Cite While You Write commands in the OpenOffice.org version 3 Writer. CWYW commands appear on an EndNote menu. Cite While You Write allows EndNote to format citations and create a bibliography for the document that is open in OpenOffice.org Writer. You can format, unformat, and reformat a document without exiting your word processor.

In order for Cite While You Write to install properly, the OpenOffice.org 3.x suite must be correctly installed on your computer *prior to* installing EndNote.

You must close all OpenOffice.org applications before installing Cite While You Write, including the OpenOffice.org Quickstarter.

RTF and ODT Documents

For word processors other than Word 2003, Word 2007, Word 2010, or OpenOffice.org 3.x, first write your paper and insert in-text citations. If the file format is anything other than an OpenOffice.org ODT document, save as an RTF file. Then, use EndNote's Format Paper feature to format the citations and bibliography from your ODT or RTF file.

EndNote Installation

Follow these instructions to install the EndNote program.

If you are upgrading from a previous version of EndNote, please see "Upgrading from an Earlier EndNote Version" on page 27.

See "Networks and Volume Installations" in EndNote Help for information about using EndNote in a network environment, licensing, and performing mass installations.

Installing EndNote

To install EndNote:

1. Log in to the local machine with administrative rights or as a user with program installation privileges. Make sure no applications are running, including virus protection software, Microsoft Word, or any OpenOffice.org applications.

The OpenOffice.org Quickstarter may appear in your System tray. Right-click on the icon, and then select Exit Quickstarter.

2. Start the EndNote installation program.

If you downloaded the EndNote installer: Double click the installer file to start the EndNote Setup program.

If you received EndNote on a CD: Insert the CD into your CD-ROM drive.

The EndNote Setup program will start. If you do not have Autoplay enabled, select Run from the Start menu, type "d:\setup" (use the drive letter appropriate to the drive containing the installation CD), and then press Enter.

3. Follow the instructions on screen to complete the installation. Use the Next button to move forward between the installation dialogs.

Welcome: Thank you for selecting EndNote!

Registration Information: If you are installing the full version of EndNote, enter your EndNote product key. You must enter a valid product key to continue with installation of the full version of EndNote. The product key can be found in the EndNote X5 CD packaging, or on the order confirmation of your digital product.

If you are installing the Demo version, select the appropriate button. You do not need a product key or serial number to install the Demo version of EndNote.

User Information: Enter your name and organization.

If you are upgrading from a previous version, you must also enter your previous EndNote product key or serial number.

Read Me Information: Read late-breaking news about this version of EndNote.

End User License Agreement: You must select “I accept the license agreement” in order to continue with the installation.

Select Installation Type: “Typical” installs only the most popular output styles, filters, and connection files. Limiting the number of files installed speeds up performance. Advanced users can select “Custom” to hand pick the file groups to install, and add additional styles, filters, and connection files.

Select Destination: By default, EndNote is installed in the C:\Program Files\EndNote X5 folder. The Demo version is installed in the C:\Program Files\EndNote X5 Demo folder. You can use the Browse button to change the folder selection if you wish.

If a previous installation of EndNote is found in the same folder, you will be given the option to either back up or overwrite the older files. If you back up files, they are placed in a Backup folder in the installation folder.

NOTE: If the installer detects a full version (not a demo version) of EndNote on your computer, it will give you the option to continue with the installation or quit. If you continue, be advised that you will need to reinstall your full version of EndNote to use it after you run the EndNote X5 Demo version.

Select Components: (Custom installations only) If you selected a Custom installation, see “Selecting Features” on page 26.

Select Default Citation Manager: (Microsoft Word 2007 and 2010 only) If the installer detects Microsoft Word 2007 or 2010, it asks whether to “Use EndNote as my default citation manager.” Cite While You Write will be installed in Word 2007 or 2010 in any case, but when this item is selected the installer will hide Word’s native Citations and Bibliography commands (the group normally found on the References tab in Word) in order to avoid confusion for the user.

Ready to Install: You can still click Cancel to stop the installation. Once you click Next, the installation program will begin installing EndNote files.

4. On the final “EndNote X5 is Successfully Installed” dialog, click Register to register your copy of EndNote, and then click Finish to close the installation program.

To make sure the program installed correctly, see “Checking Your Installation” on page 29.

Installed Files

The full EndNote installation includes the following default folders and files.

Program Folder

C:\Program Files\EndNote X5, or
C:\Program Files (x86)\EndNote X5 (64-bit Windows versions)

- ◆ EndNote.exe application file
- ◆ EndNote.chm Help file
You can double-click the file to view it. In the EndNote program, select EndNote X5 Help from the Help menu.

Pressing the F1 key on your keyboard or clicking the Help or ? button in the program brings up a context-sensitive topic.

- ◆ GettingStartedGuide.pdf gives a tour of the program
- ◆ EndNoteHelp.pdf is a compilation of all the Help topics in the online Help system
- ◆ Readme.txt text file contains late-breaking news
- ◆ Examples shortcut folder
This is a shortcut to an Examples folder that contains sample files to follow when using the guided tour found in Chapter 3 and the Getting Started Guide. You can also use samples to experiment while learning EndNote.

- ◆ **Styles folder**
This folder contains bibliographic styles for formatting citations and a bibliography. A Typical installation includes only the most popular styles. With a Custom installation, you can choose from a full collection of over 4,500 bibliographic styles.
- ◆ **Connections folder**
This folder contains connection files to connect to and search online bibliographic databases. A Typical installation includes only the most popular files. With a Custom installation, you can choose from a collection of thousands.
- ◆ **Filters folder**
This folder contains import filters for importing text files downloaded from online bibliographic databases. A Typical installation includes only the most popular files. With a Custom installation, you can choose from a collection of hundreds.
- ◆ **Terms Lists folder**
This folder contains journal abbreviation term lists. These lists contain thousands of journal names and standard abbreviations. Import a list into your library's Journals term list to use the abbreviations in your bibliographies.
- ◆ **Spell folder**
This folder contains spell check dictionaries for the EndNote spell checker.
- ◆ **Templates folder**
This folder contains Microsoft Word templates to quickly set up your papers for electronic submission to publishers.
- ◆ Various additional folders and files are installed to support the EndNote program and to integrate EndNote with other software programs.

Shared Folder

Open the Shared Documents or Public Documents folder in Windows Explorer to find the EndNote folder located at:

Windows 7: C:\Users\Public\Documents\EndNote

Windows XP: Documents and Settings\All Users\Shared Documents\EndNote

Windows Vista: C:\Users\Public\Public Documents\EndNote

- ◆ **Examples folder**
This folder contains a sample library and other sample documents and graphics to use while learning EndNote.

- ◆ You may want to use the shared EndNote folder to store your libraries so that they are available to all users on your computer.

Personal Folder

Open the My Documents or Documents folder in Windows Explorer to find the EndNote folder located at:

Windows 7: C:\Users\UserName\Documents\EndNote

Windows XP: C:\Documents and Settings\[UserName]\My Documents\EndNote

Windows Vista: C:\Users\[UserName]\Documents\EndNote

These folders are created when you create or modify a file:

- ◆ Styles folder contains new or modified bibliographic styles
- ◆ Connections folder contains new or modified connection files
- ◆ Filters folder contains new or modified import filters

While the Program Files folder contains the default styles, connection files, and filters, your personal EndNote folder contains those files that you have created or modified. This prevents changes to the original files, and assures that you will not inadvertently delete a customized file when you remove or upgrade the EndNote program. It also allows you to make changes to files even though you may not have administrator access to modify files in the Program Files folder. EndNote displays a single list of the files found in both locations. If a file of the same name appears in both locations, EndNote will display only the file found in your personal folder.

You can change your personal folder locations. See “Folder Locations” in EndNote Help for more information.

Preferences Folder

Depending on your settings, these folders may be hidden from view in Windows Explorer.

Windows 7: C:\Users\[UserName]\App Data\Roaming\EndNote

Windows XP: C:\Documents and Settings\[UserName]\Application Data\EndNote

Windows Vista: C:\Users\[UserName]\App Data\Roaming\EndNote

While many EndNote preferences are stored in the Windows registry, some are stored in your personal preferences folder. It

contains the connect.log file that records your latest online search, the RefTypeTable.xml file that stores your reference type preferences, saved search strategies, and various other settings.

Custom Installations/ Adding Content Files

Although we recommend that you use the Typical installation option to install EndNote, the Custom installation option can be useful if you are low on disk space, or if you need to reinstall only certain EndNote components, or if you would like to add additional content files (output styles, import filters, and/or connection files).

To perform a new custom installation:

1. Follow the instructions for “EndNote Installation” on page 21.
2. On the Select Installation Type dialog, select Custom.
3. From the Select Features dialog, read “Selecting Features” on page 26 to determine what you would like to select or deselect for your installation.

NOTE: If the installer detects another copy of EndNote in the destination folder, it gives you the option to either backup or remove older files during the installation. When doing a custom install, only selected components are affected. For example, if you are installing only the Anthropology styles, and you choose to remove older files, only the older Anthropology styles are removed; no other part of the installation is affected.

To install components after EndNote is already installed:

1. Log in to the machine with administrative rights or as a user with program installation privileges.
2. Do one of these:
 - ◆ Start the EndNote installation program.
 - ◆ From the Windows Start menu, select Control Panel. Then select Add or Remove Programs. In the list, click EndNote X5, and then click Change.
3. On the Application Maintenance dialog, select the Modify option, and then click Next.
4. From the “Select Features” dialog, expand the list of items, and then select or deselect the EndNote features for your installation.

Selecting Features

There are several major categories of components that can be installed with EndNote.

The components you can select for installation include:

EndNote Application

- ◆ EndNote Program
- ◆ Sample Files
- ◆ EndNote Help
- ◆ Getting Started Guide

Word Templates/Add-ins:

- ◆ Templates for Microsoft Word
- ◆ Cite While You Write for Microsoft Word

OpenOffice.org Extension

Additional Styles: These formats for creating bibliographies are grouped by type.

Additional Connections: These files for directly retrieving references from online reference databases are grouped by information service provider.

Additional Filters: These files for importing text files of reference data are grouped by information service provider.

Spelling Dictionaries: These are dictionaries available for the spell checker.

Click the plus sign next to each category to display a detailed list of items. For each category or subcategory, click the triangle next to the name to select from the available installation options. To install a feature, select one of these:

- ◆ Will be installed on local hard drive.
- ◆ Entire feature will be installed on local hard drive.

Upgrading from an Earlier EndNote Version

Before you begin, back up any custom styles, import filters, and connection files that you do not want overwritten.

We strongly recommend that you uninstall any earlier version of EndNote before you install EndNote X5. See “Uninstalling EndNote” on page 31.

NOTE: If you do not uninstall your earlier version of EndNote, then the Setup program will install EndNote X5 in its own folder and call the folder EndNote X5.

During installation, you will need to enter both your new EndNote product key (located in the EndNote X5 CD packaging or on the order confirmation for your digital product) and your old product key or serial number. Note that the Demo version of EndNote does not require these.

Install the upgrade just as you would a new installation. See “EndNote Installation” on page 21.

Backing Up or Replacing Files

If you try to install EndNote X5 in the installation folder of an earlier version of EndNote, the program alerts you and gives you two options.

- ◆ **Backup older files:** EndNote X5 provides complete, updated sets of style, filter, and connection files, but if you want to keep any of your older modified files to use with EndNote X5, you should select this option. Doing so has EndNote create a Backup folder in the EndNote folder and all of the styles, filters, and connection files from your older installation are copied into that folder. After installing EndNote, you should move any of these files that you want to use into the Styles, Filters, or Connections folders installed with EndNote X5.
- ◆ **Remove older files:** If this option is selected, Setup replaces all of the styles, filters, and connection files from your existing EndNote installation with the new ones included with EndNote X5. Do not select this option if you have custom styles, filters, or connection files that you want to save. If they have the same names as any of the files to be installed, the installer will overwrite them with the new files.

NOTE: No matter which option you choose, your libraries will not be deleted nor will any non-EndNote files in the EndNote folder.

Opening and Converting Old EndNote Libraries

EndNote X5 opens and uses libraries created with EndNote 8 and later. It converts libraries created with even earlier versions of EndNote to the latest file format.

To convert an old EndNote library (created before version 8):

1. Start EndNote.
2. From the File menu, select Open, and then select Open Library.
3. On the file dialog, locate and highlight the old library, and then click Open.

EndNote will warn you that the selected library was created with an older version, and will ask for permission to convert it.

4. Click OK to convert the library. Name the new library and click Save. The conversion makes a copy of the original library in the latest file format, and leaves the original library intact.

Using Old Style, Filter, and Connection Files

EndNote X5 can use custom styles, filters, and connection files that were created with EndNote versions 4.0.1 - X5. Once you edit and save one of these files with EndNote X5, it is converted to the latest format, which can be used with EndNote versions 8 to EndNote X5.

All of the styles, filters, and connection files supplied with EndNote X5 have been updated to the latest format. The new filter and connection files may be used by previous versions of EndNote, but you cannot edit EndNote X5 styles in previous versions of EndNote.

Checking Your Installation

To Begin Using EndNote

From the Start menu, select All Programs > EndNote > EndNote Program.

First, a dialog may ask whether you want to open a new EndNote Web account or integrate with an existing EndNote Web account. For information about EndNote Web, see “Transferring References between EndNote Web and EndNote” in EndNote Help.

Next, a dialog may ask you to open a library file. You can create or open an EndNote library, or select Cancel or Close. A Sample Library is provided in an Examples folder to help you get familiar with EndNote.

To check the version number of EndNote, select About EndNote from the Help menu. Click the splash screen to clear it.

If you have trouble accessing the program, repeat the installation steps to verify that the program was correctly installed

Checking Cite While You Write Support

To see whether Cite While You Write is correctly installed, start Microsoft Word or the OpenOffice.org Writer.

- ◆ In Word 2003, click on the Tools menu to see EndNote commands on an EndNote X5 submenu.

- ◆ In Word 2007 and 2010, you should see an EndNote tab.
- ◆ In OpenOffice.org Writer, you should see EndNote commands on an EndNote X5 menu.

NOTE: Cite While You Write commands may not be available if you installed or upgraded your word processor *after* installing EndNote.

1. Log in to the machine with administrative rights or as a user with program installation privileges.
2. Make sure that all Microsoft Office and OpenOffice.org applications are closed, including any Quickstarter applications.

The OpenOffice.org Quickstarter may appear in your System tray. Right-click on the icon, and then select Exit Quickstarter.

3. From the Windows Start menu, select Control Panel.
4. Select Add or Remove Programs.
5. Highlight EndNote X5, and then click Change.
6. Select Repair, and then click Next.

Your entire EndNote installation is checked and repaired as needed. For more information, see “No EndNote commands in Word” in EndNote Help.

Automatically Updating Files

You can automatically update EndNote X5 when incremental program enhancements are available.

To update your copy of the EndNote program:

1. Open a connection to the Internet.
2. From EndNote’s Help menu, select EndNote Program Updates.

The wizard checks for an update, lets you know whether an update is available, and then downloads the file(s) and applies the update to your EndNote installation.

NOTE: You also have the option to download the latest content files at any time from our Web site at <http://www.endnote.com>. We continually update output styles, filters, and connection files.

Uninstalling EndNote

Before you remove EndNote, back up your libraries and any other files you have created or customized.

For volume and site license installations, see “Licensing of Volume Copies” in EndNote Help.

Uninstalling Word 2007 and 2010 Settings

Word 2007 and 2010 settings are typically registered during installation of the EndNote program, and in those cases they will also be uninstalled along with the program. You can jump to the next section called “Uninstalling the EndNote Program” on page 31 for more information.

If you used the Configure EndNote utility for a specific user account, to suppress the “Citations and Bibliography” group on the References tab in Word 2007 or 2010, you should use that utility again to uninstall.

To uninstall Word 2007 or 2010 settings:

1. Log on to the workstation as the current user. You do not have to be an administrator.
2. Launch the Configure EndNote utility. You can do this in one of these ways:
 - ◆ From the Windows Start menu, select All Programs > EndNote > Configure EndNote.
 - ◆ Go to the EndNote program folder and double-click Configure EndNote.exe.
3. Select Remove all EndNote components for me, and then click Next.
4. Continue through the uninstall process as instructed.

This uninstalls a single Word 2007 or 2010 setting, and only for the current user.

Uninstalling the EndNote Program

To uninstall EndNote:

1. Log in to the machine with administrative rights or as a user with program installation privileges.
2. From the Windows Start menu, select Control Panel.
3. Select Add or Remove Programs (Windows XP) or Programs and Features (Windows Vista or Windows 7).
4. In the list of currently installed programs, select EndNote X5.

5. Click Remove (Windows XP) or Uninstall/Change (Windows Vista or Windows 7).

Or, you can uninstall by using the EndNote installation program:

1. Log in to the machine with administrative rights or as a user with program installation privileges.
2. From your EndNote CD, run Setup.exe.
3. On the Application Maintenance dialog, select Remove, and then click Next.
4. Click Next again to begin removing EndNote.

The uninstall procedure removes only files, groups, and icons installed by the EndNote installer the last time it was run. For example, if you used the installer's Custom installation option to reinstall only style files, the Uninstall program removes only style files.

To remove any modified EndNote files that remain:

We purposely do not remove any EndNote libraries or customized files. You can manually delete these files from Windows Explorer from the following folders.

Windows XP

C:\Program Files\EndNote X5
C:\Documents and Settings\All Users\Shared Documents\EndNote
C:\Documents and Settings\[UserName]\My Documents\EndNote
C:\Documents and Settings\[UserName]\Application Data\EndNote

Windows Vista

C:\Program Files\EndNote X5
C:\Users\Public\Public Documents\EndNote
C:\Users\[UserName]\Documents\EndNote
C:\Users\[UserName]\App Data\Roaming\EndNote

Windows 7

C:\Program Files\EndNote X5
C:\Users\Public\Public Documents\EndNote
C:\Users\[UserName]\Documents\EndNote
C:\Users\[UserName]\App Data\Roaming\EndNote

NOTE: If you are using a 64-bit version of Windows, your EndNote program folder will be: C:\Program Files (x86)\EndNote X5.

Chapter 3: Introduction to an EndNote Library

This chapter covers the basics of working with EndNote. In particular, you will learn how to:

- ◆ Start EndNote and open a library.
- ◆ Sort the reference list.
- ◆ Select, open, and close references in the EndNote library.
- ◆ Save references to custom groups.
- ◆ Quit from the EndNote program.

Start EndNote

To start the EndNote program and open the sample library:

1. **Macintosh:** Open the EndNote X5 folder and double-click the EndNote program icon. By default, the EndNote X5 folder is installed in the Applications folder on your hard drive.

Windows: From the Start menu, select All Programs > EndNote > EndNote Program.

NOTE: If this is the first time you have used the EndNote program, a dialog appears and prompts you to set up EndNote Web. For this section of the tour, skip setting up EndNote Web.

The following dialog appears prompting you to open a reference library.



NOTE: If you have set a favorite library to open automatically, that library will open instead of the dialog shown above. If this happens, close the library. From the File menu, select Open > Open Library. Continue with step 3.

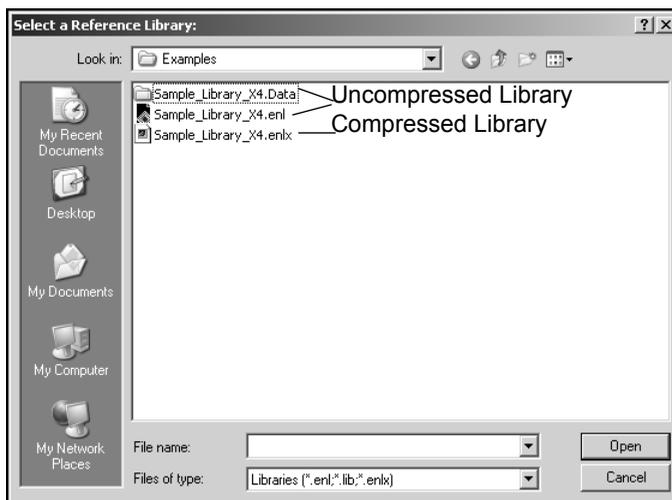
2. Click the File Cabinet icon.
3. In the file dialog, locate and open a reference library:
Macintosh: Navigate to the EndNote X5 folder, select the Examples folder, and then click Open.
Windows: Use the Look In menu to find the EndNote X5 Examples folder.
 - ◆ Select the C: drive and Open.
 - ◆ Select Program Files and Open.
 - ◆ Select the EndNote X5 folder and Open.
 - ◆ Select the Examples folder shortcut and Open. The Examples folder is actually in your Shared Documents or Public Documents folder.

The example library is shipped to you as a single compressed file called Sample_Library_X5.enlx.

Open the Sample_Library_X5.enlx file and EndNote extracts the uncompressed library files (Sample_Library_X5.enl and Sample_Library_X5.Data) for viewing.

If you have previously opened the compressed sample library, select Sample_Library_X5.enl, and then click Open.

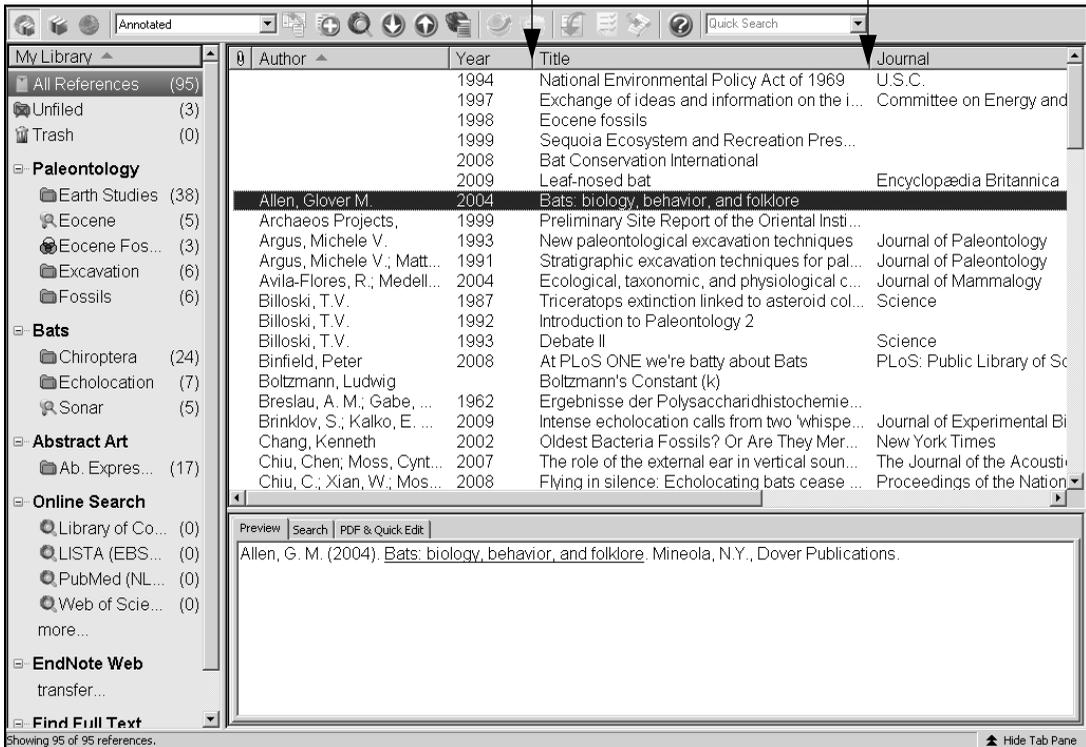
If your folder settings are not set up to show file extensions, determine the file type based on the icons indicated in the picture below.



The Library Window

When you open the sample library you will see the Library window listing all of the references that the library contains.

Move column dividers to adjust column widths



The Library window includes three panes:

Reference List pane: Displays a multi-column list of references. By default, the first column in the reference list shows a paper clip icon for references that include an attached file in the File Attachments field. This is followed by:

- ◆ Author's last name, first name, initial (all names are shown)
- ◆ Year
- ◆ Title
- ◆ Journal name or secondary title
- ◆ Reference type
- ◆ URL

◆ Last Updated

NOTE: You can change the order of the fields that display in the reference list by selecting from the Endnote X5 menu (Macintosh) or Edit menu (Windows) Preferences > Display Fields.

Groups pane: Displays various groups of references for easy retrieval.

Tab pane: Displays a Preview tab to view formatted references, a Search tab for searching either the current library or an online database, and a PDF & Quick Edit tab for quickly editing and viewing PDF files attached to a reference.

The information displayed in the reference list, as well as the font used for the display, can be changed using EndNote Preferences. Chapter 4 provides more information about customizing the Library window.

You can browse through the reference list by first selecting a reference, and then using the scroll bar, the scroll arrows, or the Page Down, Page Up, Home, End, and Arrow keys.

Preview References

You can easily see more detail about a reference by highlighting the reference and viewing the Preview pane at the bottom of the Library window.

To preview a reference:

1. First, if you do not have a Tab pane in the window, click the Show Tab Pane button at the bottom of the window, and then click the Preview tab.
2. For this example, click the reference titled “Bats: Biology, behavior, and folklore.”

The Preview tab uses the current output style to display the selected reference as it will be formatted for a bibliography. EndNote’s output styles represent the rules for creating bibliographies for a variety of journals and other publications. The styles determine how your references look when you print, export, preview, or create bibliographies.

- To select a different output style to apply to the reference, go to the toolbar and select Numbered from the Output Styles menu.

Output Style menu

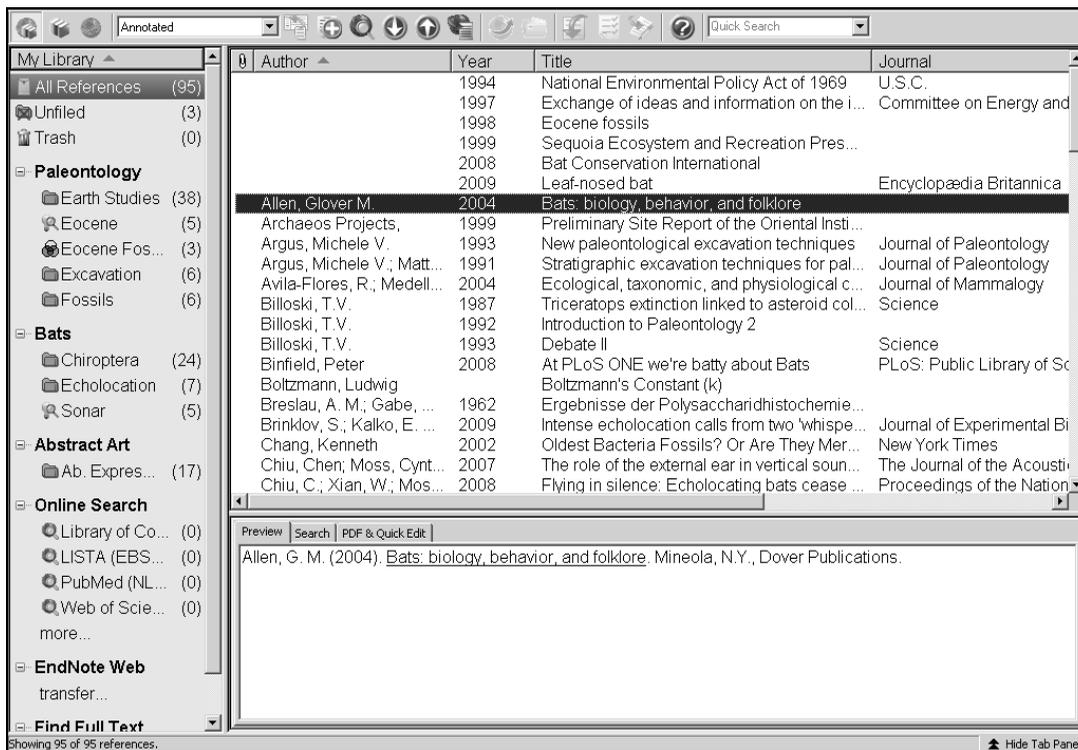
Macintosh Toolbar



Windows Toolbar



Only one reference is displayed in the Preview pane. If multiple references are selected, only the active reference (surrounded by a dotted line) is displayed.



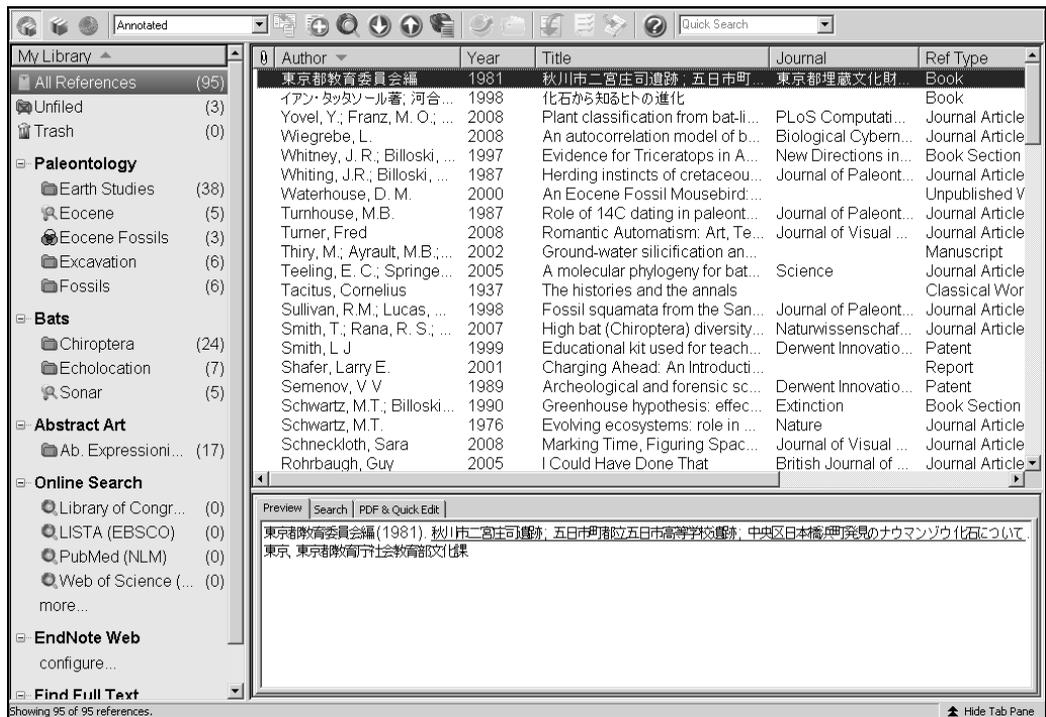
When the Tab pane is showing, a Hide Tab Pane button is available at the bottom of the window. You can click the Hide Tab Pane to hide the Preview tab and the other tabs.

Sort the References

References can be easily sorted by clicking on a column heading such as Author, Year, or Title.

To change the sort order:

1. Click the Author column heading to change the current Author sort from ascending order to descending order.



NOTE: This example shows references that include Japanese characters. EndNote uses Unicode to encode special characters, so that data is easily translated between platforms, programs, and languages. If boxes appear instead of characters, you may need to change the EndNote display fonts to a Unicode font. You will learn how to do this in Chapter 4: "Setting EndNote Preferences". If you are running Windows, you may need to install special Windows Language Packs for some display elements. Consult your Windows documentation for more information about Language Packs.

2. Click the Year column heading to see the references sorted in ascending order based on the year of publication.
3. Click the Year column heading again to reverse the sort order and see the references sorted in descending order.
4. Click the Author column heading to return the sort order of the library to an alphabetical list sorted by the author names.

Select and Open a Reference

To work with specific references, you must first select them in the Library window.

There are different ways to select a reference, such as:

1. Clicking on the reference using the mouse;
2. Using the arrow keys; or
3. Typing the first few letters found in the field by which the library has been sorted.

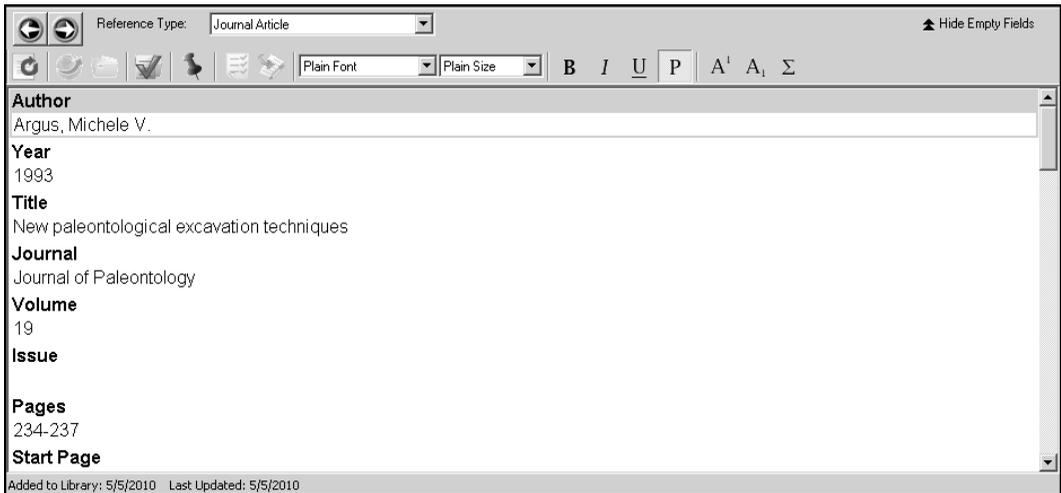
To see how this works, click any reference to select it. Press the Up or Down Arrow to select the previous or next reference.

To quickly find and display a reference:

1. Select the first Argus reference in the list. Now that the reference is selected, there are a number of things you can do with it, such as view its contents, copy, cut, delete, or edit it.
2. Open the selected Argus reference by pressing the Return key (Macintosh) or Enter key (Windows) or by using the Edit References command on the References menu. You can also open a reference by double-clicking on it in the reference list.

The Reference window opens to display all of the information associated with the reference.

Show or Hide empty fields in the reference.



Click and drag to resize the window. Note that all windows in EndNote are maximized when opened.

This is where you enter or edit information for a reference.

To view the rest of the reference, use the mouse to scroll down the Reference window or press the Tab key to move forward from one field to the next.

- ◆ Press Shift+Tab to move backwards through the fields.
- ◆ Click the Toggle Empty Fields button (Macintosh) or Show Empty Fields / Hide Empty Fields button (Windows) to toggle between showing all fields in the reference and only those fields that contain data.

Close the Reference

Close the reference. You can do this in one of these ways:

- ◆ Click the X Close button (Windows) in the upper corner of the Reference window (not the outer close button for the library) or the red Close button (Macintosh) in the upper left corner of the window.
- ◆ From the File menu, select Close Reference.

- ◆ From the keyboard, press Command+W (Macintosh) or Ctrl+W (Windows). Note that many of the menu commands have a keyboard equivalent next to them.

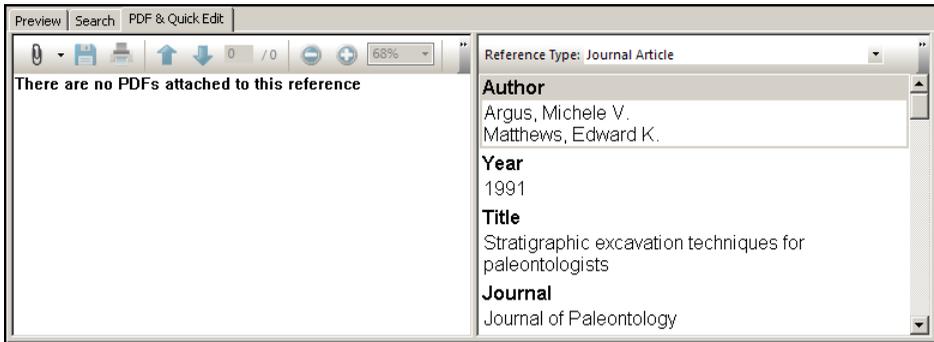
EndNote prompts you to save your changes. Click Yes to save your changes.

PDF & Quick Edit Tab

About the Quick Edit Pane

You can quickly edit your references by clicking on the PDF & Quick Edit tab. Most functionality is the same as working in the Reference window. Enter text in a field by clicking on the field. All commands are available via the menus including contextual menus.

The Quick Edit pane displays the contents of the highlighted reference. Each part of the reference is stored in its own field, and the reference type is displayed below the title bar.



About the PDF Viewer Pane

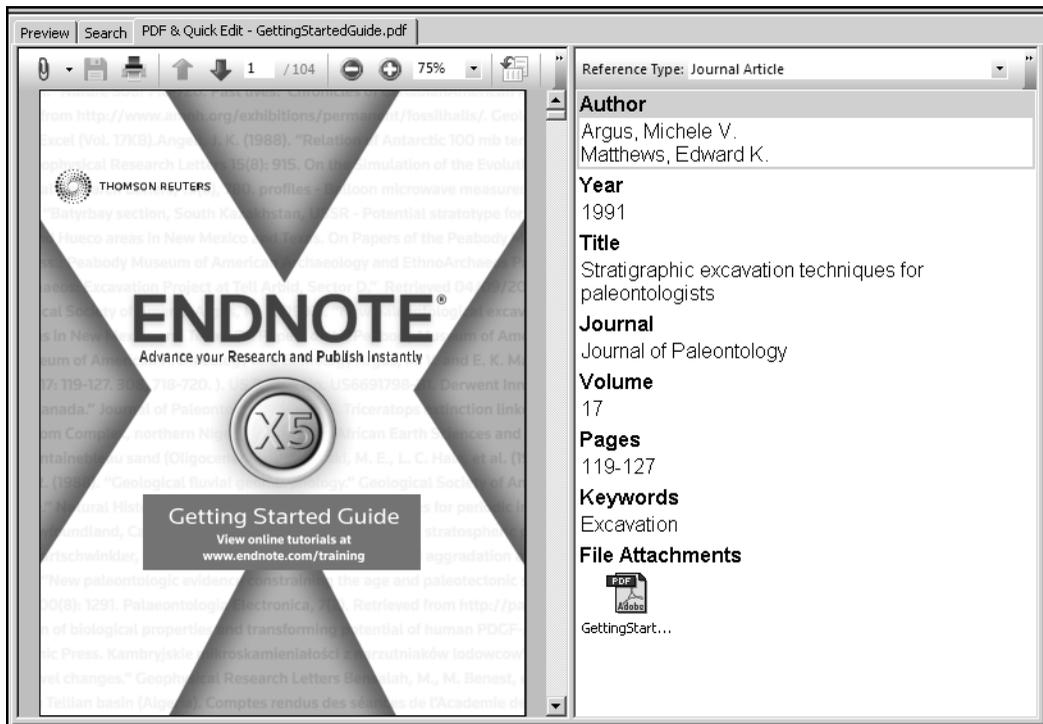
The PDF Viewer pane allows you to open and view PDF files attached to the current reference.

Let's attach a PDF file to the reference

1. Place your cursor inside the PDF Viewer pane. Note that a message displays that says: "There are no PDFs attached to this reference."
2. Press Ctrl+Alt+A to open a "Select a File" dialog. Alternatively, you can click the paper clip icon, and then select Attach PDF from the menu.
3. Navigate to the folder Program Files\EndNote X5 (Windows) or to Applications/EndNote X5 (Macintosh).
4. Notice the check box titled "Copy this file to the default file attachment folder and create a relative link." Make sure this

box is selected so that EndNote will make a copy of the file to store with the library. That way, the attached file is always available to you, even when you move the library.

5. Select the file titled GettingStartedGuide.pdf.
6. Click Open to insert the file into the reference.
7. To save the PDF file, navigate away from the current reference by clicking on another reference in the library list.
8. Select the Argus reference to display the Getting Started Guide in the PDF Viewer pane.

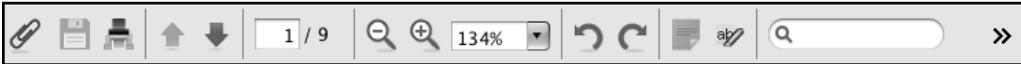


EndNote automatically opens the first PDF file attached to a reference when you select the PDF & Quick Edit tab.

Windows
Floating Toolbar

A floating toolbar appears within the PDF Viewer pane that displays the following icons.





Macintosh
Floating Toolbar

The options include:

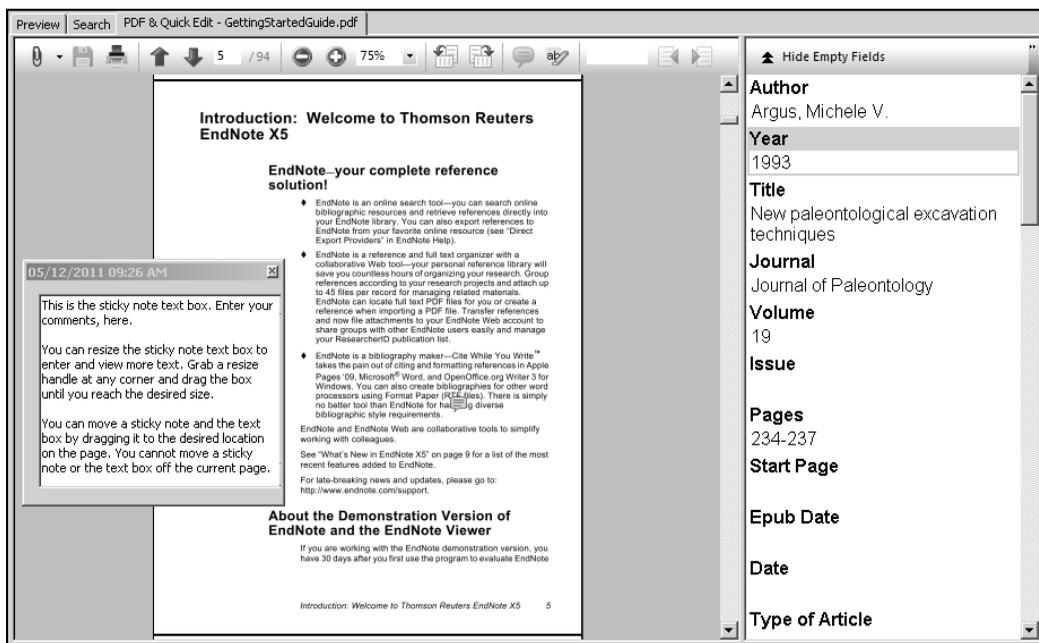
- ◆ PDF Attachments (Paper Clip icon with contextual menu)
- ◆ Save PDF
- ◆ Print
- ◆ Previous Page \ Next Page
- ◆ Go to (page)
- ◆ Zoom Out \ Zoom In
- ◆ Rotate Counterclockwise \ Rotate Clockwise
- ◆ Sticky Note
- ◆ Highlight Text
- ◆ Find (search PDF).

You can also right-click within the PDF Viewer pane to open a contextual menu that includes many of these options.

Let's create a sticky note

1. Select the Sticky Note icon from the floating toolbar.
2. Navigate to the section in the PDF where you want to add the sticky note.
3. Click the left mouse button to display a Sticky Note icon.
4. Double-click the Sticky Note icon to display a Sticky Note text box.
5. Enter your comments in the Sticky Note text box.
6. Click the Save icon in the floating toolbar. Click Yes when

prompted.



See “The PDF & Quick Edit Tab” in EndNote Help to learn more about the PDF Viewer and Quick Edit features.

Save References to a Custom Group

The left pane of the Library window lists groups of saved references. The first three groups are permanent.

- ◆ **All References** displays all of the references in the library.
- ◆ **Unfiled** contains references that are not part of a custom group.
- ◆ **Trash** contains references that have been deleted from the library but not yet permanently eliminated.

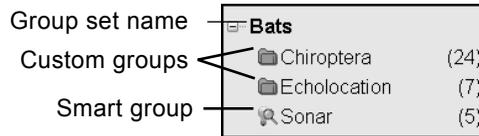


Below the permanent groups, you can create group sets to organize up to 5,000 custom, smart, and combination groups in the library.

- ◆ A custom group is built by specifically adding individual references to the group.

- ◆ A smart group is compiled automatically and is based on a search strategy.
- ◆ A combination group consists of custom and/or smart groups.

The sample library has several custom groups of references. Click the group names under the Bats set in the left pane of the Library window to view the references in each group.



Then, click All References to display all of the references in the library again.

To create a custom group and add references to it:

1. Display one of the groups in the Paleontology set so that the new group will be created in that set.
2. From the Groups menu, select Create Group.

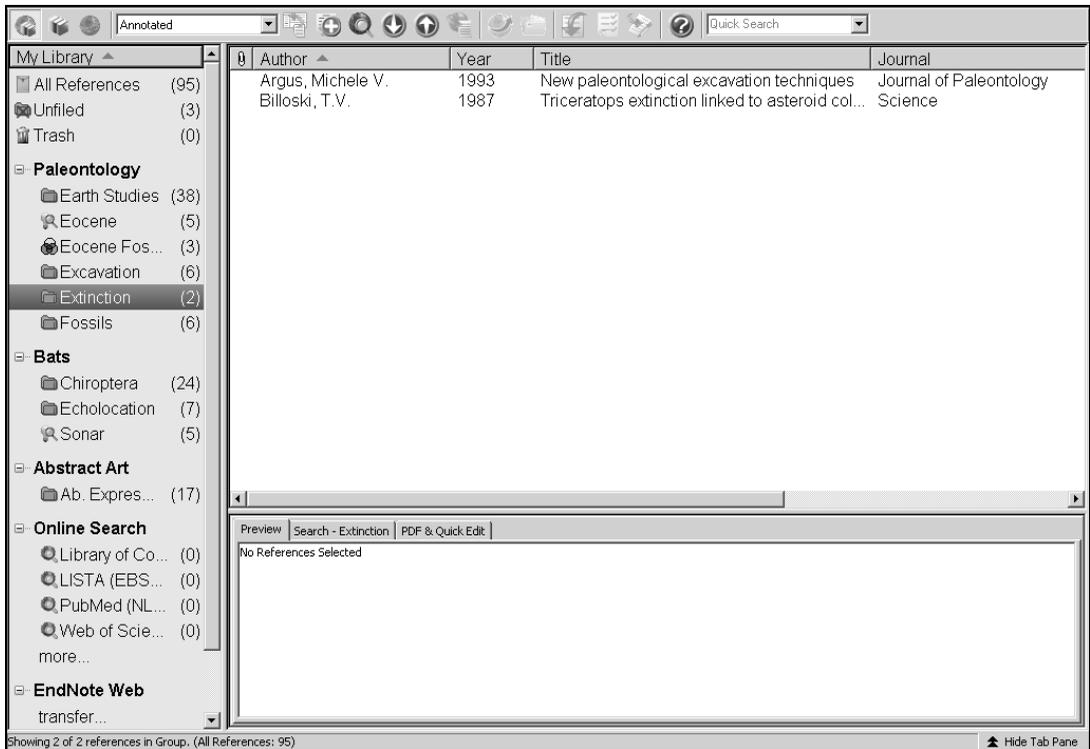
In the Groups pane of the Library window, a group titled New Group is now highlighted for editing.

3. Type "Extinction" as the group name, and then press Return (Macintosh) or Enter (Windows) or click in the reference list area to save the change.

There are no references in the new Extinction group.

4. Select the All References group to display all references in the library.
5. In the Author column, highlight the first reference by Argus and the first reference by Billoski. To select noncontiguous references, hold down the Command key (Macintosh) or Ctrl key (Windows) as you click on them.
6. Drag the selected references to the new Extinction group and drop them on the title of the group. You could go to the Groups menu, and then select Add References To > Extinction.

7. Select the Extinction group to display the two references now included in the group.



Click All References to display all of the references in the library again.

To move the group to a different group set:

1. Click the Extinction group.
2. Drag it to the Bats group set, and then drop the group anywhere in the Bats set.

To delete a custom group:

1. Control+click (Macintosh) or right-click (Windows) on the Extinction group name to display a contextual menu, and then select Delete Group.
2. When you are asked to verify the deletion, click Delete.

Only the Group subset is deleted; no references are deleted from your library.

Many of the commands for managing groups are available both from the Groups menu and from the right-click contextual menu.

Related Sections in EndNote Help

See the following topics in EndNote Help for information related to this portion of the tour:

- ◆ “Sorting the Library” to learn more about sorting.
- ◆ “The EndNote Library” to learn how to change the display of the Library window.
- ◆ “The PDF & Quick Edit Tab” to learn more about PDF Viewer and Quick Edit features.
- ◆ “Using Groups” to learn more about creating and managing groups.

Chapter 4: Setting EndNote Preferences

In this part of the guided tour you will learn how to:

- ◆ Display EndNote Preferences.
- ◆ Set a favorite library to open each time you start EndNote.
- ◆ Change the display fonts.

Open the Sample Library

If EndNote is not already running, start it and open the library called `Sample_Library_X5.enl` as shown in “Start EndNote” on page 35.

Access EndNote Preferences

To view or change the EndNote preferences:

From the Endnote X5 menu (Macintosh) or Edit menu (Windows), select Preferences.

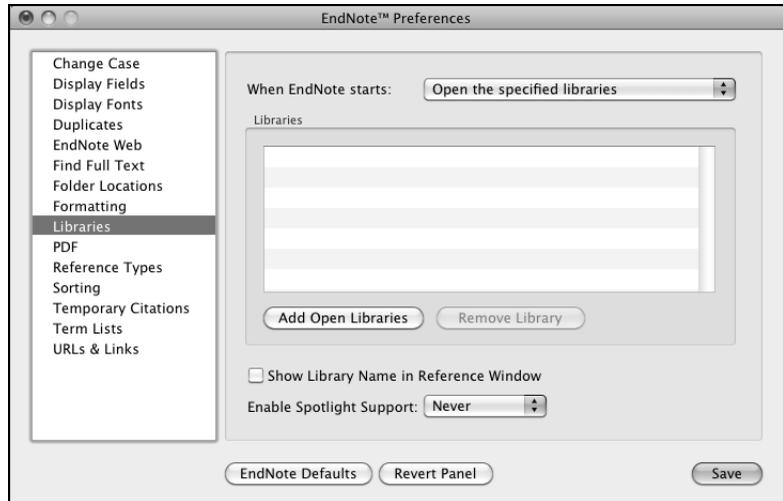
Set a Favorite Library

You can assign a library to open automatically every time you start EndNote. You will find it useful to set the sample library (`Sample_Library_X5.enl`) as your favorite library for now. Later, when you create your own library, you can set it as your favorite library.

To set a favorite library:

1. Go to the Endnote X5 menu (Macintosh) or Edit menu (Windows), and then select Preferences.
2. In the list on the left, click Libraries.
3. Select “Open the specified libraries” from the When EndNote Starts menu.

4. Click Add Open Libraries. You should see the full path and file name of the sample library (Sample_Library_X5.enl) listed at the top of the box.



5. Click Save (Macintosh) or Apply (Windows) to save this change.

While you could click the red Close button (Macintosh) or OK (Windows) to leave the Preferences dialog, we are going to change another preference first.

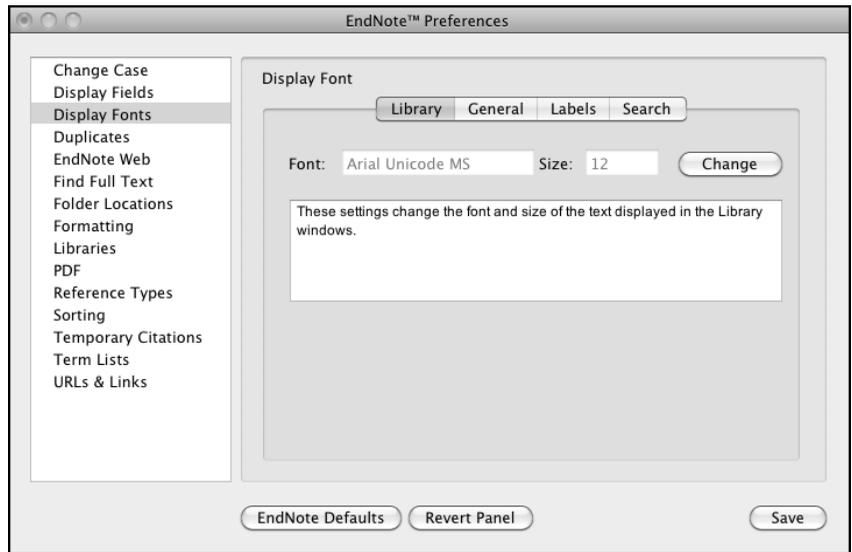
Change the Library Display Font

Pick a different font to display text in the Library window and the Reference window.

To change the display fonts:

1. Go to the Endnote X5 menu (Macintosh) or Edit menu (Windows), and then select Preferences.
2. In the list on the left, click Display Fonts to display a dialog with four tabs.
 - ◆ The Library tab determines the font and size of the references listed in the Reference List pane of the Library window.
 - ◆ The General tab changes the font used to display most text that is typed into EndNote such as in the Reference or Style windows. The General font is also used for most of the previews and information panels in EndNote, as well as for bibliographies that are printed or copied directly from EndNote.

- ◆ The Labels tab determines the font and size used for the Reference window field labels.
- ◆ The Search tab determines the font and size applied to user-entered text on the Search tab.



3. On the Library tab, click the Change (Macintosh) or Change Font (Windows) button.
4. In the Font list, select a different font (for Windows, select Arial Unicode MS, if available, since it supports Japanese characters). Close the Fonts dialog, and then click Save (Macintosh) or OK (Windows) to save the change.

EndNote uses Unicode to correctly handle extended characters. By selecting a Unicode font here, you can view extended characters in the Library window, such as the Japanese characters found in the Paleo library.

5. On the General tab, click the Change (Macintosh) or Change Font (Windows) button.
6. In the Font list, select a different font (for Windows, select Arial Unicode MS, if available, since it supports Japanese characters), and then Save (Macintosh) or OK (Windows) to save the change.
7. Click the red Close button (Macintosh) or OK (Windows) to leave the Preferences dialog.

Related Sections in EndNote Help

See the following topics in EndNote Help for information related to this portion of the tour:

- ◆ “The EndNote Library” to learn how to change the display of the Library window.
- ◆ “Preferences, Toolbars, & Shortcuts” to learn how to customize your version of EndNote.

Chapter 5: Entering a Reference

In this part of the guided tour you will learn how to:

- ◆ Enter a reference into a library.
- ◆ Attach a file to a reference.

Open the Sample Library

If EndNote is not already running, start it and open the library called Sample_Library_X5.enl as shown in “Start EndNote” on page 35.

Create a New Reference

There are various ways to add references to an EndNote library:

- ◆ Type the reference information into the Reference window.
- ◆ Connect to an online bibliographic database and retrieve the references directly into EndNote as demonstrated in “Searching an Online Database” on page 61.
- ◆ Import text files of references that have been downloaded from online bibliographic databases as demonstrated in “Importing Reference Data into EndNote” on page 73

Once a library is open, you can add a new reference to it:

1. Click in the reference list, and then from the References menu, select New Reference to display an empty Reference window.

Reference Type list

EndNote X5 - [New Reference]

File Edit References Groups Tools Window Help

Reference Type: Journal Article

Plain Font Plain Size B I U P A¹ A₁ Σ

Author

Year

Title

Journal

Volume

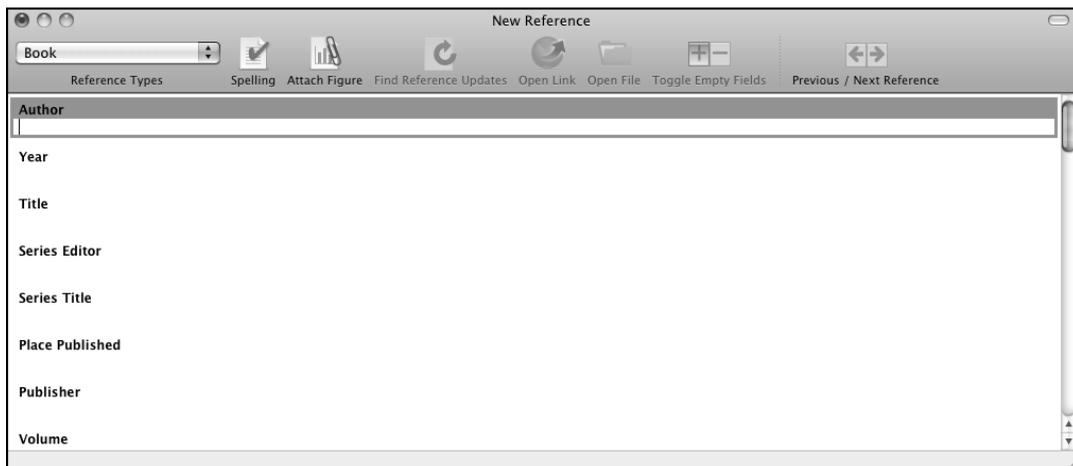
Issue

Pages

Start Page

New references appear as Journal Article (unless you change the default setting). They can be changed to another reference type using the Reference Type list at the top of the window.

2. Select the Book reference type from the Reference Type menu.



Notice that the Field list changes to reflect the type of bibliographic information you would record for a book. Select other reference types from the list to see how the list of fields changes for each type of source.

Three reference types (Figure, Chart or Table, and Equation) are available specifically for cataloging picture files and object files, although you can add File Attachments, Figures, and Captions to any reference type.

When you are done looking at different reference types, set the reference type back to the **Journal Article** reference type. You are now ready to enter reference information beginning with the author names.

3. Enter author names for the reference. Individual author names must be entered one per line.
 - a. Enter an author name with the first name first. With the cursor in the Author field, type:

Tiberius Rex

As you type, EndNote suggests names similar to the one you are entering. This is EndNote's way of using Term Lists to facilitate the process of entering new references.

NOTE: The auto-complete feature can be turned on or off with EndNote Term Lists preferences. It is available for Author fields when you enter author names with the last name first.

The name you are entering, Tiberius Rex, is a new author in this library, so keep typing until you complete the name, and then press Return (Macintosh) or Enter (Windows).

The name appears in red text to indicate that it is a new name in the Author term list for this library. When you close the reference, it will be added to the Author term list and the red text will change to black. You can read more about term lists (and how to turn these options on or off) in EndNote Help.

- b. Enter the second author's name, but with the surname first.

Morre, Nicole

This author's last name is already in the sample library, so as you start typing the last name, you will see EndNote complete the name for you.

| |
|--|
| Author Tiberius Rex Morre, Nicole |
|--|

Press Return (Macintosh) or Enter (Windows) to accept EndNote's suggested author name.

- c. For the third author, enter:

de Young, John Robert, Jr.

The first comma separates the last and first name. The second comma is inserted before suffix text, to make it clear that it is not part of the author's name for manipulation of name order or stripping to initials. Suffix text will always print after the other information for this author. Press Return (Macintosh) or Enter (Windows).

- d. For the fourth author's name, which in this case is a corporate author, enter:

University of California,, Berkeley

Corporate author names are entered with a following comma, so they will not be manipulated like personal author names. In this case, the corporate author name has a comma within the name. We inserted two commas to allow for correct formatting. The first comma makes it

clear that text up to that point should not be manipulated, and the second comma indicates that there is no “first name,” yet includes suffix text.

4. Press Tab to accept the author name and move to the Year field. Type “2006” as the search term.
5. Continue entering the reference as shown below using the Tab key to move to the next field and Shift+Tab to move to the previous field. You can also use the mouse to click in the desired field. If information is not provided for a particular field, leave that field empty.

Title: The scale and the feather: A
suggested evolution

Journal: Paleontology

Volume: 3

Issue: 1

Pages: 125-128

Date: November 22

Keywords: Feathers
Evolution
Birds

No extra punctuation (such as parentheses around the year) or text styles (such as bold or italic) are entered into the reference. EndNote adds the necessary punctuation and text style changes to the references when it creates a bibliography.

While we are not entering any text into the Abstract or Notes fields, you could enter up to 64 K into each of these fields, which amounts to 10-12 pages text.

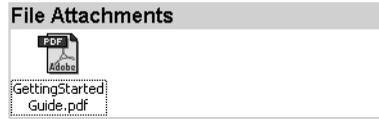
6. Attach a PDF file to the reference. You can attach almost any type of file to the File Attachments field of a reference.

Scroll to the File Attachments field, and from the References menu, select File Attachments > Attach File to display a file dialog. On the file dialog:

- a. Navigate to the folder:
Applications/EndNote X5 (Macintosh)
Program Files\EndNote X5 (Windows)
- b. Notice the check box titled “Copy this file to the default file attachment folder and create a relative link.” Make sure this box is selected so that EndNote will make a copy of the file to store with the library. That way, the

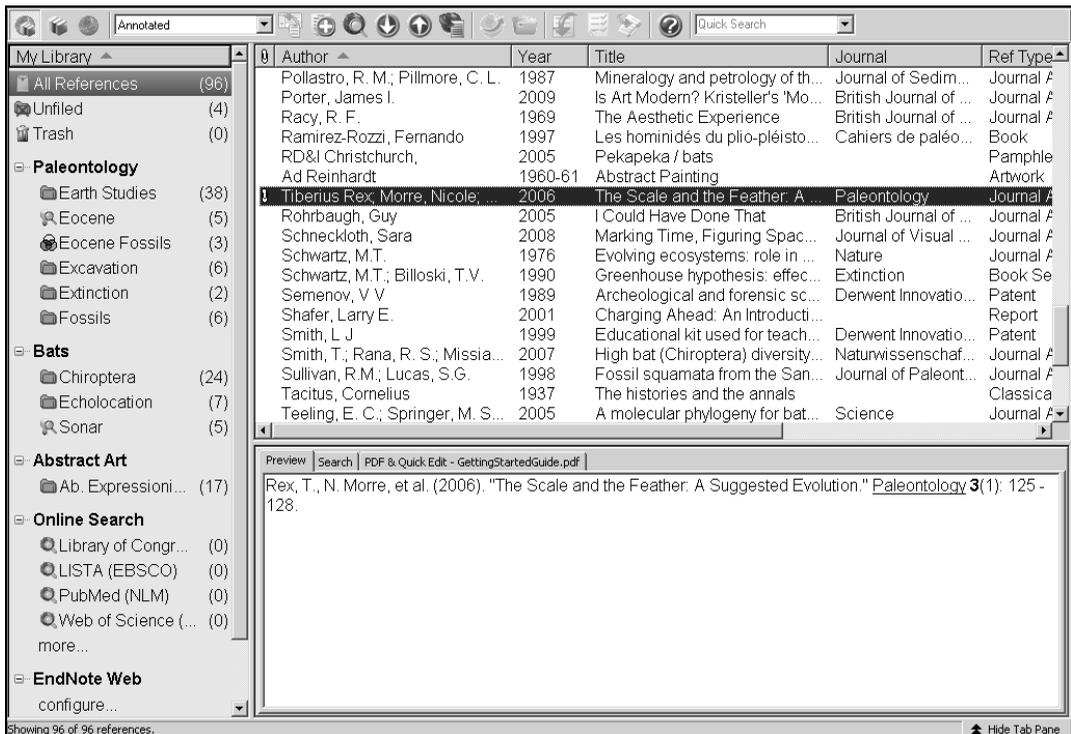
attached file is always available to you, even when you move the library.

- c. Highlight the file titled GettingStartedGuide.pdf.
- d. Click Open to insert the file into the File Attachments field. A file icon will appear in the field.



You can attach up to 45 different files to a single reference. Double-click the file icon to open the file with the default program for the file type.

7. From the File menu, select Close Reference to close the Reference window.
8. When prompted to save changes, click Yes. Your new reference will appear in the Library window.



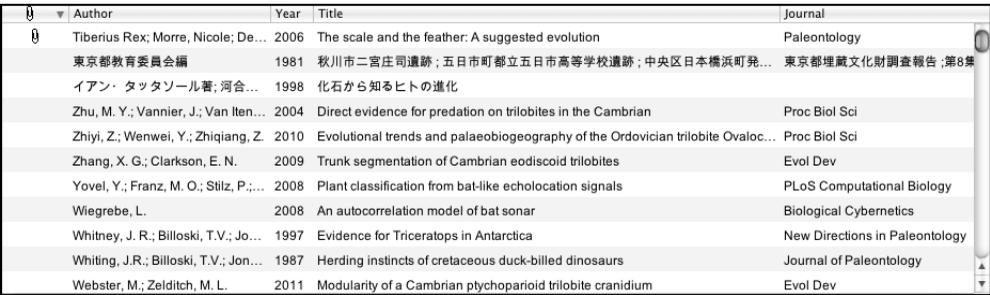
A paper clip icon appears next to the reference to indicate an attached file.

Locate References that Contain Attached Files

You can easily locate those references that contain attached files.

To locate the references containing attached files:

Click the paper clip icon in the first column heading twice to sort records containing attached files at the top of the list. References that include a paper clip have one or more attached files.



A screenshot of an EndNote reference list. The first column heading has a paper clip icon. The list contains 12 references with columns for Author, Year, Title, and Journal. The references are sorted by the presence of attached files, with the top row having a paper clip icon in the first column.

| 📎 | Author | Year | Title | Journal |
|---|--|------|---|--------------------------------|
| 📎 | Tiberius Rex; Morre, Nicole; De... | 2006 | The scale and the feather: A suggested evolution | Paleontology |
| | 東京都教育委員会編 | 1981 | 秋川市二宮庄司遺跡; 五日市町都立五日市高等学校遺跡; 中央区日本橋浜町発... | 東京都埋蔵文化財調査報告 ;第8集 |
| | イアン・ タッタソール著; 河合... | 1998 | 化石から知るヒトの進化 | |
| | Zhu, M. Y.; Vannier, J.; Van Iten... | 2004 | Direct evidence for predation on trilobites in the Cambrian | Proc Biol Sci |
| | Zhiyi, Z.; Wenwei, Y.; Zhiqiang, Z. | 2010 | Evolutional trends and palaeobiogeography of the Ordovician trilobite Ovaloc... | Proc Biol Sci |
| | Zhang, X. G.; Clarkson, E. N. | 2009 | Trunk segmentation of Cambrian eodiscoid trilobites | Evol Dev |
| | Yovel, Y.; Franz, M. O.; Stilz, P.;... | 2008 | Plant classification from bat-like echolocation signals | PLoS Computational Biology |
| | Wiegrebe, L. | 2008 | An autocorrelation model of bat sonar | Biological Cybernetics |
| | Whitney, J. R.; Billoski, T.V.; Jo... | 1997 | Evidence for Triceratops in Antarctica | New Directions in Paleontology |
| | Whiting, J.R.; Billoski, T.V.; Jon... | 1987 | Herding instincts of cretaceous duck-billed dinosaurs | Journal of Paleontology |
| | Webster, M.; Zelditch, M. L. | 2011 | Modularity of a Cambrian ptychoparioid trilobite cranium | Evol Dev |

You can double-click an individual reference if you would like to view the complete reference. When you are done viewing a reference, click the Close button.

Click the Author column heading to again order the list by author names in ascending (A to Z) order.

Related Sections in EndNote Help

See the following topics in EndNote Help for information related to this portion of the tour:

- ◆ “The EndNote Library” to learn how to create your own library.
- ◆ “Entering and Editing References” to learn about typing references into your library and inserting images.

Chapter 6: Searching an Online Database

With the EndNote Online Search command, you can search online bibliographic databases just as easily as you can search an EndNote library on your own computer. The results of your searches can be downloaded either into a temporary EndNote library or directly into your own EndNote library.

Another way to search online sources is with the Find Full Text command, which locates full text articles for your existing EndNote references.

This section will guide you through these basic steps:

- ◆ Connect to an online database.
- ◆ Search the database and download the references into an EndNote library.
- ◆ Find and attach the full text article for a reference.

NOTE: To follow this exercise, you must be at a computer with access to the Internet (either dial-up or a direct network connection).

About the PubMed Database

For this lesson, you will connect to PubMed, the U.S. National Library of Medicine's online public access version of their MEDLINE database.

For Users With “Dial-up” Internet Connections

This section pertains to you if you use a modem and a phone line to connect to the Internet, as opposed to a direct network connection.

Connecting: Most setups for dial-up connections are configured to automatically dial your information provider and connect to the Internet when you use an application that requests an online connection (as EndNote's Online Search command does). However, some setups require that you establish an online connection (sign on) *before* choosing EndNote's Online Search command.

Disconnecting: EndNote disconnects from an online database as soon as a search is completed. EndNote will not disconnect your Internet connection at any point. You need to shut down your connection when you have finished using EndNote's Online Search feature.

Open the Sample Library

If EndNote is not already running, start it and open the library called Sample_Library_X5.enl as shown in “Start EndNote” on page 35.

Select a Display Mode

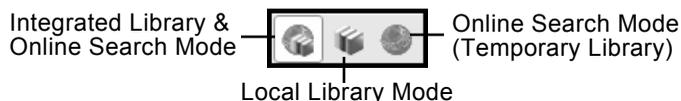
You can choose from different display modes in the Library window by selecting one of these from the toolbar.

- ◆ Integrated Library & Online Search Mode
- ◆ Local Library Mode
- ◆ Online Search Mode

There are actually two different workflows. You may want to always work in Integrated Mode, with all groups and commands available, and with online search results downloaded directly into your open library. Or, you may want to work primarily in Local Library Mode, with Online Groups suppressed until you explicitly switch to Online Mode to download references into a temporary library.

- ◆ In Integrated Library & Online Search Mode, all groups and commands are available. When you download references from an online database, they are saved directly into the open library.
- ◆ In Local Library Mode, the Online Search groups are not available. All local library commands are available. If you initiate an online search from the Tools menu, the display switches to Online Search Mode.
- ◆ In Online Search Mode, only the Online Search groups are available. When you download references from an online database, the references are stored in a temporary library until you save them to a permanent EndNote library. This allows you to download references from online databases and review them without affecting your local library. Many library commands are not available in Online Search Mode. When you close Online Search Mode, the display changes to Local Library Mode.

Try clicking on the three different mode buttons at the left of the toolbar to see how the Group pane changes in the Library window.



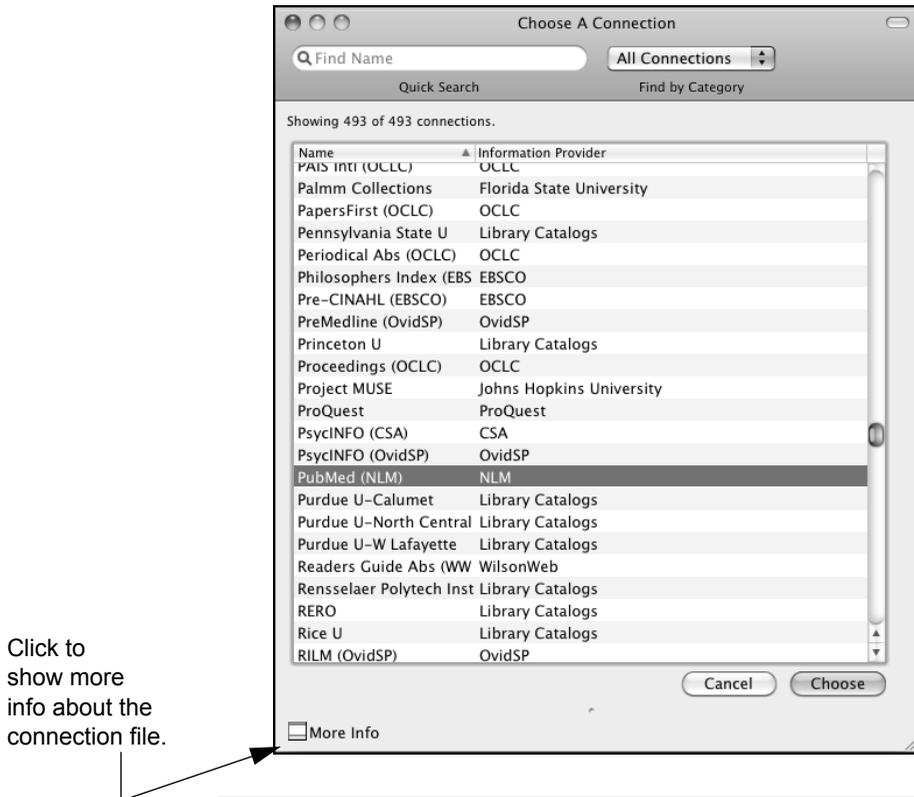
To continue the tour, click the left icon to select Integrated Library & Online Search Mode so that all groups and commands are available.

Connect to an Online Database

The first step in searching an online database is connecting to it.

To connect to the PubMed Database:

1. Go to the Tools menu and select Online Search to see the available list of online databases. You could also look under Online Search in the Groups pane, and then click the More... link.



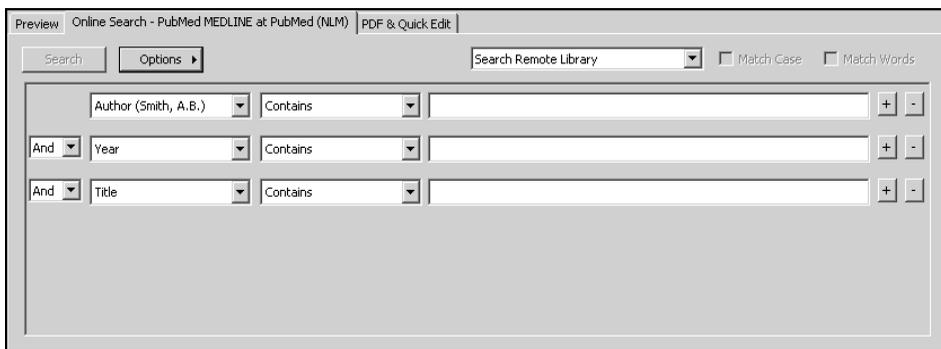
NOTE: The Groups pane will remember databases you have connected to in the past for easy access under Online Search. You can also customize a list of favorite databases to search by using the Connection Manager.

NOTE: This window displays the connection files available in your Connections folders. A Typical installation installs only the most popular connection files, but more than 4,100 connection files are available with EndNote.

2. Click the Find by Category button (Macintosh) or the Find by button (Windows) to view a list of various categories of databases to help you locate the one that you need. Or, type text into the Quick Search text box and press Return (Macintosh) or Enter (Windows).
3. Select the PubMed connection file, and then click Choose. You can begin entering your search terms in the fields.

By selecting this connection file, you have directed EndNote to connect to the U.S. National Library of Medicine's PubMed database. If for any reason the connection cannot be established, EndNote alerts you with an error message and closes the connection.

When the connection has been established, EndNote displays a Search tab titled, "Online Search - PubMed MEDLINE at PubMed (NLM)." The PubMed MEDLINE database is selected and EndNote is ready to search.



NOTE: For more detailed information on how to search PubMed, see "Importing References from PubMed" in EndNote Help.

NOTE: If you previously set a default configuration for the Search tab, the search field lists display the fields you selected as your defaults. If one of those default fields is not a valid option for this particular online database, the field selection may appear as "Any Field" or "All Fields."

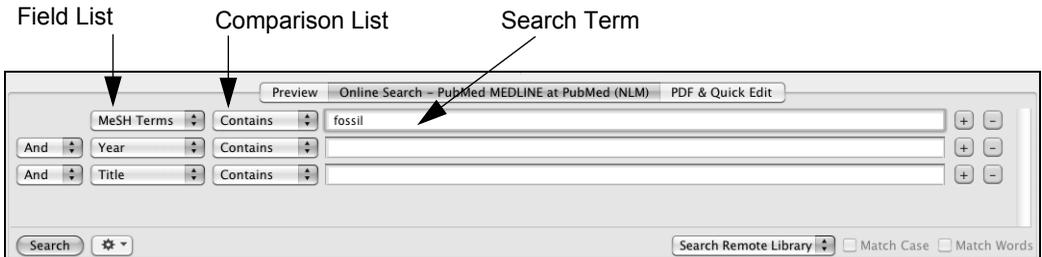
Search the Database

The next step is to enter the search term(s) to find the references you need. Searching an online database is very similar to searching an EndNote library (with a few exceptions).

Let's say you are interested in finding more information about fossils for the sample library.

To enter the search term(s) and perform the search:

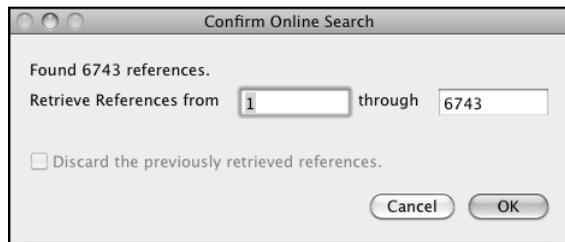
1. In the Groups pane, select PubMed (LMN)
2. Set the Field list for the first line to MeSH Terms, and enter “fossil” into the search text field. The Comparison list for online searches is always set to Contains.



Match Case and Match Words are not available for online searches

3. Click Search.

EndNote sends the search request off to the online database and a summary of the search results is displayed.



The dialog displays the number of references that were found to match your search request, and gives you the option to retrieve them.

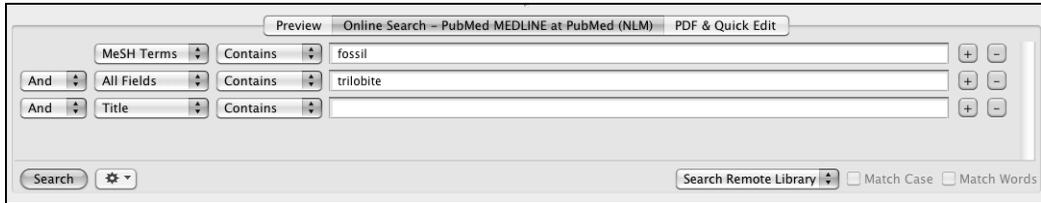
NOTE: You can halt a retrieval in progress by clicking the Cancel button on the Search tab. Records that have been processed up to that point already exist in the library.

NOTE: PubMed is updated regularly, so you may find a different number of references than illustrated here.

If the result set seems too many, you can refine the search to get closer to exactly those references you want. Let's refine this search by looking for just those references that include

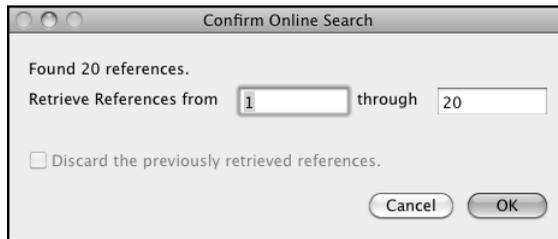
mention of a “trilobite,” a group of extinct marine animals that were abundant in the Paleozoic era.

4. Click Cancel to return to the Search tab.
5. Set the operator at the beginning of the second search line to And.
6. In the second search line, select All Fields from the Field list and type “trilobite” as the search text.



7. Click Search.

This time fewer references are found.



8. Click OK to retrieve and save the matching references.

The references are downloaded into your library and appear both in the All References group and in a temporary PubMed (NLM) group for the PubMed database connection.

The temporary PubMed (NLM) group will reset back to 0 references when you close the library.

The screenshot displays a reference management application. On the left is a 'My Library' sidebar with categories like 'All References (115)', 'Unfiled (23)', 'Trash (0)', 'Paleontology', 'Bats', 'Abstract Art', 'Online Search', and 'EndNote Web'. The main window shows a table of 20 references with columns for Author, Year, Title, and Journal. Below the table is a 'Preview' pane for 'Online Search - PubMed MEDLINE at PubMed (NLM)'. The search criteria are: MeSH Terms 'fossil', All Fields 'trilobite', and Title (empty).

| Author | Year | Title | Journal |
|------------------------------|------|---|----------------------|
| Clarkson, E. N.; Levi-S... | 1975 | Trilobite eyes and the optics of Des Cartes... | Nature |
| Foote, M.; Raup, D. M. | 1996 | Fossil preservation and the stratigraphic ra... | Paleobiology |
| Fortey, R.; Chatterton, B. | 2003 | A Devonian trilobite with an eyeshade | Science |
| Fusco, G.; Hughes, N. ... | 2004 | Exploring developmental modes in a fossil ... | Am Nat |
| Gal, J.; Horvath, G.; Cla... | 2000 | Image formation by bifocal lenses in a trilo... | Vision Res |
| Horvath, G. | 1989 | Geometric optics of trilobite eyes: a theore... | Math Biosci |
| Hughes, N. C. | 2003 | Trilobite body patterning and the evolution ... | Bioessays |
| Knell, R. J.; Fortey, R. A. | 2005 | Trilobite spines and beetle horns: sexual s... | Biol Lett |
| Lee, M. S.; Jago, J. B.; ... | 2011 | Modern optics in exceptionally preserved e... | Nature |
| Lieberman, B. S.; Kari... | 2010 | Tracing the trilobite tree from the root to th... | Arthropod Struct Dev |
| Park, T. Y.; Choi, D. K. | 2009 | Post-embryonic development of the Furon... | Evol Dev |
| Sepich, D. S.; Myers, D... | 2000 | Role of the zebrafish trilobite locus in gastr... | Genesis |
| Simpson, A. G.; Hughe... | 2005 | Development of the caudal exoskeleton of ... | Evol Dev |
| Wagner, P. J. | 2000 | Exhaustion of morphologic character state... | Evolution |
| Webber, A. J.; Hunda, ... | 2007 | Quantitatively comparing morphological tre... | Evolution |
| Webster, M. | 2007 | A Cambrian peak in morphological variati... | Science |
| Webster, M.; Zelditch, ... | 2011 | Modularity of a Cambrian ptychoparioid tril... | Evol Dev |
| Zhang, X. G.; Clarkson, ... | 2009 | Trunk segmentation of Cambrian eodiscoi... | Evol Dev |
| Zhiyi, Z.; Wenwei, Y.; Zh... | 2010 | Evolutional trends and palaeobiogeograph... | Proc Biol Sci |
| Zhu, M. Y.; Vannier, J.; ... | 2004 | Direct evidence for predation on trilobites l... | Proc Biol Sci |

NOTE: If you would prefer to save references to a temporary library first, to verify which references you want to save, you would begin by selecting Online Search Mode.

NOTE: You can click the triangle icon (Macintosh) or plus or minus icon (Windows) next to a group set heading to display or hide the list of groups under that heading.

Review the References

At this point, you can view the retrieved references to make sure you want to keep all of them. You may find that some of the references are not helpful for your research.

While you could open each reference individually to scan through the bibliographic data, you can also use the Preview tab or the Quick Edit pane.

To quickly look at the new references:

1. Click on a reference in the reference list.
2. Click the Preview tab to display a reference to view.
3. On the toolbar, select the Show All Fields output style from the Output Style list.

The Show All Fields style is not bibliographic, but represents all of the fields in your references. On the Preview tab, scroll through the data in the selected reference.

NOTE: If Show All Fields is not in the Output Style list, then choose Select Another Style to go to the Choose a Style dialog. Select Show All Fields from the list.

Delete Unwanted References

Because you are working in the Integrated Mode display, references were downloaded directly into the open library. Any references you do not want must be deleted.

NOTE: If you had downloaded references in Online Search Mode, the references would be in a temporary library; you would need to highlight the references you wanted to keep and copy them into a permanent EndNote library.

To delete references:

1. In the PubMed (NLM) group, select two of the displayed references by holding down the Command key (Macintosh) or the Ctrl key (Windows), and then clicking on the individual references. Use Shift+click to select a range of references.

| Author | Year | Title | Journal | Ref Type |
|-------------------------------------|------|--------------------------------------|-----------------------|-----------------|
| Clarkson, E. N.; Levi-Setti, R. | 1975 | Trilobite eyes and the optics o... | Nature | Journal Article |
| Foote, M.; Raup, D. M. | 1996 | Fossil preservation and the st... | Paleobiology | Journal Article |
| Fortey, R.; Chatterton, B. | 2003 | A Devonian trilobite with an e... | Science | Journal Article |
| Fusco, G.; Hughes, N. C.; We... | 2004 | Exploring developmental mod... | Am Nat | Journal Article |
| Gal, J.; Horvath, G.; Clarkson, ... | 2000 | Image formation by bifocal len... | Vision Res | Journal Article |
| Horvath, G. | 1989 | Geometric optics of trilobite e... | Math Biosci | Journal Article |
| Hughes, N. C. | 2003 | Trilobite body patterning and t... | Bioessays | Journal Article |
| Knell, R. J.; Fortey, R. A. | 2005 | Trilobite spines and beetle ho... | Biol Lett | Journal Article |
| Lieberman, B. S.; Karim, T. S. | 2010 | Tracing the trilobite tree from t... | Arthropod Struct D... | Journal Article |
| Park, T. Y.; Choi, D. K. | 2009 | Post-embryonic development ... | Evol Dev | Journal Article |
| Sepich, D. S.; Myers, D. C.; ... | 2000 | Role of the zebrafish trilobite l... | Genesis | Journal Article |
| Simpson, A. G.; Hughes, N. ... | 2005 | Development of the caudal ex... | Evol Dev | Journal Article |
| Wagner, P. J. | 2000 | Exhaustion of morphologic ch... | Evolution | Journal Article |
| Webber, A. J.; Hunda, B. R. | 2007 | Quantitatively comparing mor... | Evolution | Journal Article |
| Webster, M. | 2007 | A Cambrian peak in morphol... | Science | Journal Article |
| Webster, M.; Zelditch, M. L. | 2011 | Modularity of a Cambrian ptyc... | Evol Dev | Journal Article |
| Zhang, X. G.; Clarkson, E. N. | 2009 | Trunk segmentation of Camb... | Evol Dev | Journal Article |
| Zhiyi, Z.; Wenwei, Y.; Zhiqian... | 2010 | Evolutional trends and palaeo... | Proc Biol Sci | Journal Article |
| Zhu, M. Y.; Vannier, J.; Van It... | 2004 | Direct evidence for predation ... | Proc Biol Sci | Journal Article |

2. From the References menu, select Move References to Trash. The selected references are removed from the library and put in the Trash group.

While the references are officially no longer in your library (they will not appear in any other group or reference list, they are not included in your reference count, and they cannot be cited), they are not completely deleted until you go to the Groups menu and select Empty Trash. Until you select Empty Trash, you can still drag references from the Trash group back to your active library.

3. Because you are sure that you want to delete the references, click the Trash group, and then go to the References menu to select Empty Trash.
4. Confirm the deletion by clicking OK.
5. Click the All References group to return to the full reference list, and on the toolbar, set your output style back to Numbered.

If you wanted to do another search of PubMed, you could display the PubMed group, enter another search strategy, and then click Search again. On the Confirm Online Search dialog, you are asked, "Clear currently displayed results before retrieving records?" This check box simply removes the previous downloaded references from the PubMed group; they still exist in the library. It is an easy way to see just those references downloaded with the current search strategy.

Find the Full Text for a Reference

Many online sources now supply not only bibliographic information, but the full text of the document you are referencing. In this exercise, you will find the full text for a reference.

To find the full text for a reference:

1. Click in the list of All References and type "Chiu" to jump to the reference by the author Chiu, C.
2. Highlight the reference by Chiu as well as the reference by the author Chang, Kenneth.
3. From the References menu, select Find Full Text > Find Full Text.

EndNote displays a copyright notice advising you to adhere to downloading and usage guidelines as required by your information provider. We will use the default EndNote settings to search public sources that do not require authentication for access.

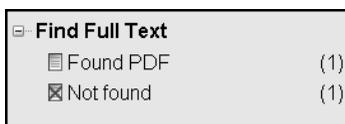
4. Click OK to begin the Find Full Text search.

In the left-hand column, under the Find Full Text group set heading, you will see a Searching group indicating that a search is in progress. This search can work in the background, so if you had many references selected, you could continue working in your library.

When the Find Full Text search is completed, the Searching group is removed. Depending on the results, you may see a combination of three different groups under the Find Full Text heading.

- ◆ Found PDF
- ◆ Found URL
- ◆ Not found

In this case, EndNote was able to locate a PDF file for one of the references.



In the reference list, you can see that the Chiu reference now has a paper clip icon next to it indicating an attached file.

| | | | |
|--------------------------------------|------|---------------------------------------|------------------------------------|
| Chang, Kenneth | 2002 | Oldest Bacteria Fossils? Or Are... | New York Times |
| Chiu, Chen; Moss, Cynthia F. | 2007 | The role of the external ear in ve... | The Journal of the Acoustical S... |
| Chiu, C.; Xian, W.; Moss, C. F. | 2008 | Flying in silence: Echolocating b... | Proceedings of the National A... |
| Cioffarelli, Ada; Natale, Maria T... | 2000 | Guide to the catacombs of Rom... | Percorsi archeologici |

Select the Chiu reference in the library window, and then click the PDF & Quick Edit tab to open the PDF in the PDF Viewer pane. See “PDF & Quick Edit Tab” on page 44 to learn more about this feature.

The Chang reference does not have a PDF icon in the File Attachments field.

NOTE: EndNote did not find a URL for either Chiu or Chang. Had Endnote found a URL for either reference, the URL would be added to the URL field. The URL would take you to the provider’s Web site where either the full text article is available or you will find information about how to obtain the full text article.

Related Sections in EndNote Help

See the following topics in EndNote Help for information related to this portion of the tour:

- ◆ “Searching Online Databases” to learn about establishing connections, searching for references, retrieving references, and finding the full text for a reference.
- ◆ “Troubleshooting” to learn how to resolve problems establishing a connection.
- ◆ “Connection Files” to learn about creating and editing connection files.
- ◆ “Importing References from PubMed” to learn how to import records from the PubMed database.

Chapter 7: Importing Reference Data into EndNote

Online searching, described in the previous section, is the easiest way to retrieve references from online databases, but not all information providers offer that option.

If you have access to an online bibliographic database or a university catalog, you can probably use EndNote's import filters to import text files saved or downloaded from these sources. EndNote filters are configurable so they give you the flexibility to import the reference data you need and eliminate data you do not need.

In this part of the guided tour you will learn about:

- ◆ Downloading data in a tagged output format.
- ◆ Selecting an import filter and importing data into EndNote.

Open the Sample Library

If EndNote is not already running, start it and open the library called `Sample_Library_X5.enl` as shown in "Start EndNote" on page 35.

Search the Database and Save the References

Often when you search a database, the matching references are displayed as text, with no clear indicator between each piece of bibliographic information. The PubMed reference below, saved in a Citation format, is an example. There is no clear indicator for EndNote to be able to differentiate a title from an address or an abstract.

Science. 1966 Dec 9;154(3754):1333-1339.

Early Eocene Bat from Wyoming.

Jepsen GL.

A fossil skeleton of an early Eocene bat, the oldest known flying mammal, was found in southwest Wyoming. The bat is assigned to the new species *Icaronycteris index* of the suborder Microchiroptera. It was apparently of a young male whose body was buried in varved marls of the Green River Formation, on the bottom of Fossil Lake, about 50 million years ago. The bones, some as slender as a human hair, show a few "primitive" characteristics such as a clawed

index finger and a complete phalangeal formula, but the bat was fully developed - an anatomically precocious contemporary of the dog-sized polydactylous horse.

PMID: 17770307 [PubMed - as supplied by publisher]

To use this information effectively, each piece of bibliographic information must be consistently tagged so it can be directed to the correct EndNote field.

Database providers typically offer several different download formats. Regardless of which system you are searching, you need to save the references in a tagged format to a text file.

For this tour, we will use a text file of PubMed references that were previously downloaded in the tagged MEDLINE format. The file `pubmed_result.txt` is provided in the EndNote Examples folder. A single reference in the file appears like this:

```
PMID- 18198331
OWN - NLM
STAT- MEDLINE
DA - 20080116
DCOM- 20080313
LR - 20081121
IS - 0890-9369 (Print)
VI - 22
IP - 2
DP - 2008 Jan 15
TI - Understanding of bat wing evolution takes
    flight.
PG - 121-4
AD - Department of Genetics, Harvard Medical
    School, Boston, MA 02115, USA.
FAU - Cooper, Kimberly L
AU - Cooper KL
FAU - Tabin, Clifford J
AU - Tabin CJ
LA - eng
GR - F32 HD 052349/HD/NICHD NIH HHS/United
    States
GR - R37 HD 32443/HD/NICHD NIH HHS/United States
PT - Comment
PT - Journal Article
PT - Research Support, N.I.H., Extramural
PL - United States
TA - Genes Dev
```

JT - Genes & development
JID - 8711660
RN - 0 (Homeodomain Proteins)
SB - IM
CON - Genes Dev. 2008 Jan 15;22(2):141-51. PMID:
18198333
MH - Animals
MH - Chiroptera/*genetics
MH - *Evolution
MH - Forelimb/anatomy & histology
MH - Fossils
MH - *Genetic Variation
MH - Homeodomain Proteins/*genetics
MH - Wing/*growth & development
EDAT- 2008/01/17 09:00
MHDA- 2008/03/14 09:00
CRDT- 2008/01/17 09:00
AID - 22/2/121 [pii]
AID - 10.1101/gad.1639108 [doi]
PST - ppublish
SO - Genes Dev. 2008 Jan 15;22(2):121-4.

Each tag can be mapped to a corresponding EndNote field. If data is inconsistently tagged, or poorly delimited, it may not be possible to import all of the data accurately.

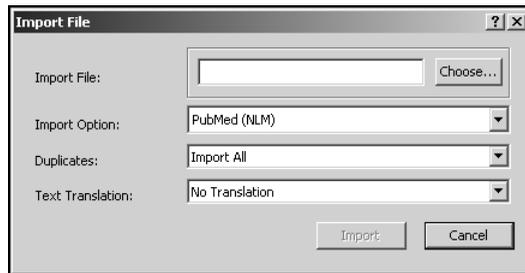
Choose the Correct Import Filter and Import into EndNote

Once you have captured and saved your data file in a tagged format, you need to identify the proper EndNote filter to import the data. There are hundreds of filters included with EndNote; each one is designed to read a specific tagged format from a specific information provider.

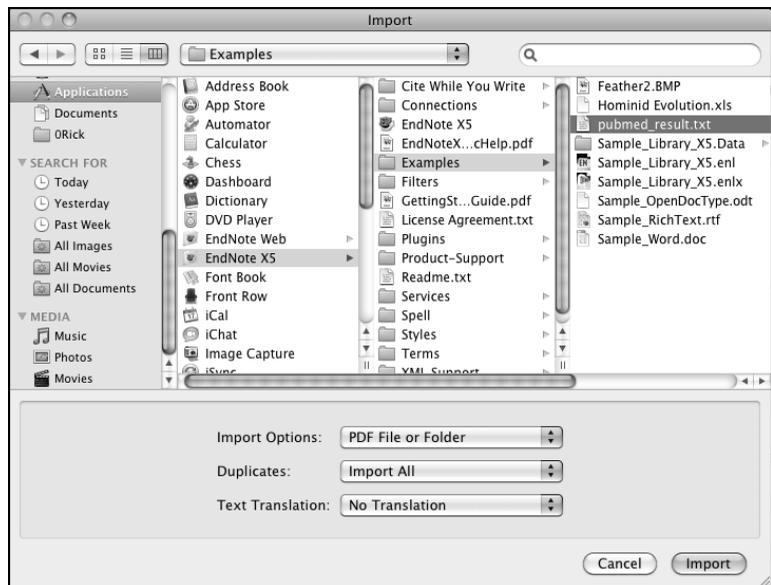
To import the sample PubMed text file into the sample library:

1. From the File menu, select Import.

The Windows Import dialog



The Macintosh Import dialog



2. Select the file to import.

Macintosh: Browse to the Applications/EndNote X5/Examples folder and highlight the pubmed_result.txt file.

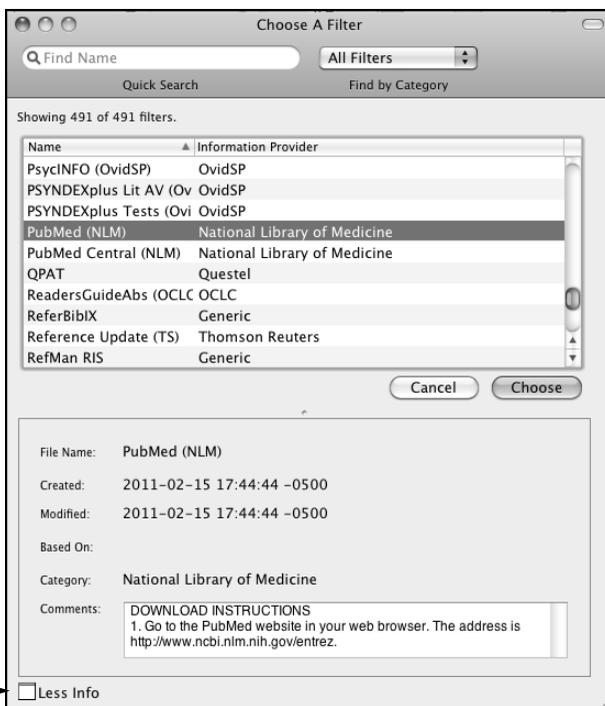
Windows: Click the Choose button to display a file dialog. Browse to the Program Files\EndNote X5\Examples folder, and then highlight and open the pubmed_result.txt file.

3. From the Import Option list, select Other Filters to display the list of filters supplied in the EndNote Filters folder.

You may want to peruse the list, to get an idea of what filters are supplied. You can create new filters or copy and edit existing filters.

NOTE: A Typical installation installs only the most popular filters, but there are hundreds available with EndNote.

4. Type “PubMed” to jump to the filter in the list.



Click to display more or less info about the file.

If the More Info button is available, click it and notice that the Comments section at the bottom of the window gives tips for downloading references from the selected source.

5. With the PubMed (NLM) filter highlighted, click the Choose button.

6. Leave the other two options at their default settings.

Duplicates: Import All

By default, a reference is considered a duplicate if the Author, Year, Title, and Reference Type match a reference already in the library. You can change the duplicates criteria under EndNote Preferences. We will import all references regardless of duplicates.

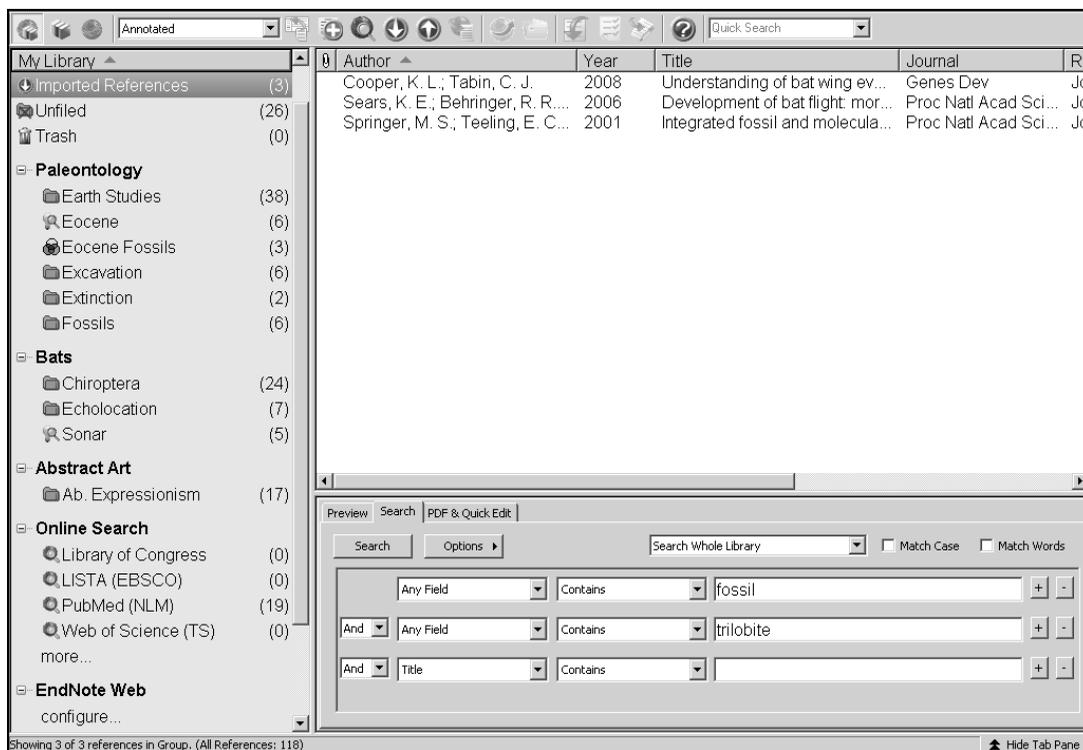
Text Translation: No Translation

This option allows you to specify the text character encoding of the file you import. This is important when you import references in languages that include extended characters. You can also find the correct language encoding information by opening the text file in Microsoft Word or another word processor.

7. Click Import to import the file.

When the process is complete, only newly imported references display in the reference list. This is a good time to peruse the new references to make sure they imported as expected. You can display the Preview tab to view the formatted references, you can open individual references to

make sure all information transferred to the correct fields, and you can easily edit or delete the new references.



Notice that the focus in the Groups pane has switched from the All References group to a new Imported References group.

The Imported References group is a temporary group. It is replaced each time you import a new set of references, and it is removed when you close the library. The references themselves remain in the library unless you specifically delete them.

- To return all of your references to the library display (including the newly imported references), select Show All References from the References menu or click the All References group.

Downloading Records from PubMed

The example below gives the recommended download format and import option for the U.S. National Library of Medicine's PubMed system.

Information Provider: PubMed
Import Option: PubMed (NLM) Filter

Follow the steps below to download your search results from the PubMed Web site and to import them into your EndNote library.

1. Go to the PubMed Web site in your Web browser at <http://www.pubmed.gov>.
2. In the Search field, enter your search criteria to execute your search. Click the Search button.
3. On the Results page, select Clipboard from the Send To menu in the PubMed navigation bar to save records from multiple searches as you work (optional). You can also click the Add to Clipboard button to save the first 500 results.
4. Select the needed results and then select File from the Send To menu.
5. Select MEDLINE from the Format menu.
6. Select a sort order from the Sort By menu. The default sort order is Recently Added.
7. Click the Create File button. This will bring up a dialog box allowing you to save your selected references as a text file.
8. Click the Save button to save the file to your computer. Save the file somewhere easily accessible such as your desktop. The default file name is `pubmed_results.txt`. You may change the file name, but we recommend saving the file with the `.txt` extension.
9. In EndNote, open the library where you would like to save these references.
10. From the File menu, select Import > File to open a dialog window.
11. Click the Choose button, and then select the downloaded `pubmed_result.txt` file from your PC.
12. In the Import Option field, select Other Filters, and then select the import filter called PubMed (NLM) from the Choose an Import Filter dialog.
13. Click the Choose button to go to the Import File dialog.
14. Do not make any selections in the Duplicates and Text Translation fields.

15. Click the Import button to import your references.
16. Look in your Groups panel to see a new group called Imported References. All the references that you downloaded from PubMed will appear in this group.

NOTE: In step 4, do not use File > Save from your browser as the file, along with the results, will not import.

NOTE: In step 7, if you have a popup blocker enabled, such as the one that comes by default from Windows XP Service Pack 2, you may need to disable the popup blocker temporarily to allow the PubMed Web site to send you the file.

When you close the current library, EndNote removes the imported records from the Imported References group.

Direct Export from Web Pages

Certain Web sites include a download button that will send your search results directly to EndNote, pick the correct import filter, and start the import process automatically.

Start by opening the EndNote library into which the data should be imported. This “direct export” or “direct download” method does away with the additional steps of saving the references to a text file, and then importing that file with the appropriate filter.

The systems listed below provide a direct export of references into EndNote. A detailed table of instructions can be found in “Direct Export Providers” in EndNote Help. The list keeps growing, so contact your information provider to find out whether they participate!

| | |
|---|--------------------------------|
| ALEPH | Los Alamos National Laboratory |
| American Psychological Association, PsycInfo Online | MicroPatent |
| Bibliotech.dk | Nature |
| BioMedCentral | Nerac |
| BioOne | NISC |
| Blackwell Synergy | OCLC |
| BMJ | OhioLink |
| Buffalo University | OVID |
| CABI-Direct | Oxford Press Journals |
| Canadian Journal of Communication | Pacific Northwest Labs |

| | |
|-------------------|--------------------------------------|
| CCLR | Patent Cafe |
| Delphion | PILOTS |
| EBSCO | PNAS Online |
| EI Engineering | ProQuest |
| Elsevier | RLG |
| EMBASE | Science Magazine |
| ERIC | Scopus |
| ESDS Government | St. John of God, Ireland |
| Google Scholar | Stanford University's Highwire Press |
| HAPI | Telemed |
| IEEE | Thieme |
| JAMA | Web of Science |
| JISC | WebFeat |
| JSTOR | WilsonWeb |
| Karger Publishing | |

Exporting Records from Web of Knowledge and Web of Science

You can easily export bibliographic records from the *Web of Knowledge* platform. A subscription to *Web of Knowledge* is required.

Go to the *All Databases* or *Web of Science* Search page and perform a search using the Topic, Title, Author, or other fields.

1. From the Results page, click the check boxes to select the records that you wish to export to EndNote.
2. Go to the Output Records section of the page and select the option to output Full Record in step 2.
3. Click the EndNote button.
4. On the Processing page, click the Export button (Internet Explorer) to export the records to EndNote. If you are using Firefox, select Open With, and then click OK to export the records.
5. If a Choose Destination dialog opens, select EndNote, and then click OK.
6. At this point, the EndNote program opens, and the records are exported to a temporary group called Imported

References.

NOTE: When you install EndNote, the system automatically installs the ISI ResearchSoft - Export Helper plug-in. The plug-in opens a dialog window on the Processing Records page that allows you to select a reference program (if more than one program is installed) and a reference library. If only EndNote is installed, then the system automatically exports the records from All Databases or Web of Science as explained in step 4 above.

Related Sections in EndNote Help

See the following topics in EndNote Help for information related to this portion of the tour:

- ◆ “Importing Reference Data” to learn about import options and about importing references from other bibliographic software programs.
- ◆ “Filters” to learn how to create or modify filters that map downloaded references to corresponding fields in EndNote.
- ◆ “Direct Export Formats and Import Formats” to learn about tables of instruction for importing reference data from various online systems.

Chapter 8: Searching an EndNote Library and Saving it as a Smart Group

In this part of the guided tour you will learn how to:

- ◆ Search an EndNote library for a set of related references.
- ◆ Save the search strategy to create a smart group that is dynamically updated each time you enter or edit a reference.

Open the Sample Library

If EndNote is not already running, start it and open the library called Sample_Library_X5.enl as shown in “Start EndNote” on page 35.

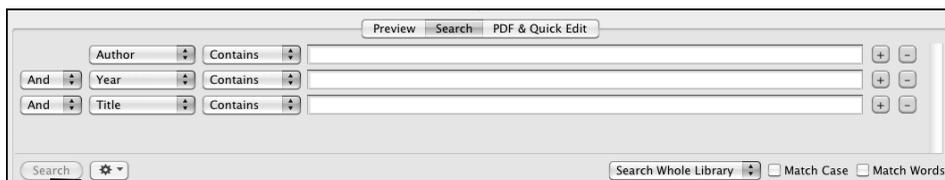
Search for a Set of References

Let us assume that you want to generate a list of all references found in the sample library that are about extinction and that were published from 2000 to 2010.

To search for references:

1. Make sure that the All References group is displayed.
2. Click the Search tab.
3. The Search tab remembers the last search you entered. To clear it, use the Action menu (Macintosh) or the Options button (Windows) to select Restore Default.

Click the Action menu to display a list of options

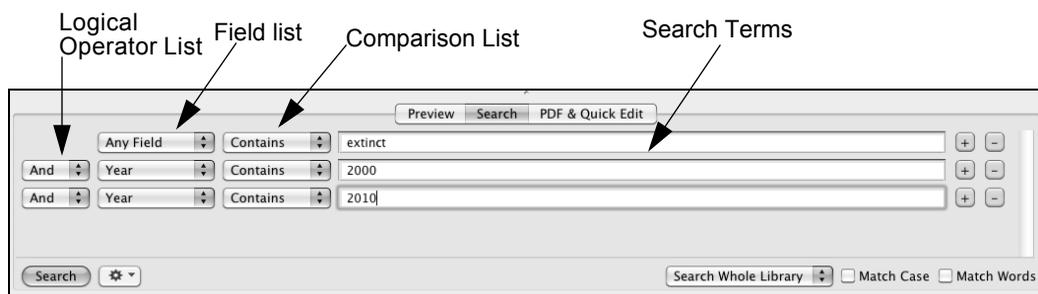


4. On the first search line:
 - a. In the first drop-down list, the Field list, scroll up and select Any Field. This means that EndNote will search all fields.
 - b. In the next drop-down list, the Comparison list, the Contains comparison operator means that EndNote will search for the string of text anywhere in the field.
 - c. Type “extinct” as the first search term.

Next, set up the search to find references dated from 2000 to 2010.

5. From the Field list in the second search line, select Year; from the Comparison list, select Is greater than or equal to; and then type “2000” as the search term for the second search line.
6. If you do not have a third search line available, click the plus sign button next to the last search line to insert another line. You can also click and drag the top of the pane to view more of the Search tab.
7. From the Field list in the third search line, select Year; from the Comparison list, select Is less than or equal to; and then type “2010” as the search term.
8. Notice the “And, Or, Not” logical operator list at the beginning of each search line. Select the And logical operator between the three search lines.

Your Search tab should look like this:



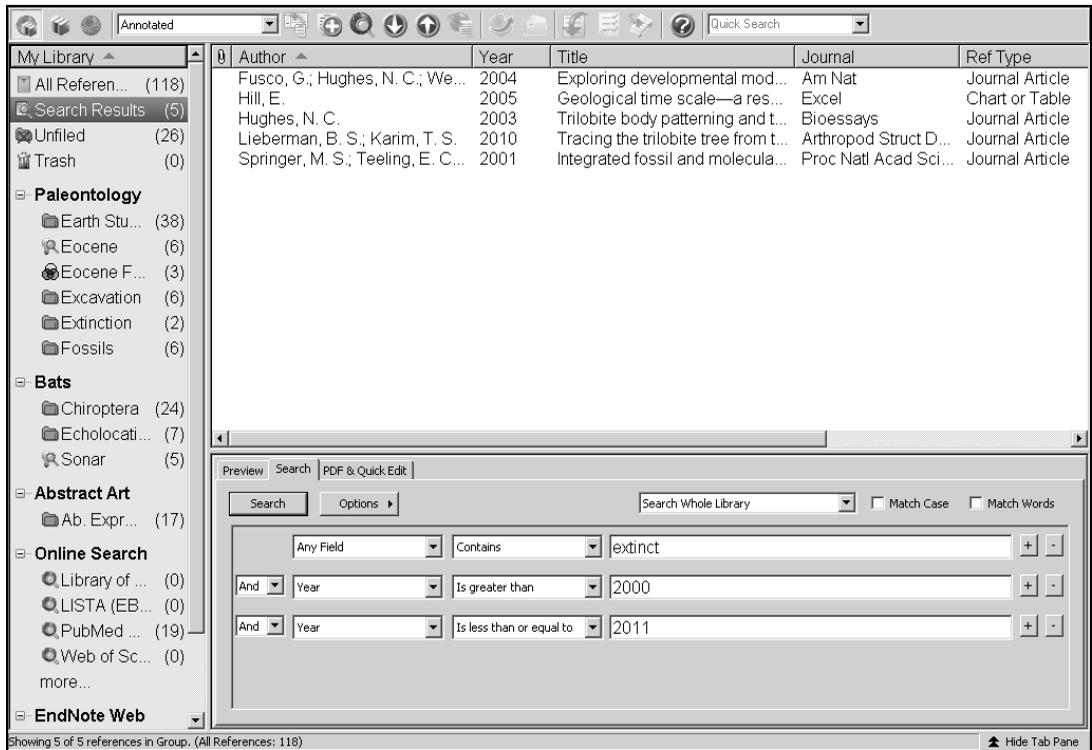
This search will find all references containing the text “extinct” that also were published between 2000 and 2011.

Notice that the following check boxes are not selected for this search:

Match Case: This option would limit our search to “extinct” in lowercase. If it were found capitalized at the beginning of a sentence, or all uppercase, it would not match the search.

Match Words: This option would limit matches to full words, with no truncation. The word “extinction” would not match our search.

- Click the Search button to begin the search. In a moment, EndNote displays the search results.



The status area at the bottom of the Library window should read, “Showing 5 of 5 references in Group.”

Notice in the Groups pane that these search results are automatically retained in a Search Results group. This makes it easy to display other sets of references, but still go back and display your most recent search results. This temporary Search Results group will be replaced the next time you run a search on the library. When you close the library, this group is removed.

As you enter additional references into your library, you may want to keep track of the references that meet this search criteria. An easy way to do this is with a smart group as described next.

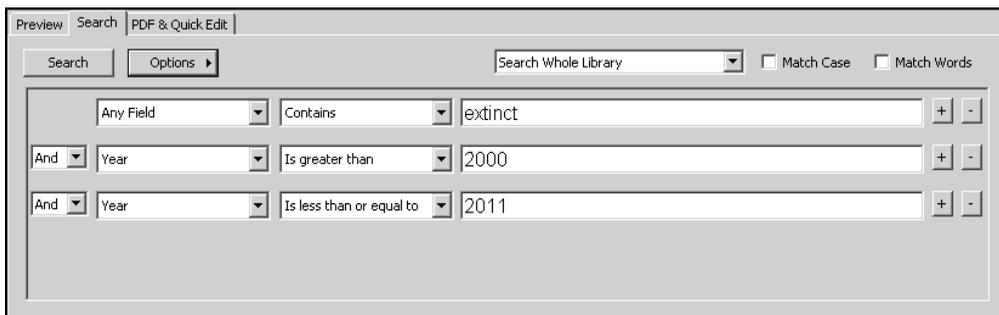
Create a Smart Group

You could create a custom group, and then drag your search results to the group, but as you entered new references into your library, you would need to manually keep updating the custom group. Instead, create a smart group that updates automatically.

The Search tab should still display the search strategy to find “extinct” and the publication years between 2000 to 2011.

To use the search strategy to create a smart group:

1. Click the Action menu (Macintosh) or the Options button (Windows), and then select Convert to Smart Group.



A Converted Search smart group is created under the first custom group set, Paleontology.

2. Type “Extinct” for the Converted Search title, and then press Return (Macintosh) or Enter (Windows).

If you have already clicked away from the editable title, you can Control+click (Macintosh) or right-click (Windows) on Converted Search, and then select Rename Group.

Each time a reference is added to the library or edited, the smart group will update as needed.

To show all references again in the library window, click the All References group.

Create a Combo Group

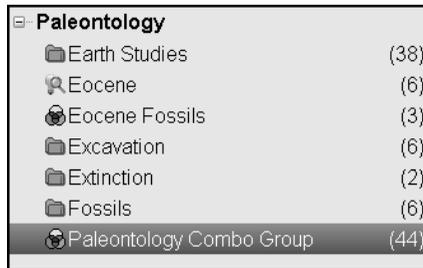
Let us assume that you want to combine all your custom groups and smart groups under the Paleontology group set in order to create a combination group.

To create a combination group:

1. In the Groups pane, click on any of the groups in the Paleontology group set.
2. From the Groups menu, select Create from Groups.
3. In the Group Name field, type “Paleontology Combo Group.”
4. Go to the “Include References in” section of the dialog. In the first field, select Earth Studies from the Paleontology group set.
5. In the second field, select Eocene, and then select the OR

Boolean operator.

6. In the third field, select Excavation, and then select the OR Boolean operator.
7. Lastly, in the fourth field, select Fossils, but then select the NOT operator.
8. Click the Create button to save your changes. Your combo group should appear in the Groups pane.



Your combined group should contain 44 references from the following custom groups and smart groups.

- ◆ Earth Studies
- ◆ Eocene
- ◆ Excavation
- ◆ Fossils

Notice that your combination group shows six references in the Fossils group. However, because we used the Not operator to exclude references from this group, those references do not appear in the Paleontology Combo Group. Moreover, duplicates are excluded from the combination group.

NOTE: If you delete a reference from a combined group, EndNote removes that reference from the custom and/or smart group from which it originally came. References deleted from a custom group are removed from the group, and from the combo group, but not from the All References list. References deleted from a smart group are removed from the smart group, the combo group, and the All References list, and moved to the Trash group.

Related Sections in EndNote Help

See the following topics in EndNote Help for information related to this portion of the tour:

- ◆ “Searching and Sorting in EndNote” to learn more about searching the EndNote library and saving references in groups.
- ◆ “Using Groups” to learn more about creating and managing groups.

Chapter 9: Using EndNote While Writing a Paper with Microsoft Word

Continue with this part of the tour only if you use Microsoft Word 2008 or 2011 (Macintosh) or Microsoft Word 2003, 2007, or 2010 (Windows). If you use a different word processor, or if you have an older version of Word, see one of these EndNote Help topics to learn how to cite EndNote references and create bibliographies in your papers.

- ◆ OpenOffice.org Writer/Cite While You Write (Windows)
- ◆ RTF Files/Scanning and Formatting

EndNote's Cite While You Write feature inserts EndNote commands into Word's Tools menu (or on an EndNote tab in Word 2007 and 2010 for Windows) to give you direct access to your references while writing in Microsoft Word. The Cite While You Write commands enable EndNote to do bibliographic formatting to the document that is currently open in Word.

In this part of the tour, you will learn how to:

- ◆ Insert EndNote bibliographic citations into your paper and create a bibliography.
- ◆ Edit citations to suppress author names and add cited pages.

Open the Sample Library

If EndNote is not already running, start it and open the library called `Sample_Library_X5.enl` as shown in "Start EndNote" on page 35.

EndNote will look for matching references in the currently open library. While EndNote can start and open your favorite library when needed by Word, opening the library first assures you that you are citing references from the appropriate library.

Open a Microsoft Word Document

Start Microsoft Word and open a new document.

While we are not using one for this tour, EndNote does include manuscript templates that make it easy to set up your paper for electronic submission to a publisher. When you use one of these templates to start your paper, many formatting issues are already set up for your target publication, such as proper margins, headings, pagination, line spacing, title page, font type, and font size.

For more information about using manuscript templates, see “Creating a Word Document Based on a Template” in EndNote Help.

Cite EndNote References

You are going to start entering some text and citations for this tour. This example assumes that your output style is set for Annotated. If not, we will show you how to select an output style in “Select a Bibliographic Style” on page 95.

To start writing your paper and inserting citations:

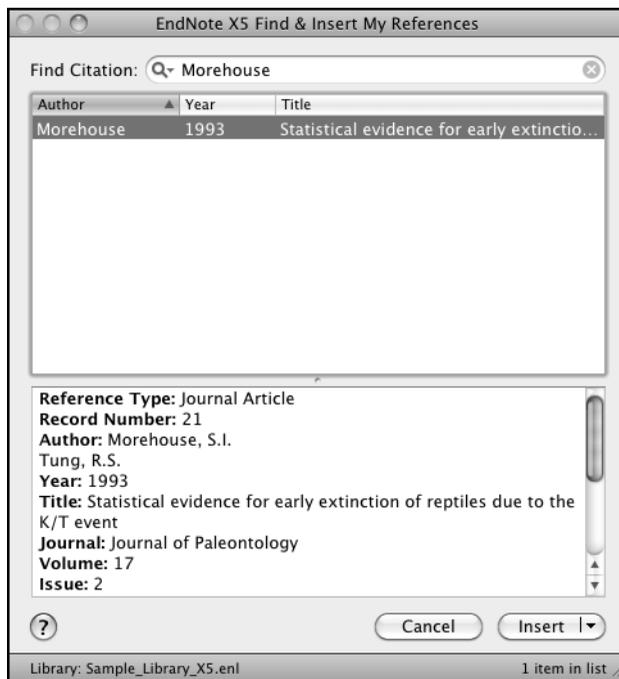
1. Open Word and enter the following text as though you were writing a paper.

The fossil in question was generally regarded to be the 220 million year-old remains of tyrannosaurus. Several years ago, however, Morehouse overturned this hypothesis with the discovery of yet another species.

Now you are ready to insert a citation.

2. From the Tools menu, go to the EndNote X5 submenu, and then click Find Citation(s).
Word 2007 and 2010: On the EndNote tab, click the Insert Citation icon.
3. The Find & Insert My References dialog appears. Type the author name “Morehouse” in the text box, and then click Find (Windows) or Return (Macintosh).

EndNote lists the matching references.



4. Click the Down arrow on the Insert button to display a menu. Select the Insert & Display As: Author (Year) option.

EndNote inserts a citation and Instant Formatting formats the citation in the currently selected style and adds it to a formatted bibliography at the end of the paper.

EndNote automatically creates a link from the citation to the bibliography. If you have multiple bibliographies (for example, one at the end of each chapter and one at the end of the document), you can link in-text citations to the reference list at the end of each section and/or chapter. See “Select a Bibliographic Style” on page 95 for information on how to turn this feature on and off.

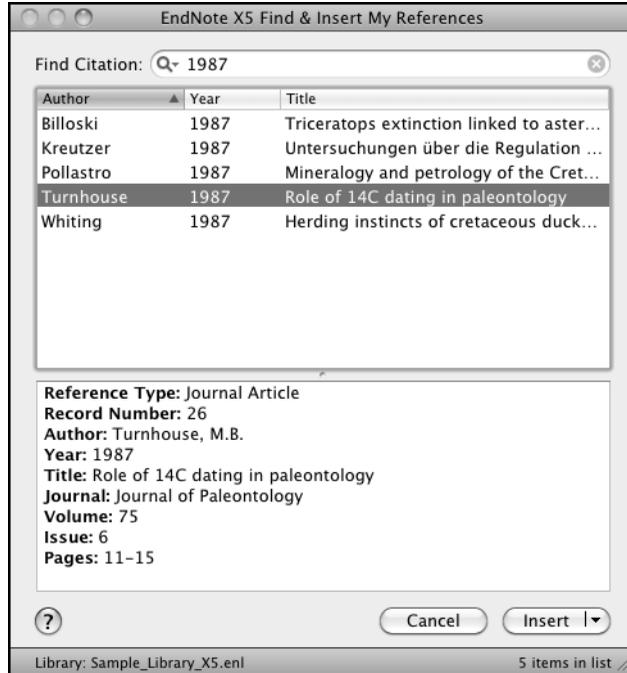
5. Add more text to the paper:

It is now the undisputed progeny of the species at hand.

6. From the Tools menu, go to the EndNote X5 submenu, and then click Find Citation(s).

Word 2007 and 2010: On the EndNote tab, click the Insert Citation icon.

7. Type the date “1987” into the text box and then click Find (Windows) or Return (Macintosh). EndNote searches all fields and lists the matching references.



8. Select the reference by the author Turnhouse.
 9. Click the Down arrow on the Insert button to display a menu. Select the Insert & Display As: Author (Year) option.
- EndNote inserts a citation and Instant Formatting formats the citation in the currently selected style and adds it to a formatted bibliography at the end of the paper.

Your document text should look similar to this example.

The fossil in question was generally regarded to be the 220 million year-old remains of tyrannosaurus. Several years ago, however, Morehouse overturned this hypothesis with the discovery of yet another species. Morehouse and Tung (1993) It is now the undisputed progeny of the species at hand. Turnhouse (1987)

Morehouse, S. I. and R. S. Tung (1993). "Statistical evidence for early extinction of reptiles due to the K/T event." *Journal of Paleontology* **17**(2): 198-209.

Northeast Spain: The stratigraphic position of the last dinosaur remains, found in the chron 31N interval, leads scientists to examine the possibility of a causal link between the extinction of reptiles in the Cretaceous period and the K/T event.

Turnhouse, M. B. (1987). "Role of 14C dating in paleontology." *Journal of Paleontology* **75**(6): 11-15.

9. Assume that you have finished inserting citations in your paper.

Keep your document open in order to select a bibliographic style to continue the tour in "Select a Bibliographic Style" on page 95.

NOTE: You can also insert citations in footnotes. First, use the appropriate Word command to create the footnote. Then, insert the EndNote citation in the footnote. Word controls the placement and numbering of the footnote, and EndNote formats the citation based on the current style. You must select a style that formats footnotes; for example, Chicago 16th.

Select a Bibliographic Style

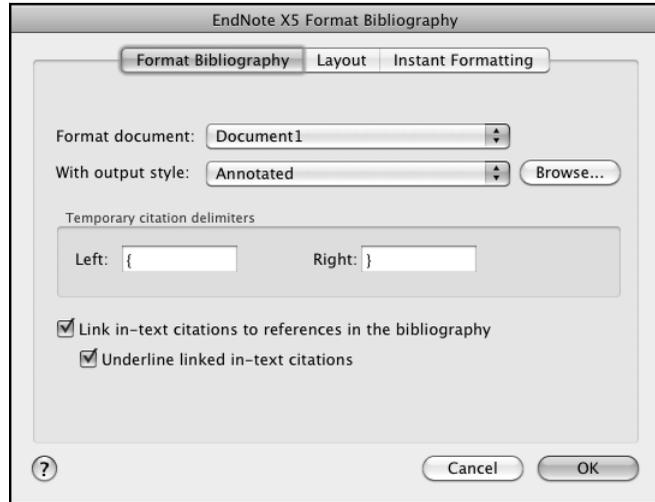
You can format your citations and bibliography as many times as you like, changing the output style and various other layout settings each time.

To select the bibliographic style used for formatting:

1. From the Tools menu, go to the EndNote X5 submenu, and then click Bibliography Settings.

Word 2007 and 2010: On the EndNote tab, in the Bibliography group, click the bottom corner arrow.

A Format Bibliography dialog appears where you can select a bibliographic style.



Styles contain instructions for how EndNote will format citations and the bibliography. Some styles sequentially number citations, and then insert a numbered reference list at the end of the paper. Other styles insert Author-Date citations.

As you can see, there are other formatting options available here; you can make changes that override the settings in the current output style.

2. The Annotated style should appear in the “With output style” field. If not, click the Browse button next to the field, and select the Annotated style.

Note that you can sort the list of styles by Name or by Category by clicking on a column header within the style menu.

3. Click the “Underline linked in-text citations” check box so that our citations within a document are visible as hyperlinks with underlining and blue text.
4. Click OK to leave the Format Bibliography dialog.

EndNote automatically updates the existing citations and regenerates the bibliography in the Annotated style.

Your document text should look similar to this example.

The fossil in question was generally regarded to be the 220 million year-old remains of tyrannosaurus. Several years ago, however, Morehouse overturned this hypothesis with the discovery of yet another species. Morehouse and Tung (1993) It is now the undisputed progeny of the species at hand. Turnhouse (1987)

Morehouse, S. I. and R. S. Tung (1993). "Statistical evidence for early extinction of reptiles due to the K/T event." Journal of Paleontology **17**(2): 198-209.

Northeast Spain: The stratigraphic position of the last dinosaur remains, found in the chron 31N interval, leads scientists to examine the possibility of a causal link between the extinction of reptiles in the Cretaceous period and the K/T event.

Turnhouse, M. B. (1987). "Role of 14C dating in paleontology." Journal of Paleontology **75**(6): 11-15.

NOTE: In the future, if you need to make changes to the paper such as adding or deleting citations or text, just do the necessary updates in your paper. If you want to change the output style or bibliography layout settings, select the Format Bibliography command again. EndNote will reformat the in-text citations and generate a new bibliography based on your changes.

NOTE: More than 5,000 styles are available. To see the list of styles currently installed, select Output Styles from the Endnote X5 menu (Macintosh) or Edit menu (Windows), and then select Open Style Manager. The Style Manager includes a Get More on the Web button to easily locate and download individual styles. Or, you can install entire categories of styles with the EndNote Customizer (Macintosh) or installation program (Windows).

Edit a Citation

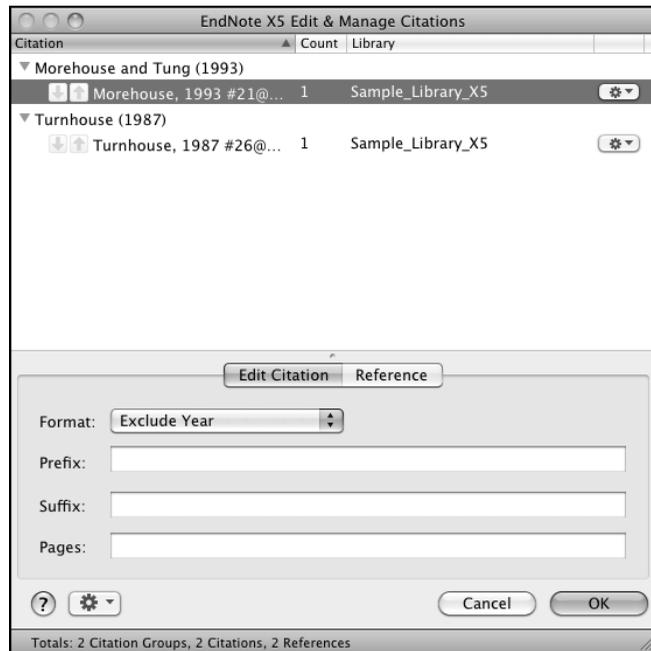
If you directly edit a citation or the bibliography, the changes will be lost when you Format Bibliography again because EndNote reformats according to the rules of the selected output style. To make and retain changes to all citations and/or the bibliography, modify the output style. However, if you want to make a change to an individual citation, select the Edit & Manage Citation(s) option as described below.

For some bibliographic styles, the majority of references are cited in an "Author, Date" format; but if the author's name is mentioned within the paragraph text, the style dictates that the name not be repeated in the citation. In our example, we mention Morehouse and the date within the text of the paper.

To edit an individual citation:

1. In Word, click anywhere on the Morehouse citation.
2. From the Tools menu, go to the EndNote X5 submenu, and then click Edit & Manage Citation(s).

Word 2007 and 2010: On the EndNote tab, in the Citations group, select Edit & Manage Citation(s).



3. Select the Edit Citation tab.
4. From the Format menu (Macintosh) or Formatting menu (Windows), Select the Exclude Year option.
5. Leave the Prefix, Suffix, and Pages field blank.
6. Click OK to update the citations in your paper.

Your document text should look similar to this example. Note that the date is gone.

The fossil in question was generally regarded to be the 220 million year-old remains of tyrannosaurus. Several years ago, however, Morehouse overturned this hypothesis with the discovery of yet another species. (Morehouse and Tung) It is now the undisputed progeny of the species at hand. (Turnhouse)

Morehouse, S. I. and R. S. Tung (1993). "Statistical evidence for early extinction of reptiles due to the K/T event." *Journal of Paleontology* **17**(2): 198-209.

Northeast Spain: The stratigraphic position of the last dinosaur remains, found in the chron 31N interval, leads scientists to examine the possibility of a causal link between the extinction of reptiles in the Cretaceous period and the K/T event.

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- ◆ "Microsoft Word/Cite While You Write" to learn about the process of citing references and creating bibliographies.
- ◆ "Bibliographic Styles" to learn about and install output styles.

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Whale Rescue Dilemma

Authors: Dr Dominique Blache, Agriculture & Natural Sciences, University of WA
Stan Koios, Department of Education and Training

You and your family are on holidays on the south-east coast of Tasmania. You are staying at the local caravan park in a small beachside town. You have spent the first 3 days visiting a variety of tourist attractions. You and your parents make a decision to have a quiet day around town today. You suggest a beach walk on a remote beach about 5 minutes from your chalet. Whilst walking on the beach you notice a large dark patch in the water off in the far distance. Excitement spreads through the whole family. This is what you came to Tasmania for, this is whale watching season. Could this be a pod of whales on their way down to Antarctica? As you move closer to the dark patch you notice it is not out in the ocean, but quite close to the beach. The feeling of excitement from the groups starts to dissipate and a very different feeling descends upon the group.

You come across 100 or more adult Long-finned Pilot Whales that are either in shallow water or on shore. Some are already dead but some are still alive. The species is not endangered but they are listed as "Lower Risk; conservation dependent" on the Red List of Threatened Species of the International Union for the Conservation of Nature and Natural Resources (IUCN). Tourists and locals are present on the beach around the whales and they are asking what course of action should be taken. Three options emerge; do nothing, euthanise the whales that are still alive or push the whales back into the water.

1. *Organise students into pairs.*

10 mins

What would you do? Why?

Compare your decision with the other person in your pair and discuss the reasons for your decision. Try to understand why the other person has made the decision that they have.

The decision to push the whales back into the water is taken and while you help, the National Park ranger tells you about the whales. Each whale 3.5 to 5 m long and weighs between 1.5 and 3 tons, for females and males. Males live for about 45 years and females for about 60 years. Whales are social animals living in large groups with a leader and a communal support system in which weaker or endangered animals are helped by the rest of the pod. The groups are mainly 10 to 30 in number, but some groups may be 100 or more. They eat mainly squid. Some of the females are pregnant. It takes a lot of work and effort to push each whale back into the water. It is obvious that you will not have enough time to save them all.

2. *Organise students into groups of 3.*

10 mins

Which animals would you push back first? Why?

Compare your decision with the other people in your group and discuss the reasons for your decision. Try to understand why the other people have made the decision that they have.

This group of stranded pilot whales has attracted the attention of a group of Marine scientists who would like to take tissue and blood samples to study the whales and try to find some explanation for the stranding. The scientists want to know if the whales are closely related using DNA profiling techniques and assess their health by testing for toxic poisoning, infection or organ failure. All these causes have been observed in other single stranded cetaceans.

3. *Organise students into groups of 3.*

10 mins

Would you agree for the scientists to take samples from all the whales? Why?

Compare your decision with the other people in your group and discuss the reasons for your decision. Try to understand why the other people have made the decision that they have.

After 2 days, only a dozen whales have been successfully pushed back into sea because each animal needs to be put on a sling and dragged across the sand of the sea bed to deeper water. Their skin is fragile and the crew does not want to harm them further. Also, because the beach is in a remote part of Tasmania, it is impossible to use heavy equipment to lift and put the animals back in the water because there is no dock or access road for heavy equipment. The whales cannot be towed from the beach to the water using a towboat because it would break their back. Time is crucial and it becomes obvious that some animals will not be rescued. Before whaling bans, the pilot whale was hunted for meat and fat. It is possible to contact a company that would euthanise the remaining whales and process them for fat. The company will take only the animals that are freshly killed and would pay for each whale. This money would help to cover part of the cost of the rescue.

Because they want to process the meat and fat for human consumption, the company propose to euthanise the whales by blowing their heads off with a small explosive, rather than an overdose of drugs which would render the meat unfit for consumption.

4. *Organise students into groups of 3.*

10 mins

Would you agree for the company to euthanise the remaining whales and process them? Why?

Do you agree with this method of euthanasia? Why?

Compare your decision with the other people in your group and discuss the reasons for your decision. Try to understand why the other people have made the decision that they have.

A few months after the event, the scientists publish their finding in a public report. The scientists point out that the causes for the stranding of cetaceans are numerous

and not fully understood. One of the hypotheses proposed by the scientists is that the whale's navigation system and communication was disturbed by ultrasound emitted during sonar equipment testing by the Navy. The number of cetaceans stranded on beaches has doubled over the last decade in the UK. There are no reliable data available for Tasmania.

5. Organise students into groups of 3.

10 mins

If you knew that the whales beached themselves because of human activities, would you have taken the same decision in Q1? Why?

Compare your decision with the other people in your group and discuss the reasons for your decision. Try to understand why the other people have made the decision that they have.

Later, however, Navy records show that their sonar testing started on day after the first group of whales beached themselves.

The second hypothesis to explain the stranding is that, as suspected, the animals of the group were genetically related and that some of the animals in the group were carrying a genetic defect leading to heart defect (cardiomyopathy). It has been documented that most isolated cases of cetacean stranding are linked to health problems, often, bacterial infection or heart defects. Because of the very strong social bond between the members of a group, it is possible that the mass beaching is the result of the leader beaching itself because of its health problem and the rest of the group following him. This is a natural process that has occurred since recordings began.

6. Organise students into groups of 3.

10 mins

If you knew that the whales beached themselves because of a genetic defect and following a natural process, would you have taken the same decision in Q1? Why?

Compare your decision with the other people in your group and discuss the reasons for your decision. Try to understand why the other people have made the decision that they have.

A few weeks later, a Blue whale is seen off Tasmania. The animal is wounded after being attacked by a killer whale; its natural predator. Blue whales are large mammals, 24-27 m long and weighing up to 136 tons. They are listed as Endangered on the IUCN red list. The seriousness of the wound will need to be assessed, a dangerous task for professional divers. The probability of the animal surviving would be increased if future attacks were averted by human intervention, giving the animal time to recover. This operation would be very expensive. Three options emerge; do nothing, euthanise the whale or try to save it.

7. *Organise students into groups of 3.*

10 mins

Would you try to save this single Blue Whale? Why

Compare your decision with the other people in your group and discuss the reasons for your decision. Try to understand why the other people have made the decision that they have.

The government has proposed that warning beacons for whales are set up at certain beaches to help prevent of whales stranding, at a cost of \$500 000. Write a letter to your local newspaper to put forward your views on this idea.

SHARK BAY

Seaweeek 2005
March 6 to 13



SOS
SAVE OUR SHARKS

The whale shark

By Brad Norman



The whale shark (*Rhincodon typus*) (© Brad Norman)

THE WHALE SHARK

By Brad Norman

ECOCEAN Consulting, 68a Railway Street, Cottesloe,
Western Australia, 6011 Australia

Introduction

The whale shark (*Rhincodon typus*) is the largest shark in the ocean, reaching lengths of 20 metres and a weight of 20 tonnes (figure 1). This icon species is often referred to as 'charismatic megafauna' and a 'gentle giant'. With very few defences, it has become susceptible to exploitation and has a global conservation status of 'vulnerable to extinction' as listed by the World Conservation Union in the *Red List of Threatened Species*.

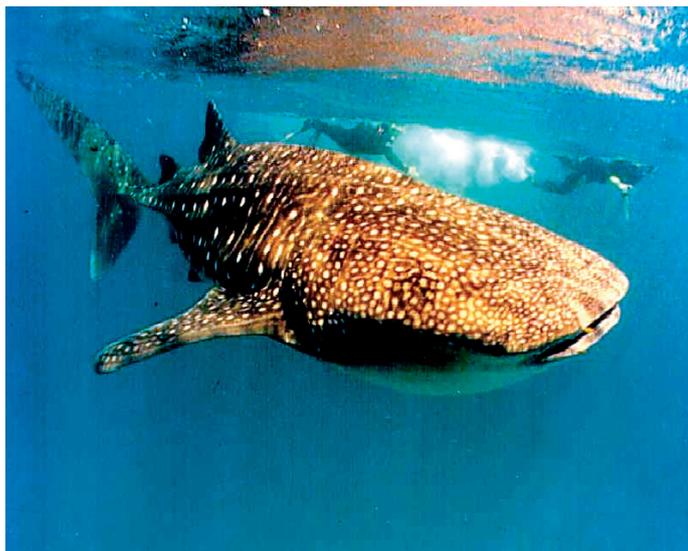


Figure 1. The whale shark (*Rhincodon typus*) (© Brad Norman).

History

The whale shark is a relatively recent addition to the human record of the ocean and its inhabitants. However, the ancestry of this shark goes back to the Jurassic and Cretaceous periods 245–65 million years ago, when the present groups of sharks began to appear.

It was not until 1828 that the first whale shark specimen known to science was discovered off the South African coast. Dr Andrew Smith formally described the species later that year as the largest living shark in the ocean.

This species is rare. Prior to the mid-1980s, there had been less than 350 confirmed reports of whale sharks worldwide. Since

then, consistent sightings have been recorded in Australia. A lucrative ecotourism industry revolving around their annual appearance at Ningaloo Marine Park (NMP), on the Western Australian northwest coast, is now well established.

Distribution

Whale sharks have a broad distribution in tropical and warm-temperate seas, usually between latitudes 30°N and 35°S (figure 2). They are thought to prefer surface sea-water temperatures of 21–25°C. Sightings at NMP, however, are most common in water temperatures around 27°C.

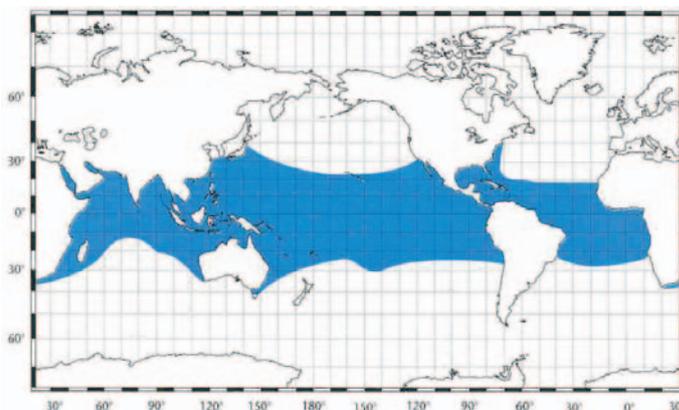


Figure 2. The whale shark is widely distributed through tropical seas (© CSIRO).

Whale sharks are known to inhabit both deep and shallow coastal waters and the lagoons of coral atolls and reefs. Australia is one of the most reliable locations to find them. Regular sightings have also been recorded from many other regions including India, the Maldives, South Africa, Belize, Mexico, the Galapagos Islands, Southeast Asia and Indonesia.

This species is widely distributed in Australian waters. Although most common at NMP (and to a lesser extent at Christmas Island and in the Coral Sea), sightings have been confirmed further south than Kalbarri (on the mid-west coast of Western Australia) and near Eden (New South Wales). Whale sharks have also been recorded from Australian waters between Australia and Indonesia.

Biology

This species is closely related to the bottom-dwelling sharks (Orectolobiformes), which include the wobbegong. There is a pattern of lines and spots on the skin of each shark that enables them to 'blend' into their surroundings. This 'camouflage' makes the sharks less conspicuous in their oceanic environment. The unique patterning does not appear to change over time and can be used to identify individuals (see photoid.whaleshark.org).

One of only three filter-feeding sharks (the other two being the basking and megamouth sharks), the whale shark feeds on minute organisms (figure 3) including krill, crab larvae, jellyfish, etc, and has been known to feed on larger prey (e.g. sardines, anchovies, mackerels, small tunas and squid). Although they have approximately 3000 tiny teeth (each less than 6 mm in length), these teeth are not used while feeding. Instead, the whale shark can sieve prey items as small as 1 mm through the fine mesh of the gill-rakers. They are able to open their mouth to a great width (greater than 1 metres) to optimise feeding and are occasionally sighted hanging vertically in the water allowing baitfish and other concentrated food items to be 'sucked' in.

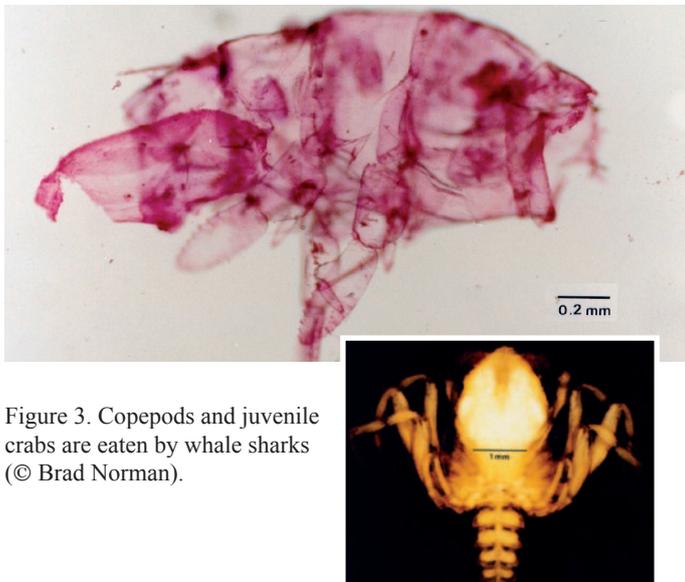


Figure 3. Copepods and juvenile crabs are eaten by whale sharks (© Brad Norman).

Reproduction

Whale sharks have internal fertilisation and produce live young (the eggs hatch in the uterus prior to birth [ovoviviparity]). They have more young than any shark, producing litters of around 300 pups—although these are very small at an average length of around 55 cm. The length of gestation, how often they breed, and where they breed remains unknown. The only pregnant female whale shark ever recorded was found off the coast of Taiwan. There have been very few juvenile whale sharks seen at any location throughout their range.

Studies of the whale sharks at NMP have established that male whale sharks do not usually mature before they reach a length of around 8–9 metres. Males can be distinguished by the presence of two claspers (absent in females) near the pelvic fin. The size at maturity of female whale sharks cannot be determined through external observation.

Habitat and ecology

Although whale sharks are most often observed swimming at the surface during 'seasonal' aggregations, evidence from tracking studies indicate that whale sharks can dive to great depths (~700 metres). They can also remain beneath the surface for long periods.

They regularly appear at locations where seasonal food 'pulses' are known to occur. The predictable annual whale shark aggregation at NMP is closely linked with an increase in productivity of the region associated with a mass coral spawning that occurs around March–April each year. It is likely that this represents a critical habitat in the life cycle of this species.

Acoustic-tracking studies at NMP reveal that individual whale sharks sometimes stay close to Ningaloo Reef over day–night periods. In addition, using the *ECOCEAN Whale Shark Photo-identification Library*, it has been possible to record many sharks returning to Ningaloo in different years and remaining there over long periods during the whale shark 'season'. As an example, one individual (A-012) was resighted at NMP on 14 separate days over a 28-day period within a very restricted area. In addition, some sharks appear to show a level of 'site-attachment' when returning to the Australian northwest coastline.

Migration

Whale sharks are regarded as highly migratory—although their 'migration patterns' are poorly understood. Research at NMP suggests the sharks may undertake a northerly migration when leaving the area. Their seasonal appearance at Christmas Island and sightings near Ashmore Reef provide support for this theory (figure 4). It is when the sharks leave Australian waters that they are potentially at risk of 'unsustainable hunting pressure'.

Satellite tracking of whale sharks in waters off the United States of America and also in the South China Sea reveals that these animals can travel great distances (thousands of kilometres). These migrations may take years to complete. A far greater understanding of whale shark movements will be possible with the continuation of tagging and tracking studies throughout the world and through expansion of the *ECOCEAN Whale Shark Photo-identification Library*. Using 'natural tagging' via photo-identification, it is possible for snorkellers and SCUBA divers from around the world to help with research on this species, by sending basic sighting information (e.g. date and location) with a photograph of the unique natural patterning on the skin of each shark to the online Library.

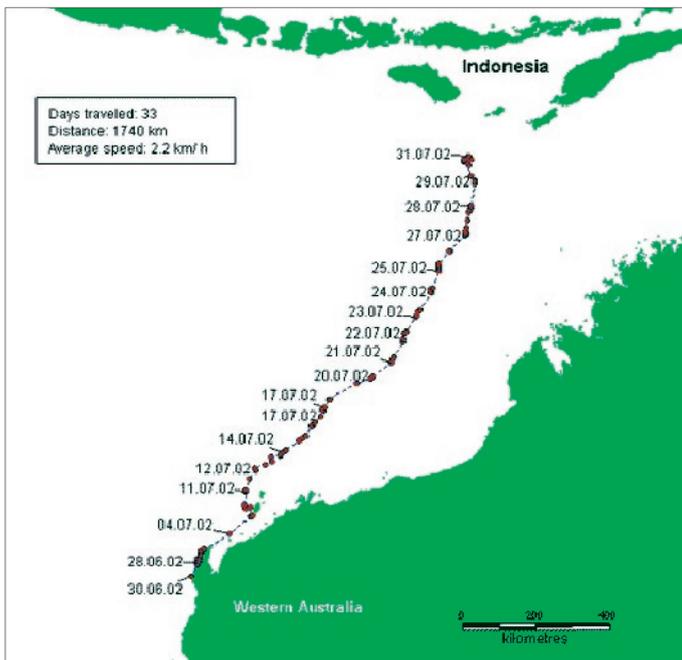
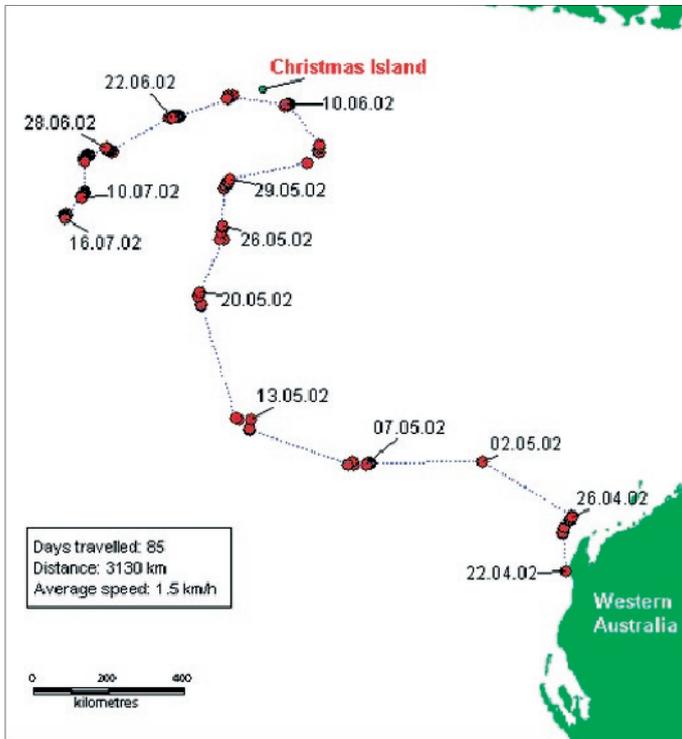


Figure 4. Satellite-tagged whale sharks in 2002
(© <http://www.marine.csiro.au/research/pelagic/tagging/hopetraveller/index.htm>).

Threats

Targeted or bycatch fisheries

- The most significant threat to the species appears to be humans. In one fishery alone (India), as many as 1000 whale sharks were believed killed in 1999 and 2000. Their habit of swimming at the surface makes them particularly susceptible to fishing. In previous times, the fins of whale sharks were sold for high prices on the Asian market, although demand has declined. There is still a market for whale shark meat in several countries including Taiwan and China.

- In Taiwan, there is a quota of 120 whale sharks for capture per year, although this is feared to be unsustainable. Of great concern is the reduction on the size of individuals caught in the Taiwanese fishery today compared with those of the early 1980s.

Natural predators

- There are very few known predators of the whale shark. In nature, the most dangerous period in their life cycle appears to be before reaching a substantial size (i.e., when the sharks are still very young). Pups are a fraction of their adult size—only approximately 55 cm in length at birth. The skin of an adult whale shark provides their main protection. On average, the thickness of the skin on the dorsal surface is 12–15 cm, greater than that of any other living animal. In young whale sharks, however, this ‘protection’ is not fully developed.

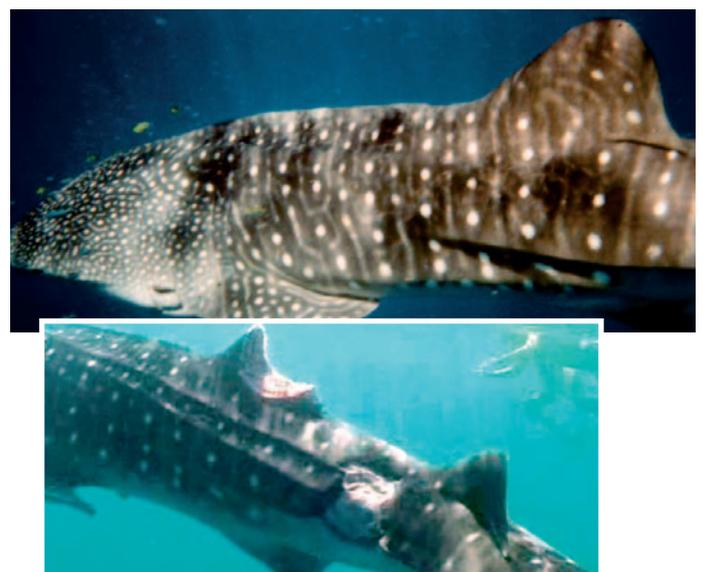


Figure 5. a) A-076 photographed in 1999 with dorsal fin intact; (© <http://www.shepherdproject.org/sharks.jsp?shark=A-076>); b) A-076 photographed in 2003 with dorsal fin damaged from attack (© <http://www.shepherdproject.org/sharks.jsp?shark=A-076>).

- Very few juvenile whale sharks (i.e., less than 1–2 metres) have ever been reported, although it is known that small individuals are sometimes preyed upon by blue marlin and blue sharks. There is also a record of an adult whale shark taken by a killer whale in Mexican waters, and evidence of a whale shark (A-076) being attacked by a larger shark off Australia. This individual was sighted in 2002 with fin intact and resighted in 2003 at Ningaloo with fresh wounds (figure 5 a, b).

Vessel contact

- Because of their habit of swimming slowly at or near the surface, whale sharks are particularly susceptible to boat strike. Earlier in the 19th century there were occasional reports of whale sharks being impaled on the bow of steamships. Today there are very few reports of this happening, although many sharks that are sighted near ecotourism activities in some parts of the world show propeller wounds (i.e., evidence of vessel contact).

Ecotourism

- Ecotourism is well-managed in Australia via a collaborative approach between industry and the management agency, which is the Western Australian Department of Conservation and Land Management (CALM). Ecotourism is developing at other locations throughout the world, and it is important that such activity is well-regulated to minimise any impacts on this threatened species.
- Whale sharks have shown a reaction to SCUBA bubbles, touching and flash photography. These activities are not permitted during whale shark ecotours in Australia (figure 6).

Protection

The whale shark is protected in the waters of very few of the approximately 100 countries where it is known to visit. It is protected in Honduras and some waters off the United States of America. The Maldives brought in legislation to protect whale sharks in 1995, and the Philippine government banned the hunting of whale sharks in 1998. India followed in mid-2001. However, at several other locations, unregulated fishing for whale sharks is still apparent.

- The whale shark is identified as a migratory species and a threatened species on the Australian Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and fully protected in Commonwealth waters.
- The whale shark is listed on Appendix II of the *Convention on International Trade in Endangered Species*. This listing will enable all member countries (~160) to monitor international trade in whale shark products.



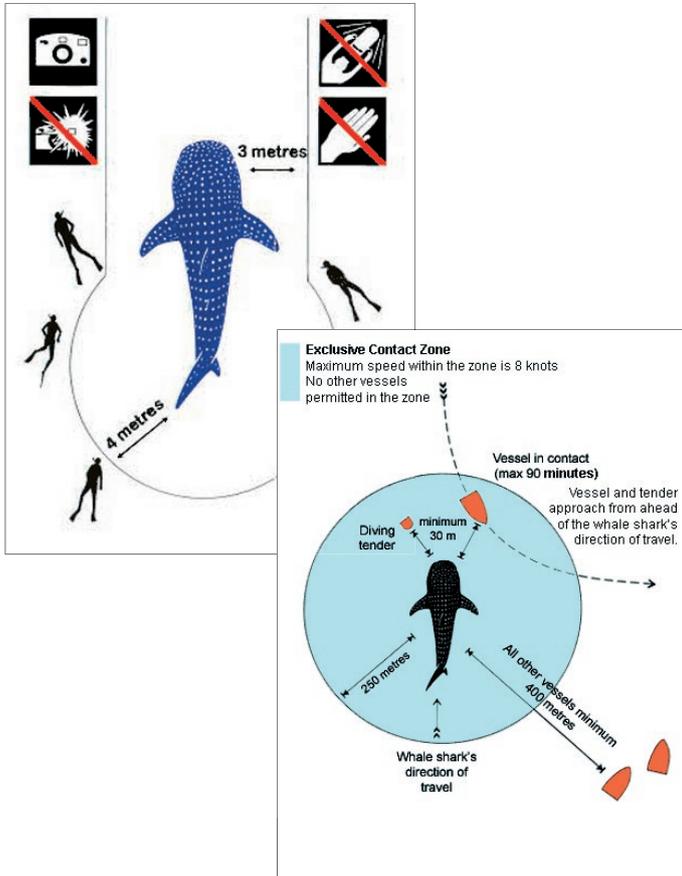
Figure 6. Whale sharks move slowly enabling ecotourists to swim alongside (© www.ecocean.org).

- In Western Australian waters, the whale shark is fully protected under the *Wildlife Conservation Act 1950* (and under this Act the *Wildlife Conservation (Closed Season for Whale Sharks) Notice 1996*) and the *Fish Resources Management Act 1994*.
- The whale shark is also listed on the *Bonn Convention for the Conservation of Migratory Species*. This identifies the whale shark as a species whose conservation status would benefit from the implementation of international cooperative agreements.

What can you do?

When swimming with whale sharks, follow the Regulations to minimise impacts on this species (figure 7).

Also, assist monitoring by noting simple sighting details of the whale shark and if an identification photo(s) is available, please submit this to the public online *ECOCEAN Library* (<http://photoid.whaleshark.org>).



For further information

ECOCEAN Whale Shark Conservation:
<http://www.ecocean.org/whalesharks01.html>

National Plan of Action for the Conservation and Management of Sharks (Shark-plan):
<http://www.daff.gov.au/sharkplan>

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Figure 7. CALM / Industry management guidelines to minimise impacts on sharks from ecotourism activities
 (© http://www.calm.wa.gov.au/tourism/whalesharks_swimming.html).