INTRODUCTION

We live in an exciting and rapidly changing world where the quantity of new information on any topic imaginable and the speed at which it can be shared via the Internet is astounding. Through the Internet children can access information that is ‘alive’, that is, they can see a moving image (real time or recorded), that image can talk to them and they can read further information about the topic at that site or link to related sites for additional information. It is a multimedia, multimodal environment that provides for any child endless possibilities and many gateways to learning.

Sometimes we believe it is relatively easy for students to find some information related to a topic they are studying but the quality of the information is not always adequate. One of the most common things teachers note is students showing no discrimination in choosing the information from the Internet to include in a homework or research assignment and so a cut and paste of large chunks of information or even more alarmingly, a print of the whole text results. Students can also waste a huge amount of time in searching for information and can become frustrated with their lack of success. They really need support in learning the mechanics of efficient Internet research, including how to read the visuals and also help in finding age appropriate sites for their topic.

In these new electronic environments researchers are becoming more aware of the importance of the role of visual images and the need for teachers to provide students with tools to read visuals through specific visual literacy skills. As Ilana Snyder states (1998) “new {digital} texts have both visual and verbal components, as well as the added dimension of hyper-text, resulting in multimedia, multimodal textual formations that demand new ways of ‘seeing’ and making meaning.” In this chapter we will examine the role of visual literacy in using the Internet.
The Internet—what is it?

The Internet began as a network developed in 1969 by the government of the United States to exchange military information between universities and military contractors. Since then the Internet has allowed academic, commercial and individual access to this ever expanding communication system. It did not follow an organised plan in its growth and so teachers need to be aware what refined skills in navigating through this new electronic maze are required so we can address this in our classroom.

So what role do we as teachers play in navigating through this new information landscape? As facilitators of students' learning, educators need to assist students to know what information is relevant, know where to look for that information, how to look for it, how to select information that is relevant and how to combine it into a new 'mind product'. In other words, the information has to be transformed by the student to meet a particular need. The first step for teachers is to become familiar with using the Internet and to be aware of the role visual images play in this multimodal environment.

The Internet environment: Getting started

You can access the Internet through an ISP or an Internet Service Provider with the purchase of a subscription. This gives you timed access to the Internet and web sites that contain bundles of information. Each web site has its own unique address or URL which stands for Universal Resource Locator—an electronic postal address. For example if you want to access PETA's web site you could type in the URL: http://www.peta.edu.au

It needs to be mentioned at this point that access to the Internet is not necessarily available to all students and there are many issues surrounding access and equity in the new information age which need to be discussed on a whole school basis. The Vital (Values in Information Technology and Learning) website addresses critical issues in Information Technology such as access and equity. Vital is a professional development program for teachers which explores issues of access in relation to physical disability, resources, language and gender. Information about this professional development program is found at: http://www.vital.nsw.edu.au. Lankshear and Knobel note that it is not only lack of access to computers which can effect low socio-economic positioned schools and students. Access to 'powerful technological literacies' (1997: 152) as well as actual computers is needed to provide students with successful pathways into this type of literacy. A critical orientation to any source of information—written, spoken, visual or multi-media—is therefore an important part of any teachers' classroom practice, particularly when teaching students living with poverty and other types of disadvantage (see Knobel & Healy 1998).

People use the Internet for a variety of purposes, for both work and pleasure. Most people are usually looking for information or entertainment or want to communicate with other people through chat rooms, bulletin boards or e-mail. Generally there are certain characteristics that Internet users expect from an effective web site:
FIGURE 9.1 A representation of the network of computers and ISPs which make up ‘the Internet’

- Fast to download once you click on the site
- Attractive and innovative
- Easy to navigate and find what you are looking for
- Kept up to date
- Contains information that is logically linked.

WHAT IS MY FIRST VIEW?

The first thing that you will see after logging on to the Internet will be the screen of your Internet browser. This is the software that allows you to view the Internet—think of it as the ‘eyes’ of the Internet. The examples we are using in this article have utilised Netscape as the browser. Another example of a browser would be Internet Explorer from Microsoft. Both Explorer and Netscape use similar controls and menus.

As readers of print material we are oriented through years of experience to reading a single page that is usually bounded on all sides by white space. In other words there is a definite beginning and end to the page. This understanding does not support the effective reading of a computer screen. There is an environment outside the screen ‘page’ that gives us important information.

Each Internet screen is framed by important information that tells us such things as:
- Tools which are available to use
- The URL (Internet address)
- Other applications which are open

The visual images are embedded within the frame and it is critical that teachers make explicit to students what role these images play in manipulating the environment (see figure 9.2).
Websites themselves also have organisational and structural features. Unlike a book, which can be physically flipped through to browse some of the areas, a web site organisation is hidden from the viewer. They are, however, planned and designed in various layouts. For example, the organisational chart of a website on Visual Literacy may be represented as it is in figure 9.3 on page 101. Each box could represent a 'page' or link on the website. Often a main menu provides an overview of the links available.

**NAVIGATING**

To conduct a search on the Internet you need to use a **search engine.** These tools index information that has been placed on Internet sites. Each search
An important role for teachers is to know shortcuts to help students narrow a search. Search engines use what is known as **Boolean Search Operators** for this purpose. These commands placed in the prompt box along with the key word or phrase help to refine the search by filtering irrelevant information. It is an important tool to use and practise when searching. For example, if we are trying to conduct a search on our moon we could go about it like this:

We chose the phrase ‘The Earth’s Moon’ to conduct our search and we used the Alta Vista search engine (figure 9.4). You can see the result of the search as having over 100 matches found. If we click on the ‘Refine your search’ link, we are given choices as to how we can further fine tune our search.

Different search engines use different ways of searching for information. Some examples of Boolean language are shown in table 1 on page 100. To find out more about Boolean language go to each search engine site and click on **Help** button on the page.

**HYPERTEXT AND HYPERLINKS**

Hypertext is ‘a way of connecting texts, pictures, film and sound in a non-linear manner by electronic links (and it) exists only on-line.’ Hypertext is fully electronic reading and writing and differs from printed text by offering users
FIGURE 9.4 Alta Vista search engine screen

TABLE 1

<table>
<thead>
<tr>
<th>Search engine</th>
<th>Boolean language</th>
<th>Searching with phrases</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALTA VISTA</td>
<td>Use <strong>and</strong>, <strong>or</strong>, <strong>not</strong>, <strong>near</strong></td>
<td>Place the phrase within “double quotes”</td>
<td>“Earth’s Moon”</td>
</tr>
<tr>
<td>EXCITE</td>
<td>Use +, -, and Boolean <strong>and</strong>, <strong>or</strong>, <strong>not</strong></td>
<td>Place the phrase within “double quotes”</td>
<td>+ Earth’s + Moon will mean that all results will include Earth and moon</td>
</tr>
<tr>
<td>WEBCRAWLER</td>
<td>Use <strong>and</strong>, <strong>or</strong>, <strong>not</strong>, <strong>near</strong></td>
<td>Place the phrase within “double quotes”</td>
<td>“Earth’s Moon” Set your preferences</td>
</tr>
<tr>
<td>YAHOO</td>
<td>See options section on the site</td>
<td>See options section on the site</td>
<td>Earth’s moon in main search or search by category eg Science—Astronomy</td>
</tr>
</tbody>
</table>

multiple pathways through a web of information (Snyder 1997: xxvi). In a sense, “hypertext is the glue that holds the Internet together” (Snyder 1997: 145).

Generally, any text that appears blue or bold on the screen can be clicked on to access that particular information. For example if the word ‘moon’ appears blue on a screen you can click on this word and it will link you to that particular site with that particular information about the moon. As you draw the
cursor over the blue text you will see that it changes from an arrow to an icon of a hand. This is a visual cue that informs you to click here.

Once clicked on, an icon of an hourglass or watch will appear until the site has been accessed. Once the text has been clicked on and you advance to the next site or link, if you return to that previous screen you will find that the text has changed colour. The colour changed text marks the trail much like the ‘trail of crumbs’ in the story of Hansel and Gretel.

**VISUAL LITERACY**

**FIGURE 9.5**

These cues—the hand, the hourglass, the watch, the colours of the text—often become quite invisible to the experienced user. One isn’t even conscious of how these visual images or icons guide us. It is much like the experienced driver. Traffic signs and traffic lights elicit mental decisions and physical responses or in other words guide us through the traffic environment. We call this system of signs and symbols a semiotic system.

**Using visual images:**

Understanding the semiotic system of the Internet allows us to utilise the various information sources more fully. The visual images that appear on the screen can fulfil two different functions:

1. **Procedural images and icons (navigational tools)**

These images/icons direct us to take certain actions. This tool bar has both image and text embedded in it. By clicking on the following icons you are able to:

**FIGURE 9.6** Move forward and backward between screens  
**FIGURE 9.7** Re-load current screen.

By clicking here any new information that has been added to the site is accessed as it refreshes or uploads added information.
2. Content

Images/icons such as charts, diagrams, maps, photographs or graphics provide information about a topic or concept.

Both of these kinds of images can appear simultaneously on the screen. There may also be an overlap between the two, where a content image is also a link.
to further information. There are more images embedded in electronic information than we realise. We are often not conscious of them being significant. For example, consider the screen capture below (figure 9.14). The teacher could orientate the students to the field to be investigated by asking them questions such as:

- What do these set of images tell me about this site?
- What information might I access at this site?
- How do the words and images create a message?

The screen shows students on the left using a computer, the image of the earth, the student on the right analysing readings from instruments and collecting data, suggesting to the ‘reader’ that this site involves students interacting with the technology to explore something about the Earth. As we scan down the page the visual image of the world on the left of the screen tells us there is information about world weather patterns and the text below the image (which is a hyperlink) confirms the visual meaning.

**Information in a multimodal environment**

The Internet has certainly changed the way both teachers and students can go about researching information. Although the library and print information will always be part of education, the Internet has added a new dimension to the way we access information via electronic technology. One significant change is the use of visuals as a tool in researching information and its central role in effectively using information skills.

The images related to **procedural functions** (icons) and or **content functions** (charts, diagrams, photographs) are integrated into all stages of the information skills process and the teacher needs to help students become aware of the role they play. The steps in the Information Process are:
Although all of the above skills are important in researching information, the locating and selecting skills in particular require specific integration of print and visual images for effective accessing of information.

The information skills process is usually set in the context of a theme or topic for which students will produce a piece of work, such as a project, spoken presentation or multimedia presentation. Images related to procedural functions (icons) and/or content functions (charts, diagrams, photographs) are integrated into all stages of the information skills process and the teacher needs to help students become aware of the role they play. As such they will not only be reading images but may also be using them in their own presentations.

Reading multimodally

Reading an Internet screen is not linear. Traditionally we have been taught to read print from left to right and top to bottom. This familiar approach to reading changes when we view a ‘live’ text on an Internet screen. Our eye tends to bounce around the screen and be attracted to the elements that have visual weight, that is the images demand our attention by being marked in some way eg. bold, large font, colour, icons and placement. All of the parts together create a whole. This means the individual component parts of both text and image work together to create a visual text that carries meaning for the viewer. As the reader scrolls down the screen, several reading skills need to be activated. The reader skims and scans the screen for overall understanding of what is contained on the screen both in written text and visual images. This requires a visual memory of what has gone before and readers need to develop this skill as part of the reading process associated with new technologies.

The best way to focus on the role of visuals in conducting a search is to revisit “The Earth’s Moon” search example referred to earlier (figure 9.15).

Before accessing the Internet, the purpose for finding information needs to be clear. Consider questions such as What do I want to find out? What do I already know?
## TABLE 2

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Role of the Teacher</th>
<th>Use of images</th>
</tr>
</thead>
</table>
| To come up with key words and phrases to use in the search | • Support students by helping to clarify what the topic asks  
• Complete a list, mindmap, brainstorm or create questions  
  eg. Moon  
  The Earth’s Moon  
  Ice on the moon  
  Moon explorations  
• Identify the search icons on the engines being used  
• Remind students about the use of Boolean language when conducting a search  
• Remind students about the importance of carefully ‘reading’ procedural icons | What do the images mean—procedural and content images/icons?  
What do they allow me to do  
What do they attempt to tell me? |
Locating

TABLE 3

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Role of the Teacher</th>
<th>Use of images</th>
</tr>
</thead>
</table>
| To find as much information that will support the research topic | • Suggest search engines that are well designed and give clear directions  
• Provide some topic specific sites for students to search  
• Discuss with students how the site descriptions from a search might provide useful information about the site | What do the images mean?  
What impact do the images have on my search?  
Are they procedural images or content images?  
How am I being directed by hyperlinks? |

Selecting

Having selected a site from the search, we must consider both the text and the images that appear on the screen. In this case the screen contains images of the moon (see figure 9.15). These images may be used as part of the information collected for the research topic.

The student may require assistance in learning how to collect both textual information and images from the site accessed. Providing the student with a proforma or scaffold to collect information will help alleviate the habit of simply printing out the information. By putting the information into their own words on the proforma, the teacher is supporting the information process for students. Learning how to save images is also an important skill. The issue of copyright is also important to discuss with students as acknowledgment of the source of both visual images and written text is both an ethical and legal requirement.

TABLE 4

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Role of the Teacher</th>
<th>Use of images</th>
</tr>
</thead>
</table>
| To save images and text from the web to import into documents  
To acknowledge the source | Discuss with students criteria for selecting information  
Consider:  
• relevance to topic  
• credibility of source  
• currency of source | What do the images mean? What information do they give me?  
Can I use any of the content images?  
Are the images biased in any way?  
Does the image/s fit the topic?  
Do the images I have support the message I am trying to convey in my presentation?  
In what format will I save the image/s to use later?  
How do I reference the images? |

Organising and Presenting

Images play a key role in the organisation and presentation of work. Students will need to understand how they can use them in their own work and consider the layout and integration of written text as well.
TABLE 5

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Role of the Teacher</th>
<th>Use of images</th>
</tr>
</thead>
<tbody>
<tr>
<td>To provide a framework for students assist them in organising the</td>
<td>Provide clearly structured frameworks and models for</td>
<td>Are the images positioned within my</td>
</tr>
<tr>
<td>information and images collected.</td>
<td>students which scaffold them in their own presentations.</td>
<td>document for maximum effect?</td>
</tr>
<tr>
<td>To enhance their presentation</td>
<td></td>
<td>Do they create/enhance the message</td>
</tr>
<tr>
<td></td>
<td></td>
<td>intended?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Will the presentation be an interactive</td>
</tr>
<tr>
<td></td>
<td></td>
<td>assignment?</td>
</tr>
</tbody>
</table>

Some of the following will be important to discuss with students when they are producing their own texts.

- Placement eg Is the image in the centre, top right, bottom left? Where are the words in relation to the image?
- Size eg How big/small is the image in relation to the words?
- Shading eg Does the image have shading? If so, what is the effect?
- Visual weight eg Is there bold print? What font is used?
- Component parts ie How do the images and written text individually work together to create a complete text?

Evaluating

TABLE 6

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Role of the Teacher</th>
<th>Use of images</th>
</tr>
</thead>
<tbody>
<tr>
<td>To encourage the students to be aware of the processes they engaged</td>
<td>The teacher assists the students to reflect on how they</td>
<td>How have the visual images interacted with the</td>
</tr>
<tr>
<td>in while doing the task and to consider whether the final product</td>
<td>have fulfilled their task; what they have learnt in</td>
<td>written text to create a particular message (critical</td>
</tr>
<tr>
<td>achieved the set purpose.</td>
<td>completing the task in terms of product and process.</td>
<td>literacy skills)?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Have I referenced the material appropriately?</td>
</tr>
</tbody>
</table>

Following the steps in the information process provides a useful framework for teachers in guiding students in their research on the Internet. Questioning the use of images as partners in the meaning-making process adds an important dimension to a student’s thinking about both the interpretation and creation of texts.

CONCLUSION

We have tried to present an overview of the role of images and some of the important questions that we must be addressing in visual literacy for ourselves and for our students in this emerging multimodal environment of the Internet. Gunther Kress in exploring the emerging relationships of both visual and textual communications suggests:
'The interaction of different modes and of different possibilities of expression in multimodal texts and multimedia production poses questions not only at the level of text, but also of cognitive processing; new demands are made cognitively (and no doubt affectively) by the new technologies and by their textual forms' (1997: 76).

It is important, indeed it is our responsibility to explore this new electronic environment in order that we provide a facilitative role for our students in these new and emerging literacies.

REFERENCES


