

▶ getting up to speed

■■■■ on getting connected

Many ways to get connected

As more households, governments, businesses and other services go online, making the most of an internet connection is becoming critical for early childhood services.

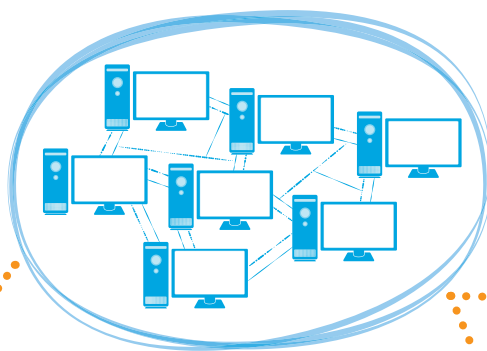
If you are new to the internet, considering setting up a connection for the first time or at a new location you may want to look at the basics first in this factsheet on *getting connected*.

If you are already connected to the internet in an early childhood setting, you might want to skip ahead or look at the checklist and profile for information about other kinds of networking and to learn what others are doing.

The basics

Options for connecting and networking abound, including networking a group of devices *without* connecting to the internet.

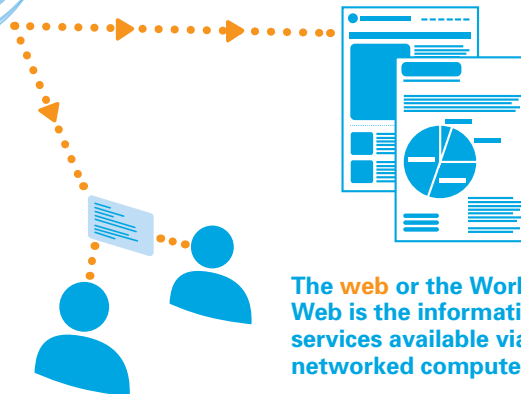
IN THE VERY BEGINNING



The internet is made up of millions of computers all over the world, linked to each other by a network of telephone lines, cables and satellite connections.



The internet connection from a computer is made through an Internet Service Provider (ISP).



The web or the World Wide Web is the information and services available via these networked computers.

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In the early days of the internet, computers were usually connected by a phone line (a **dial-up connection**). More recently **faster access** has been available by a **broadband connection**.

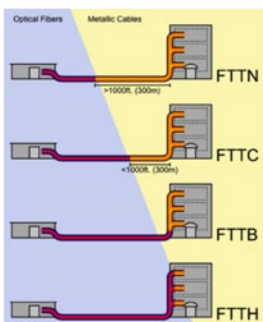
Fast broadband options

All communities across Australia will soon have access to faster broadband using a mix of technologies and providers depending on location. Three options are **fibre**, **fixed wireless** and **satellite**.

Fibre options make use of Telstra and Optus networks (copper wire, optical fibre and coaxial cables) and are the main option for residential and business broadband connections in metropolitan, suburban and many regional centres of Australia. It will bring fibre to the node (i.e. to a point outside the building), onto the property, into the building (in the case of an apartment block) or straight into each dwelling as shown in the diagram below.



Recognise this? It is the node in fibre to the node connections. Image courtesy of Department of Communications.



Fibre to the Node

Fibre to the Cabinet

Fibre to the Building

Fibre to the Home

Fixed wireless technology will be deployed for areas beyond the fibre rollout including outlying hamlets and villages and will be based on a predictable number of users in a given area.

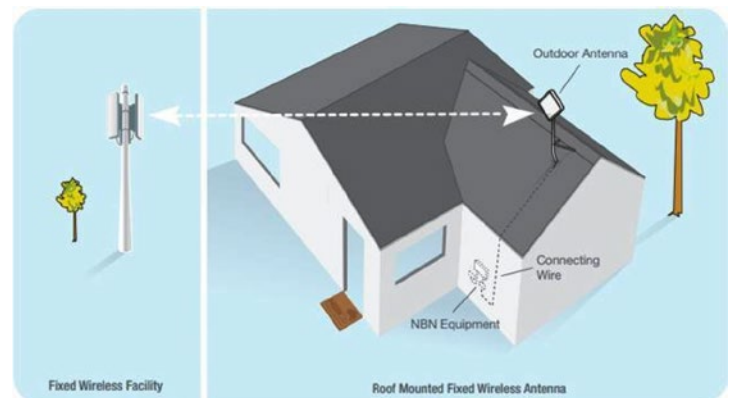


Image courtesy of Department of Communications

Satellite connection will bring broadband services to the most remote areas of Australia. A long-term satellite service, planned for 2015, will connect all outback and remote areas of mainland Australia, Tasmania and Lord Howe, Norfolk, Macquarie, Cocos and Christmas Islands.

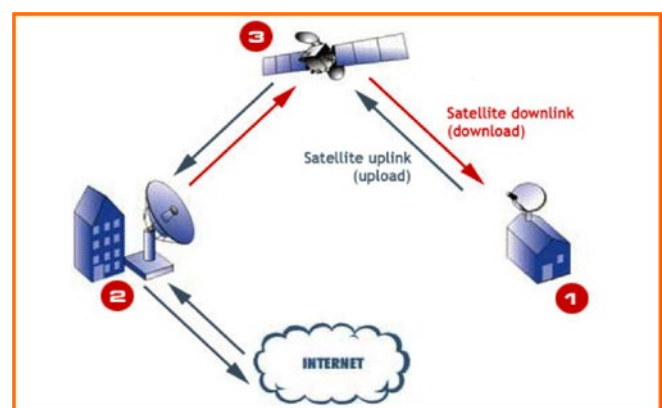


Image courtesy of Department of Communications

To find out when faster broadband will be available in your area, see: www.nbnco.com.au/connect-home-or-business/check-your-address.html.

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Why the fuss about higher speed broadband?

Some existing online activities by many early childhood education and care services will be easier, quicker and smoother with higher speed broadband. Exchanging large data files, downloading and playing videos as well as backing up information to web servers (also known as storing data in the cloud) are some examples.

Higher broadband speeds will also make new options possible for early childhood practice and for business arrangements that until now have been difficult or unavailable. In the future, developments in technology combined with fast broadband speeds will enable options that are yet to be imagined.

Administrative and other staff, along with educators, managers, directors, children and families, reap benefits when higher broadband speeds enhance the capacity to:

- ▶ download and use interactive educational tools with children on conventional devices such as computers and laptops and on interactive white boards, smart tables and mobile devices
- ▶ download educational resources, movies, television programs and make use of streamed TV online at vastly faster rates than previously available
- ▶ use digitally connected tools anywhere: for outdoor and indoor programs, in purpose-built early childhood settings as well as mobile and temporary services, on excursions, picnics, in museums and for other cultural visits
- ▶ meet or collaborate on projects online and simultaneously with several colleagues—tap into expertise all around Australia as well as internationally
- ▶ connect and collaborate with another educator, family day care educator or with groups of children at remote locations

- ▶ make high-quality video calls at lower rates than many conventional telephone rates to connect with families, colleagues, other early childhood professionals and support services across Australia
- ▶ make cheaper phone calls using the updated technology
- ▶ make use of interactive educational opportunities such as conferences and online seminars (webinars) without the slow speeds and interruptions that poorer quality connections have
- ▶ stay in touch with managing, complete tasks or participate in professional development activities from home or other locations, and at times that suit.

The experience of these benefits will depend on a number of factors including the type and quality of equipment and software you invest in and the kind of broadband plan you choose. An Internet Service Provider (ISP) supplies the connection to the internet based on your requirements and capacity.

- DIGI-WORD**
- ▶ **Hotspots**—also known as tethering or internet sharing—create a wifi connection that allows a nearby device to access the internet via a smart phone. Many newer smart phones have this option although not all mobile plans offer it. A hotspot has the advantage of allowing multiple devices to access the same mobile broadband network. This is convenient when travelling, when the internet connection is temporarily unavailable on other devices or when using devices that don't have a USB port. A drawback is that data limits on some mobile carrier plans are soon exceeded so it can prove expensive. A device known as a mi-fi can be purchased to act as a hotspot.

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On-site options: cable, wireless or mobile

You can connect to broadband using a **cable** and modem or by setting up a **wireless** network on the premises. The size and layout of the premises can affect access, so explore options with potential ISPs.

Mobile broadband access is possible using a **USB modem** or a **SIM card** too. A USB modem (also called a **dongle**) inserted directly into a computer USB drive makes a connection via mobile telephone towers. Tablets and smart phones use a SIM card to provide fast internet access in the same way. In both cases no cables are needed and the dongle or SIM card can be purchased and paid monthly based on usage or can be purchased on a pre-paid plan usually for a minimum time of 12 to 24 months.

Increasingly, smart phones can share their internet connection with nearby devices (creating what is called a *hotspot*) making it possible to operate a laptop or tablet from an internet connected mobile phone.

On-site equipment

Connecting to the internet using a fixed connection (wireless or cable to the premises) requires five elements (many probably already familiar by name if not by function):

- ▶ a device such as a laptop, desktop computer or wireless device
- ▶ a router (optional) can connect multiple devices to the ISP
- ▶ a modem that connects to the ISP
- ▶ an ISP
- ▶ internet availability.

For an excellent guide to the basics, simple videos and explanations, see: www.internetbasics.gov.au.

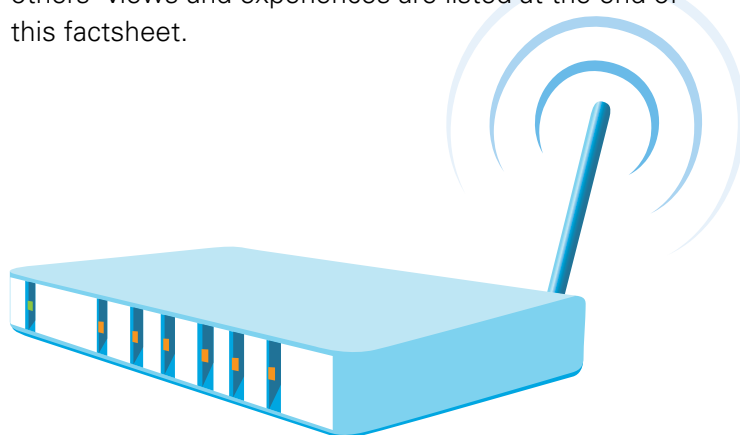
Choosing an internet connection

The kind of connection that best suits your circumstances depends on what is available in your area, how you will use it now as well as how your education, professional development and business practices will grow in the future.

Early childhood services can first find out if high speed broadband is already available by entering an address into the *When do I get it* option on the NBN Co website: www.nbnco.com.au.

To choose a service provider, early childhood services can talk to their preferred telephone or internet service provider or find out about those participating in the broadband rollout at: www.nbnco.com.au/serviceproviders or by phoning 1800 OUR NBN (1800 687 626).

Several forums that help compare options and hear others' views and experiences are listed at the end of this factsheet.



A router can connect multiple devices to the ISP

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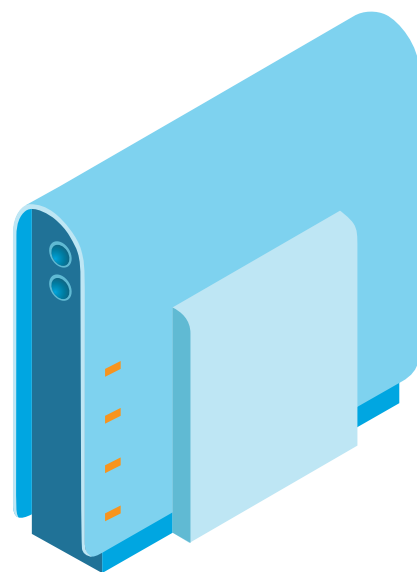
What do I need to know?

Rapid technological changes in the last decade indicate that reliance on internet-based technology will continue to expand across all parts of the early childhood sector.

- ▶ **The speed** of an internet connection refers to the maximum capacity to upload and download data. It is measured as numbers of megabytes that can be transferred per second. On any given day the speed might be less than the maximum potential speed. Fibre to the premises is likely to offer consistently faster speeds than fibre to the node or satellite connections for instance.
- ▶ **Difference between upstream and downstream speeds.** The size or the speed that data can be sent and received from your computer differs. Upstream bandwidth speeds refer to the rate at which data can be *sent* from your computer to the internet. Downstream bandwidth refers to the size or speed of data that your computer can *receive* from the internet.
- ▶ **Private vs. business use.** Many households and private users of broadband are interested in downstream speeds because this affects the rate at which they can receive information from the internet for instance for browsing online. However, businesses are likely to be sending data to other parties using the internet, exchanging large files and backing up data to the cloud, so upstream speed is a priority.

- ▶ **Usage and digital tools** affect internet requirements. A basic internet connection speed is sufficient for simple browsing online and reading web material but is unlikely to support what will be standard educational and business uses of technology in two or more years. A medium connection speed is necessary for early childhood services using the internet to download videos and images, exchange music files and browse the web whereas the highest internet connection speeds are essential for advanced uses such as interactive and video conferencing functions and large or complex data exchanges such as web-based accounting or human resource management applications.

A good explanation of broadband options, speed measures and how to choose to match usage is available at: whistleout.com.au. Select *How much broadband do I need?* from the *Broadband* tab or go to www.whistleout.com.au/Broadband/NBN-speed-tiers-explained. For more on the broadband rollout and digital business, see: www.nbnco.com.au and: www.digitalbusiness.gov.au.



A modem connects to the ISP

Home tips for hidden costs

When considering a connection and choosing technology for your early childhood setting—whether in a home, centre, a school or from the back of a mobile van—consider hidden costs and ways around them. Many homes and offices have cheap options in place. Bring them to early education and care services.

- ▶ Interactive whiteboards (or smart boards) are expensive and can be energy intensive, increasing energy costs. Use a large screen television with an internet connection networked to other devices to achieve many similar effects for learning with young children including downloading and viewing images or videos from the internet, projecting slideshows and viewing images from a desktop computer, laptop or tablet.
- ▶ Develop your own and children's technology skills using donated mobile and smart phones, old keyboards, screens and other equipment. Take a keyboard apart and find out how it goes together. See MaKey MaKey® or Bee-Bot® on YouTube for inventive ways to use technology.
- ▶ Attend online seminars or connect with colleagues by video without installing expensive, specialist equipment. An internet connection, a computer or laptop with a built in or fitted camera (or a tablet) plus simple software are all that is needed and can be just as effective. Free and low cost software is available including Skype, Tinchat, Facetime, Google Talk, Yahoo Messenger and ooVoo.
- ▶ Set up a network to share and store: a simple network of devices—computers, laptops and printers—can store and share documents, images and other materials. Use the cloud as a network. Options include Dropbox, SkyDrive, Google Drive and Box.com but check free vs. fee storage and data security. Devices can be connected to an intranet—an internal network protected from the internet—using software that provides integration. One internet-enabled device can be used to download and store material that is accessible from other devices.
- ▶ Stay flexible for future developments: instead of investing in expensive equipment, maximise options by choosing tools carefully. Servers, software and storage are being overtaken by developments in web-based apps. Cloud computing can reduce some costs dramatically and increase access at multiple locations and from multiple devices. Consider cloud-based apps such as iCloud, Dropbox, Google Apps and others.
- ▶ Storage on hard drives and servers can prove expensive over time, especially with the rapid increase in the use of digital and video cameras in early childhood settings. Select, back-up and delete. Make a copy and give to families for their records.
- ▶ Use a smart phone hotspot or a tablet to provide quick internet access off-site or in part of the early childhood setting not accessible to the fixed internet connection. This provides a quick fix but use sparingly as it can be expensive for long periods.

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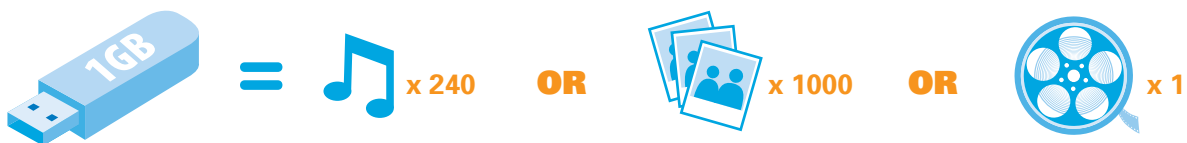
Factsheet

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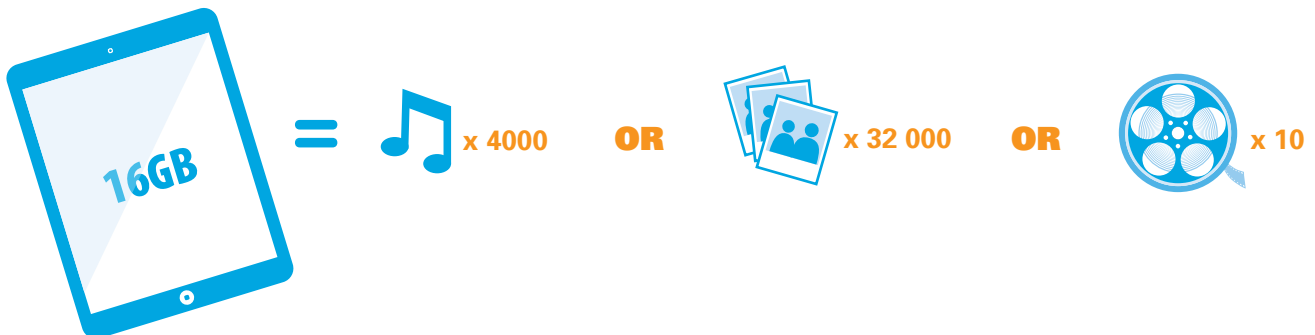
Bits and Bytes: A bit is shown as a lower case 'b' and is commonly used to measure connection or download speeds. **Mb** is a megabit, **Gb** is a gigabit. When the speed of the internet appears in mbps, it refers to megabits per second—the number of megabits that can be transferred in a second. A **byte** usually indicates the size of a file. A byte is eight times larger than a bit and its symbol is an upper-case 'B'. (Megabytes are shown as MB, Gigabytes as GB).

Rough guide

One GB translates to about 240 songs (depending on song length), up to 1000 pictures, a feature-length movie or four episodes of ABC's *Playschool*.



A 16GB tablet can hold about 4000 songs, ten feature-length movies or around 32 000 photographs.



Search shortcuts

Some of the best advice about getting connected is available online. Avoid getting lost on the internet. Sharpen your search techniques to find what you need before you know what it looks like:

- ▶ Know how to browse and use a search engine. There are hundreds of search engine tools, each with strengths and drawbacks. Major ones include Google, Yahoo, Bing and Firefox.
- ▶ Use a favourite search engine but learn what it offers and what it lacks. Every now and then try a different option and compare results. Some search engines are better for some kinds of searches. New ones to try include Dogpile, Factbite and Intute.
- ▶ Narrow the search to include key words or a string of text that would typically appear on a website about the information you seek.

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- ▶ Focus on key words, for example, enter 'alternatives Google' or 'alternatives Yahoo' in a search engine (including both of those search engines) to find a list of articles and blogs discussing alternative ways to search the web. Among the results for 'Australia search engines' is an item from the National Library of Australia, 'Searching the Internet', that lists useful search engines and their features.
- ▶ Strings of words can help locate an exact answer, website, product, article, book or item, a little like knowing the first line of a poem or book but not its title. Use quote marks to find an exact phrase. Enter "our vision: every young child is thriving and learning" into a search engine bar and Early Childhood Australia will be among the top options found. 'How do I install a modem' produces a list of explanations, step-by-step guides and videos explaining among other things how to set up and install a modem or connect it to a router.
- ▶ Once you have created a key word or string of words to search, click extra options on the search engine homepage such as 'image', 'web', 'Australia', 'video', 'maps' or 'advanced search' to help locate what you need more precisely and quickly.
- ▶ Add 'YouTube', 'video', 'vimeo', 'ivideo' or 'wiki how' to your search to find videos and step-by-step guides related to what you are looking for.
- ▶ Finally, while Google has become one of the most powerful and widely used search engines, be aware that its search results reflect the most popular queries. Like many search engines it also has advertisements listed at the top of its results and plants 'cookies' on your computer to collect information on the sites that the computer visits, when, how long it lingers there, what is viewed and where the computer goes next online.

Facing the fear

One difficulty in getting connected is not related to decisions, training, equipment or funding. It goes deeper than concerns about the risk digital technologies may pose in early childhood settings.

Resistance and fear were two words that often surfaced in discussions about the Digital Business Kit with individuals and organisations in the early childhood sector. They appeared in many forms: frustration with the resistance of leaders and managers, resistance among members of the same team, individuals talking of their reluctance to use technology. Educators may have worked many years in early childhood rarely needing to use technology and either did not want to engage or did not see it as necessary. Some expressed fear, some,

hostility to technology in early childhood settings, while others simply said, 'I don't do computers'. Fear of the unknown is a factor as well as fatigue with change and having to learn skills that don't seem related to education practice. Some felt inadequate to teach children while others felt proficient in some technologies but did not want to learn new ones. Even young educators sometimes expressed discomfort faced with new software, processes or devices.

Managers, directors and colleagues explained their strategies to induce reluctant staff to get connected and noticed it was not always related to age, experience or position. Getting connected means finding strategies to face this reluctance.

For a profile and checklist on small steps and strategies for getting started [click here](#)

getting connected

How to find out more

Getting connected means more than finding an ISP or connecting to the national broadband rollout. Connect with the skills in your own organisation, to the services and service providers you need. Have a plan, assess your capacity. Use your network of colleagues and local enterprises as well as the online network to get connected.

- ▶ Start with online forums such as Whistleout, Whirlpool, [Broadband guide](#) and [Your Broadband](#).
- ▶ Find a colleague who seems to be using technology well. Ask how they went about it: where did they begin? What services did they tap into? Who did they draw on?
- ▶ Start small and build up knowledge. You don't have to invest heavily or provide wall-to-wall equipment to use technology well in early childhood. One or two devices can be effective to get started. Plan and borrow before buying.
- ▶ Use the network of parents, businesses and local government in your community for advice, tips on good service providers and internet plans as well as donated old equipment. Ask for the surplus mobile or smart phone lurking in a drawer at home that has never been recycled.
- ▶ Go to a retail outlet or a technology expo. Speak to the sales staff and promoters. Ask questions, get them to explain, ask for demonstrations. 'Play' with the equipment.
- ▶ Make technology a topic on the next early childhood forum in your region and invite a guest speaker. Contact local government or a small business association to see what information, training and support is available in your area. Try Flying Solo, the micro business forum: www.flyingsolo.com.au/forums.

- ▶ Identify an in-house expert, decide to 'grow your own' expert or identify a service that can provide advice and support just as an accountancy service or in-house bookkeeper would advise on the financial side of managing an early childhood service.
- ▶ Budget for technology upgrades as for other materials, maintenance and operating costs.
- ▶ Consider how you use technology and how the children in your education practice use it now. Imagine technology in your educational and business practice ten years from now.
- ▶ Keep visiting the *Getting up to speed* Digital Business Kit for more information, modules and videos including a module on technology plans.

Resources, sources and more information

For more on doing business online, see the Department of Communications site: www.digitalbusiness.gov.au

To understand the basics:

- ▶ internetbasics.gov.au
- ▶ wikipedia.com
- ▶ wikihow.com

For comparisons and forums on internet plans and providers, see:

- ▶ Whistleout: www.whistleout.com.au
- ▶ Whirlpool's broadband choice or discussion forum: whirlpool.net.au
- ▶ The Broadband guide: www.broadbandguide.com.au
- ▶ Your Broadband: www.yourbroadband.com.au
- ▶ a diagnostic tool to help regional and rural businesses prepare is available too: www.digitaldiagnostic.net.au

The NBN Co site has useful information on:

- ▶ certified providers: www.nbnco.com.au/get-an-nbn-connection/certified-service-providers.html
- ▶ finding an ISP service provider: www.nbnco.com.au/get-an-nbn-connection/certified-service-providers.html
- ▶ getting connected: www.youtube.com/watch?v=sH6wJ0mNOQs
- ▶ how it works: www.nbnco.com.au/nbn-for-home/how-it-works.html

Technology, education and childhood sites include:

- ▶ EdTech Review: www.edtechreview.in
- ▶ Children's Technology Review: www.childrenstech.com
- ▶ www.Geekdad.com



An Australian Government Initiative

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A voice for young children