The wooden internet: Play-based learning about the internet

Why is this important?

Children are using the internet from a very young age. This is not a problem in itself, since the internet is an important part of modern life and there are many opportunities for children to play, learn, and connect with people they know online. However, like all facets of life, the internet poses both opportunities and risks and, as a consequence, children need opportunities to learn about the internet, including how it works and, importantly, how to engage with it safely.

In our research, we found that using wooden devices (phone, laptop, tablet, Wi-Fi router) were useful in supporting play-based learning and provided insight into children's understanding of the internet and valuable opportunities for adults to model creative curiosity and safe decision making.

An example from our research is when a child used a wooden phone to pretend to take a photo of another child and wanted to send it to their parents. Taking and sharing photos is a very common behaviour of adults that children will have observed on a regular basis. However, children are often not included in the decision-making process of those adults, including decisions about why the photo was taken, whether the person whose photo was being taken had given permission, and whether the person taking the photo has the right to send it to someone else. In our research, we found that by playing with the wooden internet, the adults could model good decision-making strategies with children, such as asking for permission to take photos and question whether they really needed to send the photo. This is just one of the learning opportunities that can be stimulated by the wooden internet.

What is the internet?

In simple terms, the internet is a system by which digital devices can send and receive data across the world. The word "internet" comes from the merging of two words "international" and "network".

If you would like to know more about the internet, watch the short video entitled What is the Internet?

The internet and young children

Children observe adults and older children using the internet all the time. Children are also using the internet from a very young age. Research by the eSafety Commissioner points out that 81% of parents with preschoolers say their children use the internet and 94% of these parents report that their child was already using the internet by the age of four (eSafety Research Parenting Digital Age Report). Research by the Australian Centre to Counter Child Exploitation reported that 87% of children aged 4- to 7-years-old are using the internet with only 16% having adult supervision (ACCCE Research Report).

If you would like to know more about children's use of the internet, see the book created by Early Childhood Australia: Young Children Online.

The internet and opportunities to learn about our world

The internet is part of the world in which many people live, work, and learn. We see the influence of the internet all around us, from our internet-enabled televisions, to video messaging, social media, online shopping, and the wide variety of apps on our phones. Many families are constantly connected via the internet, messaging each other, sharing photos, and co-ordinating tasks. Consider what this may seem like from a child's perspective. They observe and use devices that connect them with family (e.g., video calls) and entertain them (e.g., videos, games, and web-enabled television). They also see how these devices engage the adults and older children around them. They see how the adults and older children are entertained and frustrated by the technologies. It is not surprising that young children are also interested in using the internet.

The internet and safety

Children experience the internet through images, videos, messages, and games. These experiences can lead to children thinking that the internet is their device and that the internet is safe to use. Indeed, most of us do not spare much thought for the idea that when we use the internet, it means we are sending and receiving data (often details about ourselves) via many connections, and using software created by people we do not know, for reasons we are often not aware of. "Free" social media (like Facebook) and games are exciting and can be valuable ways to stay connected and play. However, sometimes they have been created to monetise your data (use your data to advertise products to you or share your data with other companies).

There is also the problem of people using these internet-based technologies to cause harm. There are many types of harmful activities. It may involve accessing your information for identity theft and financial scams. It might be to spread harmful computer viruses or access details that can be sold or used in undesirable ways. It can also include spreading disinformation, bullying, and the exploitation of children.

Children from a very young age need to learn about the internet so that they have greater independence in their decision making. When children have opportunities to learn about the internet, they are supported in their understanding of online safety, such as knowing to ask an adult for permission to go online and when to ask for help.

The wooden internet provides children with the opportunity for play-based learning in which children can participate in common uses of the internet in their lives. Adults who participate in children's internet play can intentionally guide conversations that help reveal the nature of the internet as a system that sends and receives data across many computers. The wooden internet provides a rich opportunity to reveal how the internet works, such as asking children: What does the router do? How do you know when you are online? How does your message get from one device to another?

Play-based learning

Play-based learning is used in early childhood education to support young children's exploration of their worlds, meaning-making, and connections with other people. Play-based learning that connects with what children see and experience in their daily lives provides an important context for children to share their thinking and for adults to help children develop understandings about how and why things work.

Play-based learning:
- is based on children's experiences.
- acknowledges the environment as an important source of learning, including the range of experiences, activities, and materials available to children.
- is fluid and spread over time with children moving in and out of their explorations.
- is often highly social, involving peers and adults.

Why use wood?

In our research, we found that wooden replicas of devices, such as smartphones, provided highly tactile and symbolic opportunities for children to learn about the internet with adult supervision.

Sometimes, non-working devices (e.g., old phones) are used with very young children for pretend play. These can be useful, but attention should be paid to the risk of danger from breaking plastics and glass, choking hazards from small parts, and injury from hard corners. It is also important to remember that when non-working devices are used, they are often older technologies (e.g., landline telephones or typewriters) and do not resemble the ones that adults are using around children on an everyday basis and, as a result, can sometimes lead to children not choosing to play with them because they are not relevant to their lives.

Wooden devices align with the hands-on nature of play-based learning and fit well with other wooden objects used to support children's play, such as pretend cookers, microwaves, fridges, and furniture. Families, carers, and educators are often worried about children overusing digital devices. Parents often feel their children have enough exposure to devices at home and appreciate early learning centres as places where children's use of digital technologies is carefully managed.

It is important that young children have well-designed and appropriate learning experiences with working and connected technologies (always with adult guidance and supervision), such as searching for information online, exploring robotics, exploring and representing ideas with digital media, and communicating with other people. However, a wooden internet provides a non-digital and hands-on opportunity for adults (e.g., educators, parents, carers) to support children to learn about digital devices and online safety.

Do I have to use wood? Can I use something else?

Even though we have used wood to create a wooden internet, it is possible to support children's play-based learning about the internet using other materials. For example, you can draw the images of the devices (e.g., a laptop keyboard or a tablet screen) onto cardboard (or print out images onto paper and glue them onto cardboard or simple wooden blocks).

Children also enjoy drawing and creating their own devices from available materials, such as boxes and paper.

In a different approach, the below image shows how educators used a pinboard to represent several smartphones connected by a string which allowed children to send messages from one to the other. Children drew their own emojis to use during their play.
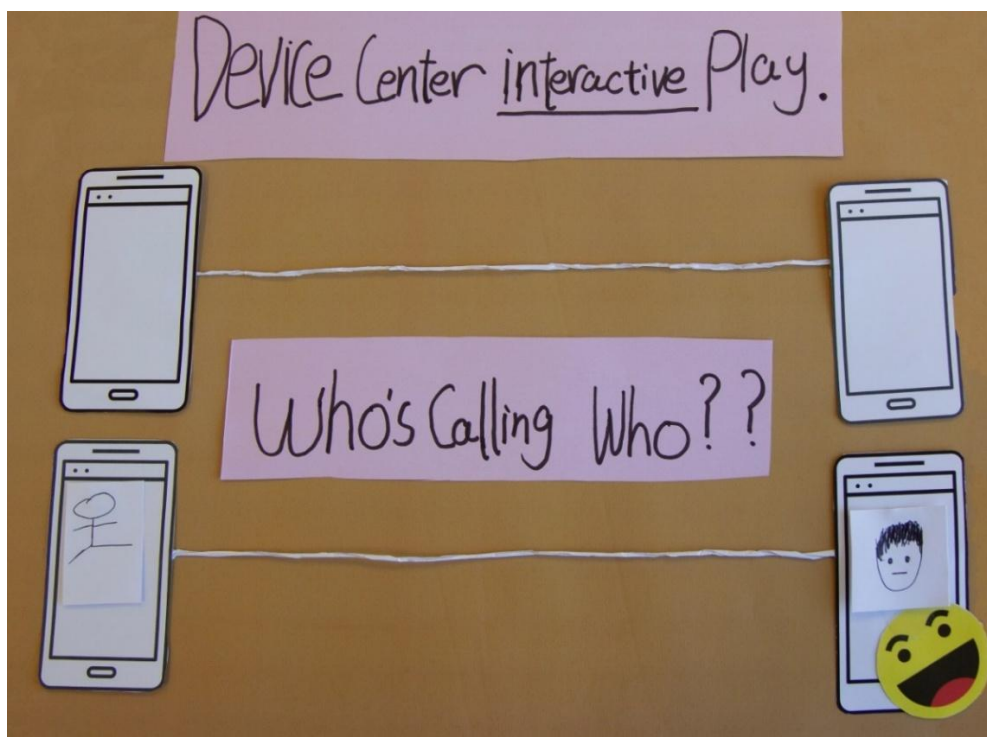
Building your own wooden internet

When you build your own wooden internet, you should consider the following general specifications. Even if you are able to purchase wooden replicas of phones, tablets, and laptops, we recommend you consider the below specifications which can help you in deciding if those toys are suitable, and how many and what type you need.

Materials:

- Natural materials such as wood can provide enjoyable tactile experience, but it can be mixed media/materials.
- Light enough for young children to handle and not hurt themselves.
- Not overly fragile – needs to withstand general use by young children.
- Needs to be safe (e.g., no sharp edges, splinter-free surfaces, nothing that can be put in the mouth, no toxic paint or toxic oils).

Detailing:

- Avoid cute images (e.g., pictures of teddy bears on the keys).
- Try not to use stereotypical colours (e.g., pink and blue).
- Devices need to be recognisable but do not have to be a perfect replica. Absolute realism is not needed and can even be distracting to children's play. Things do not have to actually work (e.g., buttons do not have to move).
- Do not create or use any small parts in the design and construction of the Wooden Internet.

Type of device

The devices should be easily recognisable and similar to children's lived experiences with technologies. It is helpful to model the devices on common and current technology. For example, using a screen-based phone is likely to be more readily recognisable to young children than a 1990's type mobile phone.

There should be enough devices so that several children can play simultaneously.

The devices

We suggest a ratio of one phone per four children; one tablet per six children; and one laptop per 10 children. We strongly recommend that at least one Wi-Fi router for the devices is created and that children use a wooden or cardboard internet with adult supervision at all times.
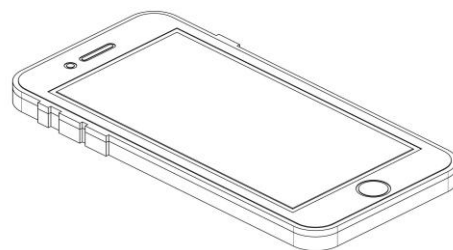

Mobile phones

Mobile phones, such as the iPhone, are readily recognisable by children and are used by adults around them all the time in the home, in the car, at work, and while eating.

Links:
- *Image for paper printout*
- *Technical drawing for woodworkers*
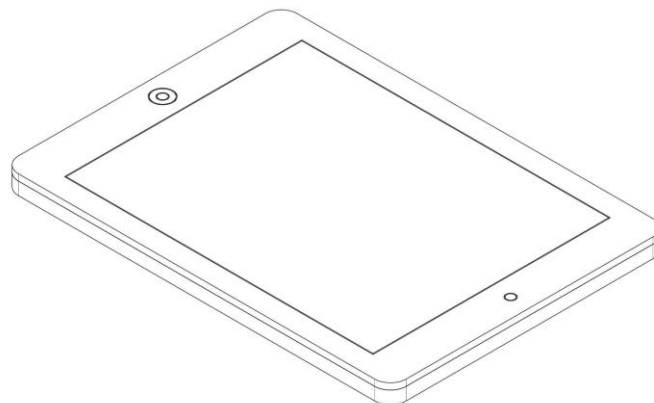- *Image for laser cutters / etchers*

Tablets

Tablets, such as the iPad, are commonly used by children at home. Often older siblings and other family members use tablets to play, learn, work, and be entertained.

Links:
- *Image for paper printout*
- *Technical drawing for woodworkers*
- *Image for laser cutters / etchers*

Wi-Fi router

A Wi-Fi router is an important part of the wooden internet. You may be tempted to not include a wooden Wi-Fi router because, although it is a common feature in most homes, it is often in the background. But a Wi-Fi router is a key component of the wooden internet because it can help adults in stimulating curiosity around how the internet works. It helps children to learn that the internet is a network of connected technologies, and this can lead to powerful conversations about how their own devices are connected to other devices, and other people, and how devices send information across the network. The Wi-Fi router thereby provides opportunities for discussions about sharing and communicating with others when using the internet.

For example, the wooden Wi-Fi router provides an opportunity to explore the idea that when you are using the internet, even when you are sending a photo to a friend, you are, in fact, sending your data across a network of technologies. Having the router within the wooden internet set helps children understand that when they are using an internet enabled device, they are connected to other devices and other people. It means that other people can also send them messages, and that when they interact with games, they may accidentally be sending details to unknown people on the network. A wooden internet set should include at least one Wi-Fi router.

Links:
- *Image for paper printout*
- *Technical drawing for woodworkers*
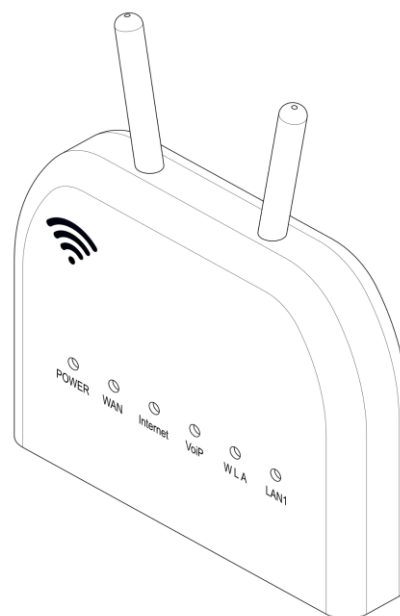
Wi-Fi Stickers

In our research, we found that it is valuable to have a visible way of indicating that a cardboard or wooden device is "connected" to the Wi-Fi router, and thereby the internet. One way to do this is to invite children to draw a Wi-Fi symbol on a small sticker or piece or paper that can be attached and detached from the phones, tablets, and laptop. The Wi-Fi drawings provide a visible representation of the connection of the device to the internet that can stimulate conversations about devices being used by people to share information.
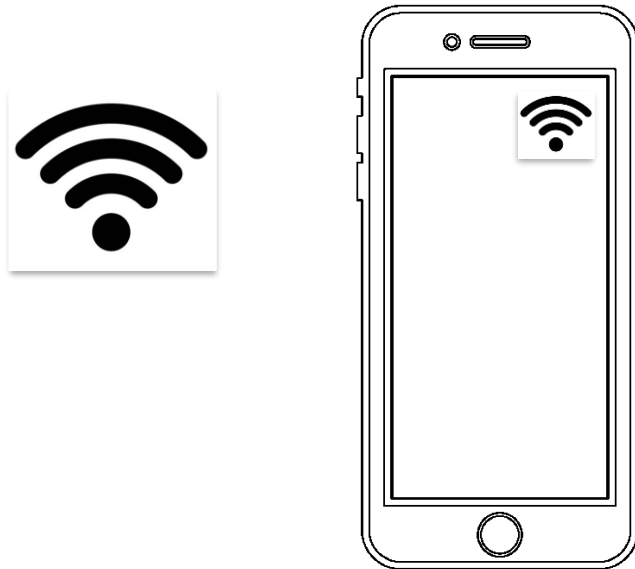
Laptops and desktop computers

Laptops and desktop computers are often observed by young children but these technologies are usually less frequently used by young children who may have difficulty in using the keyboard and mouse. These devices are also larger and heavier than phones and tablets, and so they are somewhat less moveable by children.

Nevertheless, we suggest that one or two laptops can be useful as part of the wooden internet set and may help young children begin to understand that these computers, like the smartphones and tablets, are devices that are connected via the internet.

Keyboard

If a keyboard is used, then we recommend that the keyboard includes the letters and numbers but does not need all the usual details (such as shift, caps lock, function keys, etc). For example, here is a keyboard with just the letters and numbers.

Links:
- *Image for paper printout*
- *Technical drawing for woodworkers*
- *Image for laser cutters / etchers*

Mouse

A laptop or computer is likely to be accompanied by a mouse. This can be achieved with a simple curved block of wood.

It may be tempting to have the mouse attached by a cable to the laptop or computers, but wireless mice are very common and are a better representation of how the technology is used in children's lives.

Links:
- *Technical drawing for woodworkers*