

## THE INTERNET: THE VIEWS OF YEAR SIX STUDENTS

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### Abstract

As the Internet encroaches into our daily activities, and the Internet of Things (IoT) looms on the horizon, children's conceptualization of the Internet, its elements and functions, forms the basis of its use in teaching and learning. Only the children know what they know and think about the Internet. This research draws upon children's ideas of the Internet. Participating students were asked to *Draw a picture of what the Internet looks like, sounds like and feels like*, using pictures, words or both. What the researchers found was amazing!

### Introduction

There is a paucity of research that has explored student beliefs about the Internet. While there is considerable research around student access to and use of and, more specifically, students' activities with the Internet (and ICT more generally) and many commentaries about students' interest in the Internet, there is a lack of clarity around what children know the Internet to be. Establishing some baseline understanding of the view of the Internet held by Year six students has the potential to inform teaching practices: this is based on the constructivist idea that it is necessary to know what students know as the basis of further learning. This research attempted to capture the beliefs of children about the Internet from children in Indonesia and Australia, using a methodology familiar to children, drawing.

### Literature

Data and research tell us that access to and use of the Internet by children varies with age and in many countries use is extensive (Green, Olafsson, Brady, & Smahel, 2011). Morimoto and Friedland (2010) refer to this as *media saturation*. This use is determined by access and views of the Internet. Views of the Internet, its structure and function, form the basis for how children interact with it for learning, both independently and more formally in the classroom. Examining these views can form the basis of teacher planning for classroom usage. Many studies (Ofcom, 2014) conclude that children use the Internet for entertainment including gaming, social activities and communication.

In Livingstone (2003, p. 4), it is suggested,

Numerous commercial surveys chart children's favourite websites, showing that children value this new medium for information and entertainment, for relieving boredom and, their preferred activity, for communication (chat, email, instant

message). BMRB's Youth TGI (2001) showed that the most common uses are studying/homework (73%), email (59%), playing games (38%), chat sites (32%) and hobbies and interests.

The suggestion in this paper is that an understanding of the Internet that includes these ideas has advantages for students in contemporary classrooms (Hunt, 2007; Linn, 2004). The Concept to Classroom website (Education Broadcasting Corporation, 2004) suggests,

The strength of the Net is in its ability to greatly increase the communication and collaboration among students and teacher, to increase the range of resources available to students, and to provide students with multiple ways of presenting their ideas and opinions. (para.1)

Prensky (2007) offers a different set of advantages including student engagement and increased motivation, collaboration with other students, flexible learning -- anywhere, anytime and anyhow. In White (2008), a definition of publishing on the Internet is proffered, "The WWW had moved towards becoming a read/write platform where users could engage with others, contribute and publish information in several formats including text, graphics, animation, audio and video" (p. 3). The fundamental ideas known and broadly agreed about student use of the Internet are clearly organic and the ways these ideas change is rapid, such is the growth of tools and devices available. Richardson (2011) suggested social media affords the opportunity for students with online access to contribute to the world in meaningful ways. It allows students to create, share, discuss or exchange ideas and information online. According to Asosiasi Penyelenggara Jasa Internet Indonesia (eMarketer, 2015), Internet use is synonymous with social media use in Indonesia.

Studies to date (with students) have used surveys to identify trends of use, access, and type of activity on the Internet. Few focus on what the Internet is from a technical perspective: a massive network of networks, a networking infrastructure. Children's views of the Internet create a different focus for research. This study examines these views and proffers ideas on the contribution of these views to Internet-enabled learning for a classroom context as a reference for teachers and education systems.

### **Research questions**

RQ 1: How do students describe the Internet?

RQ 2: What are the dominant features of these descriptions

### **Methodology**

This study used a qualitative methodology engaging children in an activity enjoyable to most children, namely drawing. Year six children were asked to show what they think and believe about the Internet using a combination of words and pictures: *Draw a picture of what the Internet looks like, sounds like and feels like*. This draws support in research by the works of Moreland and Cowie (2004), Appleton, Hunt, Heldsinger and Thrupp (2006), and Hunt (2015) and elaborates upon the idea of thinking with graphic organisers (Novak & Gowin, 1984).

**Procedure** Two mixed gender classes of Year six primary/elementary students participated in the study: one in Central Java, Indonesia and the other in Queensland, Australia. Students were encouraged to use drawings and annotations to show their

ideas. Data from each school were analysed manually by members of the research team and themes identified. Both data sets were analysed by an external moderator to ensure consistency of interpretation. Both sets of data are presented using the identified themes, followed by a comparison of the data sets.

### **Data Analysis**

Themes identified in the data about the Internet included appearance, uses, evaluation/judgement and emotions. These themes were evident in both data sets. The data from each country is introduced using holistic statements from participants to forefront a more detailed comparison that follows with a discussion of data sets. Each data set had some unique attributes and these are discussed separate to the larger themes.

#### **Indonesian Data**

Indonesian participants show that Year six students are capable of presenting their ideas,

The point is that by using the Internet we can find many things and see anything. We can sell and buy things in the online shop. The weakness of the Internet is [that it is] sometimes slow and runs out of bandwidth. But, by using the Internet, homework can be done.

This statement demonstrates a critical view of the Internet, some of its uses (e.g., finding out, seeing, purchasing, and doing homework) and elements (e.g., bandwidth, connections). Use of the word *weakness* shows that the Internet is viewed as having strengths and weaknesses.

A second quote identifies a further category of responses, emotions,

Sometimes feel angry when I lose, especially when I am almost winning but because of the games lag and broken [Internet connection], I had to go back to the main menu. That can make me cry, angry and screaming.

The image of six asterisks (\*\*\*\*\*) that follows this statement elaborates on the extent of emotion related to the Internet.

A third quote forefronts uses, appearance and evaluation. “We can search for so much knowledge and other things that [are]useful. We can read comics. We can open social media such as Line, WhatsApp, and Blackberry Messenger (BBM).” Words such as *useful* identify the ability of Year six students to evaluate the Internet, identifying aspects of the Internet (e.g., Line) and its uses (e.g., searching).

#### **Australian Data**

The Australian data is presented in a different format to that used for Indonesia as it contained two student perspectives statements worthy of a closer analysis. Case Study 1 represents unique data from a single student. Case Study 2 is representative of the data of most participants.

**Case Study 1.** The participant described the Internet as a “world of knowledge. It is a big space of imagination that is intriguing.” Though it appears to have “freedom and fun it feels like someone is watching or doing things we don’t know of.” This participant associates “addiction” with the Internet and a place where you need to “think before you click.”

**Case Study 2.** The Internet “looks like videos, websites.” It consists of “hard drives, computers, phone, mouse and TV, peoples’ voices,” and “beeps and bops.”

### A Comparison of Data

In analyzing the broader themes, it became evident that there were considerable similarities between the two student cohorts, whilst there were also some unique features. This section analyses and compares data from the two schools according to the themes identified: appearance, uses, judgment/evaluation and emotion.

#### Appearance

Views of the appearance of the Internet differ considerably. The appearance is defined for these students by the physical reality for them. In the case of the Indonesian students, it is the graphical user interface of the social media. Australian students more frequently refer to the hardware they use and home pages, e.g., Google, though there was also a sense of the graphical user interface as the Internet. Some sense of the size of the Internet is evident in the Australian data. Interestingly, the references to *connection* and *speed* are more evident to Indonesian students because of the constant problems they experienced. This reference to speed and connection is also reported in the: *Policy Brief: Evaluation of ICT in Education in Papua Province* (Analytical Capacity Development Partnership, 2015).

Table 1

#### *How the Internet Appears to Students*

Indonesia	Australia
<ul style="list-style-type: none"> <li>• Students described the Internet using words such as <i>connection</i>, <i>speed</i> and <i>modern</i>.</li> <li>• References to <i>modern</i> were common.</li> <li>• Three physical descriptions included <i>small box</i>, <i>white colour</i>, <i>white</i> and <i>looks like a sewing machine when loading</i> and thirdly, <i>like a rotating ball</i>.</li> <li>• Other physical references indicated sounds that are obvious when connections are made, for example, Facebook and <i>when someone wants to talk to us</i>.</li> <li>• Lists of software and applications suggested that the Internet looks like <i>Line</i>, <i>WhatsApp</i>, <i>Blackberry Messenger</i>, <i>Google</i>, <i>YouTube</i>, <i>Facebook</i>, and <i>Instagram</i>.</li> <li>• Students described <i>games</i> including <i>Minecraft</i>, <i>Avatar skin</i>, <i>Angry Birds</i> and <i>Star Wars II</i>.</li> </ul>	<ul style="list-style-type: none"> <li>• The Internet is described as <i>everything</i>, <i>listening to people</i> and <i>talking</i>, <i>different accents</i> and <i>noises</i>, <i>both loud and quiet</i>.</li> <li>• A sense of size for the Internet was given by <i>huge</i> and <i>the world</i>.</li> <li>• Others presented different physical views: the Internet is strongly associated with hardware used e.g. keyboards, screens, desktop computers and headphones</li> <li>• Linguistically, students described it as: <i>It looks like a heap of little square shaped pixels</i>.</li> <li>• Others described the screens as having <i>shapes</i>, <i>colours (red and black)</i>, <i>letters</i> and <i>action</i>.</li> <li>• The Internet appears associated with what is seen on the screen. <i>Home pages</i> and <i>Google</i> were frequently mentioned.</li> <li>• Specific applications other than YouTube were not mentioned.</li> </ul>

#### Uses

The Internet is a diverse environment of fun and entertainment for *avoiding boredom* and *filling leisure time* according to the data. In the Indonesian context, the entertainment is related to communication with friends. Australian students identify

music and videos for entertainment, predominantly. The Internet as a place of learning is more clearly enunciated by Indonesian students and less so in the Australian data. Communication is evident with less frequency in the Australian context. Unique to the Indonesian data were references to the Internet being *motivational*.

Table 2

*Student Uses of the Internet*

Indonesia	Australia
<ul style="list-style-type: none"> <li>The Internet is: <i>diverse -- can be used for everything, or look for anything.</i></li> <li>The Internet was viewed as: sharing and communicating. Described as <i>seeing updates about other people, contacting other people via social media, seeing other friends' postings, chatting to friends, and we can know people that we don't know.</i> NOTE: This latter might raise concerns amongst educators if not managed well through Internet Safety programs.</li> <li>The Internet was also related to learning: <i>lessons, learning materials, understand new things, search for so much knowledge and other things, getting knowledge, and as a way of dealing with difficult homework.</i></li> <li>The Internet as entertainment was commonly referred to as: music, favourite songs, streaming video (e.g. Stand-up comedy) and online games.</li> </ul>	<ul style="list-style-type: none"> <li>The Internet is seen as a place of entertainment. The words <i>fun</i> and <i>entertaining</i> were common.</li> <li>Limited references were made to <i>sport, communication, learning and opportunities.</i></li> <li>Entertainment included <i>listening to music, accessing different music and noises, recording, YouTube, video uploading, and Google.</i></li> <li><i>Music, videos and YouTube</i> were the forms of entertainment to which there were most frequent references.</li> <li><i>Sport</i> was mentioned several times.</li> <li>Data such as <i>words and messages</i> attributed communication to the Internet. <i>The Internet is a great way to communicate to the people you want to talk to as well as see them.</i></li> <li>Learning was evident for <i>searching places. You can learn and [it can] help you get through life of the hard times.</i></li> </ul>

**Judgements/Evaluations**

The Internet is a place that is readily judged and evaluated. All students felt comfortable with rating the Internet as interesting. Importantly, students identified the Internet has having extremes. Attributes, both good and bad were identified. Australian students were more likely to discuss the trustworthiness of the Internet. Terms alluding to the Internet as noisy, ugly and rude appear less frequently in both data sets though are worthy of future study within the context of students being safe on the Internet.

Table 3

*Judgments/Evaluations Made About the Internet*

Indonesia	Australia
<ul style="list-style-type: none"> <li>The Internet is seen as: <i>helpful, useful, very useful, popular and interesting.</i></li> <li>Others used words such as: <i>dazzling, weird, wasteful, noisy and ugly.</i> These descriptors not commonly found in the literature.</li> <li>The term <i>wasteful</i> was contextualized by <i>because we have to have quota/bandwidth</i></li> </ul>	<ul style="list-style-type: none"> <li>The Internet is seen as <i>interesting</i> and <i>smart</i>.</li> <li>Other attributes included: <i>extraordinary, fantastic, fabulous and awesome</i></li> <li>These judgments were balanced by: <i>good, bad, not good, boring</i> or at least, <i>not boring.</i></li> <li>The attributes of <i>rude, mysterious</i> and <i>trustworthy/well-trusted</i> require further investigation.</li> </ul>

**Emotions**

The Internet as an emotional environment was supported strongly in the data (Table 4). The majority of participants expressed their views with multiple adjectives, strengthening the conviction with which they expressed these views. Both negative and positive emotions are attributed to this environment, some students expressing the full spectrum in one statement, for example, *light, funny, sad, dark*. Other examples included *gives sounds like my heartbeat when he/she is in the BBM* balanced by *sometimes makes me scared and emotional*. Terms used such as *sorry, guilty, and hurt feelings* deserve future clarification within the context of safety.

Table 4

*Emotive Ideas Expressed About the Internet*

Indonesia	Australia
<ul style="list-style-type: none"> <li>• One participant stated <i>touches emotions</i>.</li> <li>• Positive emotions described: <i>fun, enjoyable, nice, cool, exciting, sensitive, sweet, WOW, relax, interesting and surprised</i>.</li> <li>• Negative emotions described included: <i>sad, scary, hurt feelings, angry, and insensitive</i>.</li> <li>• Some participants contextualized the one-word emotions further: <i>Enjoyable when we play online game; Cool to hear music; Fun when we can see other friends' postings in Facebook; Fun because we can search for so much knowledge; and Exciting when chatting to friends.</i></li> <li>• The Internet is also viewed as <i>hurting feelings</i> and could be related to the term <i>insensitive</i> giving way to <i>sad for no reason</i>.</li> </ul>	<ul style="list-style-type: none"> <li>• Many words to describe emotions included: <i>enjoyable and funny</i>.</li> <li>• Funny was emphasized further by <i>cool, relaxing, hilarious, joyful and happy</i>.</li> <li>• Positive emotions were frequently balanced by: <i>confusing, sad, dark, sorry, guilty, creepy and shocked</i>.</li> <li>• The Internet appears to create a wide range of emotional type responses. <i>Sorry, guilty, creepy and shocked</i> may need further investigation.</li> </ul>

**The Research Questions**

This research sought to explore the following research questions:

- RQ 1: How do students describe the Internet?
- RQ 2: What are the dominant features of these descriptions?

The discussion that follows is framed by these questions and asks in addition:

1. What is the effect of students not knowing the correct definition of the Internet?
2. What is the effect of students not being able to differentiate between World Wide Web and Internet?
3. What knowledge of the web and Internet should we expect students to have?

The uses of the Internet identified by students in many studies, including this work, dictate what students believe the Internet to be. The composite definition of each group relates to the uses of applications, though in the case of the Australian data, there was an identification of hardware as the Internet, rather than hardware being the device by which the Internet is accessed. Year six students from both countries provide little evidence of the technical structure of the Internet and, therefore, the definition supported by the technical community. The understanding of the Internet by Year six students is constructed from their experiences in using it. It is an environment that they

judge to be of worth for their enjoyment. In Table 5, a comparison of the broad ideas held by students is presented using the broad themes identified. Student data in this Table is italicized and uses are listed in order of frequency within each data set. Same order does not denote equal frequency.

Table 5

*Summary Comparison of Data Organized in Identified Themes*

Indonesian	Australian
<p><b>Appearance</b>  <i>Connection, speed, modern                      Line, WhatsApp, Google,                      YouTube, Facebook, BBM, Instagram</i></p>	<p><b>Appearance</b>  <i>Everything, listening to people and talking,                      different accents and noises, both loud and quiet                      keyboards, screens, desktop computers, and                      headphones represent the Internet                      Homepages, Google</i></p>
<p><b>Uses</b>  <i>Filling in leisure time, motivation, not being                      bored                      Sharing and communicating (e.g., know people                      we don't know)                      Finding things out (e.g., search for knowledge)                      Entertainment (e.g., songs, video, games)</i></p>	<p><b>Uses</b>  <i>Fun, entertaining,                      sport,                      communication,                      learning                      opportunities</i></p>
<p><b>Evaluation</b>  <i>Helpful, useful, very useful, popular, interesting</i></p>	<p><b>Evaluation</b>  <i>Interesting,                      extraordinary, fantastic, fabulous and awesome                      good, bad, not good, boring                      trustworthy</i></p>
<p><b>Emotion</b>  <i>Fun, enjoyable, nice, cool, exciting, sensitive,                      sweet, WOW, relax, and surprised                      Makes me annoyed when slow, sad when out of                      bandwidth.</i></p>	<p><b>Emotion</b>  <i>Enjoyable and funny,                      confusing, sad, dark, sorry, guilty, creepy and                      shocked</i></p>

Comparable and common themes were evident in both sets of data. The emphasis or nature of individual themes varied. The appearance of the Internet is that of applications according to Indonesian students. This was less so with Australian students where the appearance was consistent with hardware with few applications listed. Both sets of participants identified the Internet as a place for entertainment, information and learning, and communication, consistent with findings by Ofcom (2014) and Livingstone (2003). While Australian students placed a strong emphasis on entertainment, they placed little to no emphasis on information and learning and communication. Indonesian students identified the Internet as an equal mix of these attributes, viewing communication as entertainment. This was strongly evident in their emphasis on social media. The nature of entertainment identified by both groups differed in other ways; one group placed a heavy emphasis on videos and gaming whilst the other group gave little specific attention to these activities. Dominant features of the Internet as *awesome*, *surprising* and *motivating* were agreed by both student groups.

Both groups use the Internet in different contexts on different devices. Substantially, it can be concluded that both groups have defined the Internet by basing their thinking on their personal use. As a group, clear comprehensive views with social and emotional dimensions were evident. Few participants enunciated a complete personal view. Only a few individuals mentioned any detail that associates with the technical definition of the Internet.

While a few students chose to make lengthy descriptions or explanations, others responded specifically to the sounds like, looks like, feels like structure. These responses were compiled to construct a cohesive response in defining the Internet. It appears that few Year six students are able to enunciate the complexity of the connections, which account for the vast size of the Internet and the technical definitions of the Internet. They understand it to be an environment of seamless links to others and information in a way that is worthwhile for personal satisfaction. Students define the Internet to be about connecting people rather than connecting computers. There is very little cognizance by Year six students of the underlying foundations that technically define the Internet, regardless of culture. Much of that which students consider the Internet to be is the World Wide Web.

The participating students, regardless of culture, view the Internet as an enjoyable place for their entertainment and less so, for communication. The Internet is social, emotional and endless in nature. It is an environment of many emotions, strongly divergent in nature and extent. It is recognized as having two sides, bright and dark. While some commentators and researchers (Richardson, 2011) perceive social media to be an environment of opportunity, this is only minimally recognized by Year six students.

Commentary (Prensky, 2007) in the last twenty years refers to the digital competencies of children. Many names have been applied to children born in the era of the Internet, for example, digital natives. These names accredit children with knowledge of the digital world from having lived in this era. The question remains, what knowledge do we expect children to have? In the instance of this study, is it expected that children know what the Internet is? This study has shown that children have developed partial views for themselves and can describe their views. How do these incomplete, partially formed or incorrect views influence effective use of the Internet in the future?

These questions create challenges for teachers and educators. Students know the Internet to be a diverse environment with some cognizance of the opportunities it offers. This knowledge is limited in many ways. Teachers and educators are now tasked with bringing together the requirements of curriculum that assumes an alternate knowledge of the Internet than that shown to exist for students in this study.

### **Conclusion**

The Internet is a technical term that is defined in general commentary according to its uses or with how students interact with it. Year six students agree with this view. The concept of the Internet as a network of networks is overwritten by the public face of Facebook and Google and does not align with the technical definition. Obviously, there is some confusion between the terms Internet and World Wide Web. Furthermore, there exists some incompatibility between the views of the Internet held by students and student views of the Internet as perceived by educators as evidenced in national curriculum documents. While further research with larger groups of students (in other age groups) is necessary to confirm the findings of this study, this study highlights the need for reflection on perceptions of the knowledge of contemporary learners and of the concerns of students and educators for safety in the Internet environment. The notion of Internet safety appears to be at the fore-front of suggestions made by the Australian students, appropriate in a country with rigorous programs designed to keep students safe. There is no identifiable policy or practice in Indonesia, a position gleaned from

previous studies and conversations by the authors in Papua, West Papua and Central Java.

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