

# Promoting the relationship between digital technologies and learning

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The exponential growth in Information and Communication Technologies has been extraordinary over the last thirty years or so and most of them have been incorporated into the daily life of a school. Some have enhanced educational outcomes; others just made the traditional curriculum easier to deliver.

Digital content and networked applications have transformed the world in which we live and perhaps it follows therefore that there needs to be a transformation in the way we teach and the way our students learn.

In the late 1990s the United States government published its National Educational Technology Goals and twenty years on it is interesting to see how we in Australia measure our progress against these goals.

- Goal 1: All students and teachers will have access to information technology in their classrooms, schools, communities and homes.
- Goal 2: All teachers will use technology effectively to help students achieve high academic standards.
- Goal 3: All students will have technology and information literacy skills.
- Goal 4: Research and evaluation will improve the next generation of technology applications for teaching and learning.
- Goal 5: Digital content and networked applications will transform teaching and learning.

How well have we met these targets? Most of us would say that students and teachers have access to ICT in their classrooms, schools and generally at home. So we meet goal 1.

That said, however, available research does not yet suggest that the use of computers in class is producing great improvement in results, or put another way, the incorporation of computers into classrooms has not guaranteed the achievement of goal 2. Educational improvement requires more than simply 'giving teachers and students access to ICT'.

In past generations when there was not the range of technologies that we have today, the source of knowledge *was* the teacher because quite simply, no other source was available. So yes, the classroom activity was teacher-centred, but that doesn't mean that the focus wasn't about learning, just that if the teacher was to help the students learn, he or she had first to pass on his or her knowledge. Today, there is a plethora of sources for information and as a result, we as teachers can direct more energy into guiding students in their quest for knowledge and less energy into providing the information. So yes, we *should* now embrace a paradigm that moves away from teacher-centred activities, because we can.

It is the abundance of information that often presents us with the biggest challenge. How are today's students to curate the volume of information to which they now have access? Is Wikipedia the font of all knowledge? Of course not. When many of us attended school our teachers spent time teaching us how to perform research in a library full of books and journals. Today's students also need to be guided on how to do research, but much less frequently do they use books and journals. Rather they use the internet. Today's students access their information via a raft of mobile devices, not the least of these being the mobile phone. How then, can we help our students to filter the volume of data to which they have access? How can they use the internet to curate opinions?

Higgins et al (2012) for the School of Education, Durham University said:

*"The crucial lesson emerging from the research is that it is the pedagogy underpinning technology use which is important: the how rather than the what. The challenge is to ensure that technology is used to enable and to advance effective teaching and learning practices."*

The role of the teacher in guiding the students re the use of their devices to optimise learning cannot be underestimated. So if we are to use computers in our classes, we should be looking to use them not simply to do better what we have always done, but rather to embrace new theories of learning and with a deeper understanding of how these devices can impact on learning. Only then will we be doing justice to our students.

Many teachers fear the use of these emerging technologies because they feel intimidated by the technology and believe that not being masters of what they present in class exposes them to the risk of failure or ridicule.

Alan November, one of the most respected authors and expert commentators on education says

*“Teachers do not need a lot of technical skills. Teachers need an ability to manage the use of many technologies in the classroom without having to know the technical details. Managing student brainpower is one of the most important skills for teachers.”(November 2010, p 48)*

In his articles and on his web site ([novemberlearning.com](http://novemberlearning.com)) he provides numerous examples and resources to help teachers face the challenges of new paradigms. For example, he examines what he calls the anatomy of a web address. How many of us have taken the time to ensure that our students (or we ourselves for that matter) understand what the various elements of a web address represent? How many of us take the time to examine the web address when evaluating the quality of the information we are collecting?

It is relatively simple to explain the difference between domain names. Most of us take for granted web sites that end in .com or .com.au, but there is much we can learn from the web address. What is the country of origin? What is the nature of the organisation responsible for the web site?

Some common country extensions – (<https://www.domainit.com/domains/country-domains.mhtml> )

Australia	.AU
Great Britain	.GB
China	.CN
Denmark	.DK
Germany	.DE
Greece	.GR
Indonesia	.ID
Italy	.IT
South Africa	.ZA
United Kingdom	.UK

Some organisation extensions

Government	.GOV
Commercial	.COM
Education	.EDU
k-12 schools in the US	.k12
Organisation	.ORG
Network	.NET

When assessing the reliability of data on the web, we would do well to consider the web address. Information published on a site including .edu in the web address will often be validated by specialists in the area and such articles will often be peer reviewed. Those sites containing .gov will be providing government endorsed information. In and of itself this is not a guarantee of truth or accuracy. The country of origin might help determining whether or not the government information is filtered or more likely, in what way it is filtered. A web address that uses .com, .org or .net indicates that the web address is owned by a person or organisation, and very likely has a commercial or at least a vested interest in the information provided. When looking to assess the validity of information, understanding the nature of the relationship between the information and the author/publisher cannot be underrated.

If the source of a web site can tell us something about the validity of the data, then the ability to filter our searches by the elements of the web address would be a valuable tool.

Few people that I have ever met, teachers included, use search commands to filter information. Most are blissfully unaware that they even exist! This is one of the reasons that as Simon Breakspear, founder of LearnLabs, says, the relationship between digital technology and learning is not always powerful. Information literacy is fundamental to deep learning.

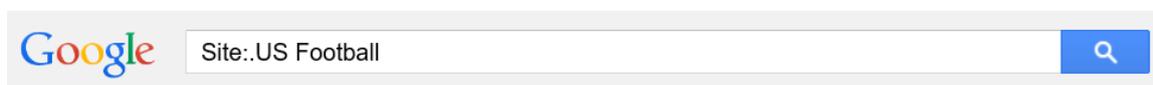
Try the following simple exercise. Type the word 'football' into a Google or Bing search.

Most likely the top half a dozen results will include an American Football link, an English Football link and Australian Rules Football links. Google will return around 1,190,000,000 results and Bing will return around 186,000,000 results. Repeat the search, but this time modify the search by using the search command 'Site:UK'



The result will now be significantly fewer results, will include only sites published in the United Kingdom and thus, predominately sites involving English football.

Repeat using 'Site:US'



This time you will see only sites published in the United States and thus, predominately sites involving American football.

There are many such search commands which can be used to filter the results of web searches.

Some useful commands

Command	Action	Example
Site:	Restricts the output to those locations including the nominated site extension.	Site:edu "Indigenous Education" Will produce results of a search for 'Indigenous Education' from educational sites only
inurl:	Restricts the output to those that have <i>some</i> of the keywords in the web page address	inurl: digital wisdom Will produce results that include either or both of the words in the web address inurl: "Digital wisdom" Will produce results that include the phrase 'Digital wisdom' in the web address

Command	Action	Example
intitle:	Restricts the output to those that have <i>some</i> of the keywords in the title of the web page	intitle: digital wisdom Will produce results that include <i>either or both</i> of the words in the page title
allintitle	Restricts the output to those that have <i>all</i> of the keywords in the title of the web page	allintitle: digital wisdom Will produce results that include <i>both</i> of the words in the page title, not necessarily consecutively. allintitle: "digital wisdom" Will produce results that include the phrase 'digital wisdom' in the page title.
allintext:	Restricts the output to those that have <i>all</i> of the keywords in the body of the web page	allintext: digital wisdom Will produce results that include <i>both</i> of the words in the page body text, not necessarily consecutively.
+	Restricts the output to those that include a specific word	Digital +wisdom Will produce results for the search for 'digital' that includes the word 'wisdom' in the body text
-	Restricts the output to those that exclude a specific word	Digital -wisdom Will produce results for the search for 'digital' that do not include the word 'wisdom' in the body text
date:x	Restricts the output to those published in the last x months	date:2 Football Will produce results for Football published in the last two months
safesearch:	Ensures that the results exclude adult content	Safesearch: "online games" Will produce online results for the phrase "online games" that exclude known adult content or known links to adult content.
filetype:	Restricts the output to only documents of the filetype specified	filetype:pdf Football Will produce only pdf documents from the search for Football.

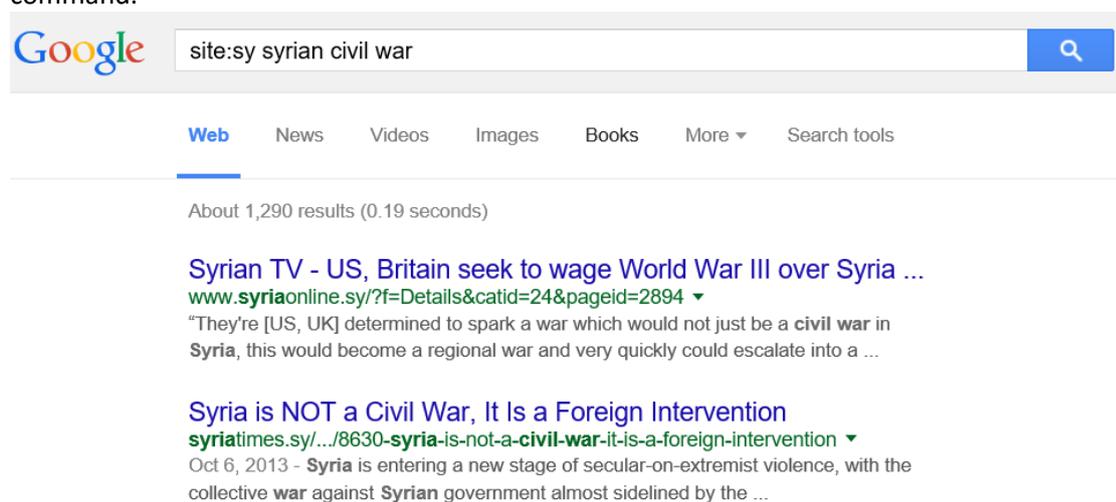
A more complete list of available commands for a number of search engines can be found at <http://searchcommands.com/>

Another useful exercise that demonstrates the differences in performing the same search in different countries is to visit <http://www.langreiter.com/exec/google-vs-google.html>

This page allows you to enter a search and see the different outputs of Google in each country. Some sites appear only in one country's search result whilst those that appear in both are often returned in a different order. Given that we know most students (and I suspect teachers) never go beyond the first page of results when using a search engine, we need our students to understand the importance of the region.

An excellent example might be when wanting to explore the difference in attitudes across countries to a given situation. The question of whether or not Australian forces should be involved in Syria and to what extent if yes, is currently in the press. If we were to ask our students whether or not Australia should be involved and what the views of Syrian people might be, how would they respond? How would they collect information in order to make a balanced and informed response?

My guess would be that they would head to a search engine and enter Syria or “Syrian civil war”. Indeed, entering the latter of these into a search engine produces an enormous amount of information, most from news services in Australia, the United Kingdom and the United States. Is this a balanced view? Does it tell us what the Syrian people might feel? Repeat the search using the ‘site:sy’ command.



The top two sites give a hugely different perspective to that we get from our initial search.

Now I am not looking to make this article a political piece, nor to defend any particular view, but rather to make the point that we can get vastly different results when we look at an argument from different perspectives. The mere fact that we can see different views being presented when we modify our search commands means that we can engage in more meaningful and much deeper conversations. We don't need to simply accept one view, or even debate which view is correct. It might be that the conversations look at why the two searches produce different results. That in turn might help shape an appreciation of free speech and human rights.

A teacher's responsibility is to enable learning and to encourage critical thinking. In other articles I have said if we choose to use computers in our classes, it should be because the educational outcome will be enhanced. If we are to use computers effectively in class, then a consequence of that will be that we will help our students develop information literacy skills. I would argue that we have already seen a vast improvement in the technology applications for teaching and learning (Goal 4 above). Devices are becoming more powerful almost daily and applications are being released for these devices at a rate no one could have predicted as recently as a decade ago. If we can tap into the students' technological experiences to enhance information literacy then we will facilitate cognitive exercises that will lead to deep learning. When we achieve this, the relationship between digital technology and learning will be truly powerful and we will have met goal 3 above and be on the way to achieving the transformation in the way we teach and the way our students learn, and when we achieve that we will have met goal 5.

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