

Born to Be Wired

InfoSavvy for the Information and Communications Age

by Ian Jukes

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Welcome to the Information and Communications Age. We've all heard about it. The marriage of computers, communications systems multimedia and information - seemingly almost overnight it seems to have appeared on our doorstep. But hold on a second, just what is the Information and Communication Age? When did it begin? Who is being affected? How are they being affected? Why is it happening? And why is this such a big deal?

Let's begin with a little test. Look at the line directly below, read what's on the line, then, close your eyes and recite the line from memory. Are you ready?

2H9

That wasn't hard, was it? Now try the same thing with the next line:

47Q93F

Okay, now try:

8J3, D67, NVB, WS4, 2W9A, 101OL

How are you doing so far? Now let's try the next line:

N214, NFBC, ZYTV, GFM, 85UY, 9KIL, 4590, IL1, 77H, 84CV, DWS3, AEB4, EBRK,

Things got a little harder as you went didn't it? At what point did you begin to suffer from system overload? Did you notice that the longer the list was, the harder it was to remember? For most of us, the more things there are to read and remember, the smaller the chance of remembering anything at all

That exercise is a simple example of what it's like to try and manage things in the Information and Communications Age. Let's consider the circumstances in real terms. Today, to a large extent because of the proliferation of information systems, the number of new words, terms, and concepts being introduced into our world is happening at an exponential rate. Richard Saul Wurman, author of *Information Anxiety*, estimates that there are presently more than 540,000 words in English language. This is a number five times as many as there were in Shakespeare's time. This is due in large part to the fact that we are living in a rational age,

The amount of new information being produced is so large as to be almost beyond our ability to comprehend

How much information are we dealing with? Wurman estimates that more than 1.3 trillion new documents are produced each year in the US alone. When you do the mathematics it quickly becomes clear that it would take years, decades or even centuries to cover even 1/10th of 1% of available information in any given field of science or technology.

Information systems have created a raging torrent of information. There has been more new information produced in the last 30 years than in the previous 5,000. Have you ever had someone ask you if you have read a new book, and you felt embarrassed because you not only hadn't heard of the book, but the author as well? Wurman tells us that there are more than 1,000 books published daily around the world. That a weekday edition of New York Times contains more information than someone in the 17th Century was likely to come across in a lifetime. That in one year, an average person will read or complete 3,000 notices and forms, read 100 newspapers and 36 magazines, watch 2,463 hours of television, listen to 730 hours of radio, talk on the telephone for 61 hours, and read 3 books.

Add to this the absolute explosion of the World Wide Web into our lives in the 90's - an explosion that overnight turned telecommunications from a specialized thing done by propeller heads who spent their spare time waxing their modems for higher speed tin something deeply embedded in the public consciousness. In 1993 there were essentially no users of the World Wide Web, primarily because Marc Andreessen, creator of Mosaic, the Web browser software that eventually became Netscape, was still in high school. Today the number of users can be measured in hundreds of million. Any attempt to cite specific numbers of users or Web pages being added each day would immediately cause this book to be viewed as hopelessly out of date. A broad understatement is that we are viewing something biological in terms of its growth rate. Add to the mix the absolute explosion of e-mail into our lives. The number of e-mail messages sent daily can be measured in the billions.

The emergence of the Web and the use of e-mail have lead seemingly overnight to a completely new mindset about communication. This is primarily because it is something that has been exponentially not incrementally adopted. Consider for a moment the time that different media took to reach 50 million users. The telephone took 41 years. Radio took 38 years. TV took 13 years, but the Web took only 4 years. Until recently, cyberspace was only for modem jockeys and computer geeks. Now it's a middle class suburb despite the fact that it still costs a significant amount of money to get connected and where downloading files and information can sometimes seem like trying to such peanut butter up a straw. Despite this, the average adult in America today spends more money each year accessing the Web than they do viewing movies.

Where with this lead tomorrow as small and inexpensive Internet appliances combine with new

for overload, each of these will be eventually resolved. What's happening now is similar to what took place with the introduction of the telephone system in the early part of the 20th century. It isn't perfect yet - not all have access - it's not always easy to use. But despite this, it's absolutely coming at us like a tsunami. This explains the continued Internet fever on the stock markets. In just a few short years, it has already reached full-fledged status as a commercial medium and it is probably going to be the dominant communications medium for the next century. In the words of MIT's Nicholas Negroponte, this is a 10.5 on Richter scale of social significance and thus, it is hard to overstate the implications for the Information and Communications Age as it represents the near and distant future of the global, information economy.

Is it any surprise then that most of us spend our lives working and exchanging information in some form? As a result, Michael Crichton, author of Jurassic Park and creator of the TV series ER recently suggested that most Americans today spend more money on food for thought than on food for their bodies. For many, this leads to information overload.

How has all of this affected you? How many of you feel like you might be suffering from Information Overload? Let's take another test. How many of the following apply to you?

1. Do you experience major guilt over your inability to "keep up" with all of the information flowing into you life?
2. Do you ever suffer from a sense that there is "so much to do, and so little time to do it in?"
3. Do you ever experience a feeling of helplessness in the light of relentless media bombardment?
4. Do you encounter increasing information overwhelm and exhaustion from the endless flow of information emanating from newspapers, magazines, TV, radio, e-mail and the World Wide Web?
5. Do you have sedimentary piles of information on you desk, by your bedside or in a drawer that you never seem to get to?
6. Do you ever become frustrated with your inability to find exactly the information that's needed?
7. Do you frequently end up lurching from one task to the next, suffering from a chronic case of dealing with the tyranny of urgent, immediate and/or unnecessary and in doing so, being reduced to making things up as you go?

If some or all of these symptoms apply to you, then you may be suffering from Information Dysfunction Disorder (IDD). If so, welcome to the Club. IDD is quickly becoming the official brain syndrome of information age, leading to high levels of stress, overwhelm and overload. And if it's like this for us, what's it like for the children of this country?

The Informationally Oblivious are unconsciously unaware of their condition. They have been bludgeoned, brainwashed and anesthetized by info overload into benign acceptance of what they are presented with and view most sources and forms of information equally. As a result, they have a passive, accepting mentality that takes as gospel truth almost anything that comes out of a TV, radio, magazine or computer.

Many are consumed by scattered bits of minutiae, passively absorbing unrelated, trivial bits of information about everything they have heard, read or seen. As a result, they often know more about the latest celebrity scandal than they do about the Constitution or our legal system. Even those things they do know about are understood at a superficial level. Is it ignorance or is it apathy - they don't know...and they don't really care.

The Informationally Paralyzed are consciously unaware of personal information deficiencies. They know that they don't know and understand that there is a need for them to be better informed, but they are overcome by the sheer amount of information or are frozen by the fear of new technologies. As a result, they don't have the skills, can't use the needed tools, can't find the needed information, are unable to interpret the information that is available, or don't understand new ways of presenting the information.

The Informationally Dyslexic are consciously aware of their information problems. They know what they know and what they don't know. They have some information searching skills but these are haphazardly applied because the skills have not been refined or clearly delineated. Thus they are often not able to repeat successful searching. Even when they can find the raw data, they are often confused as to how to view, process, analyze, authenticate, or apply it; or technodroll and technolust sidetrack them. The Informationally Dyslexic frequently mistake information access for the ability to use the information and thus find themselves spinning their tires, unable to get out of first gear because the ability to access information - and lots of it - does not create an ability to evaluate it.

This is happening in large part because the traditional ways of processing information just aren't valued as much today because they don't work any more. In the Information and Communications Age, information systems are generating data at such stupendous rates, that we can no longer just memorize and regurgitate things on demand. Even just a few years ago, academic success based to a large extent on the ability to memorize. The teaching model was Teach, Test, and Turf. Teach the content, test for the student's ability to recall the information, and then turf it out to get ready for the next unit of study. Is it any wonder that you could take a test one day and do well, but be tested on the same information a few weeks later and have absolutely no memory of the details.

In the past few years however there has been a distinct shift away from equating success

because of information systems, Gilder suggests that in the last 15 years, the lifespan of worker skills and knowledge has declined from 7-14 to 3-5 years.

He further suggests that we are at the end of age of specialist, because, like the dinosaurs, specialization leads to extinction. As a result, there is little place left for obsolete excellence. It's no longer about being an expert. Rather, it's about pursuing expertise and of making the shift from being a specialist to being a generalist with effective analytical processing skills. Increasingly, it's not about just what you can remember; it's about what you can perceive about information and how you apply that knowledge within the context of real life experiences.

This requires a completely different set of skills than those that were needed in the past. To successfully navigate the vast quantities of information out there, we must be able to ask the right questions, access the data sources, synthesize, analyze and authenticate the information, and apply what has been developed to solve real problems. The problem is that many adults just don't know how to do this, let alone teach their children how.

So how do we deal with IDD? We're faced with two choices. First, we can choose to abandon ship and continue to try doing things the way they've always been done. If this is our choice, we must learn to accept the fact that we will continue to feel swamped by information oblivion, paralysis or dyslexia as we slowly sink in to the sunset.

Our second option is to learn to deal with IDD! The starting point for doing this is to acknowledge that things have fundamentally changed in the past few years and that as a result, we live in a very different world that requires us to get beyond TTWWADI (That's the Way We've Always Done It)

We further need to acknowledge that there are a new set of core skills that are needed by the many, not few and that we all need to learn them so that we can swim, stay afloat and learn to ride wave of change rather than run the risk of becoming a part of the beach as the Information and Communications Age wave washes over us.

So where and how do we begin?

Let's start by zooming ahead at warp speed and spending a day with Jean Luc Picard, captain of the Starship Enterprise. Let's watch as he handles the challenges of daily life? He has a challenging job dealing with the vast cultural differences amongst the crew not to mention the complexities of overseeing the technical running of Starship, and the seemingly constant need to avoid intergalactic war. More than anything, he needs to constantly manage huge amounts of information in order to solve a host of everyday problems

How does he do this?

This is a challenge because he isn't able to hold all of the necessary information in head and

The 5 Aspects (A's) model is as follows:

1. At stage one, he asks questions of the crew, computer, Data or others (Asking)
2. At stage two he gathers as much data about the problem as possible (Accessing)
3. At stage three, he tries to separate the facts from opinion in order to turn the data into usable information (Analyzing & Authenticating)
4. At stage four, he applies the information to solve problem, identify the aliens, avert the war, save galaxy or finds a parking spot (Application)
5. Finally, at stage five, alone in his quarters with the Captain's log, he clarifies the events that have taken place and reflects upon what was learned (Assessment)

This 5 step process allows him to filter the background noise and, in doing so, provides relevance and context for the use of information. Let's examine each of these steps more carefully.

Asking

Jean Luc starts with awareness that there is a specific problem to be solved. Without a problem or context, any data that is obtained is meaningless. He has a complete understanding of need-to-know learning techniques combined with confidence that just about any problem or task can be solved because the truth is out there. Awareness leads to Asking. If he doesn't have a problem, he probably doesn't have many questions. The Asking stage requires the ability to clearly define the problem, and in doing so, focuses the mission. In asking the right questions, he sets some boundaries for research. It is in the problem solving, that he gains ownership of the learning as well as responsibility for the data. He asks himself what he needs to learn to solve the problem? This gives a context and relevance to the mission and helps him make the right connections, which makes learning real.

The crucial asking skills are:

1. clear understanding of problem to be solved
2. ability to brainstorm
3. ability to think laterally
4. ability to prioritize searching strategies
5. ability to identify key words and form questions around them
6. ability to determine where info is
7. ability to determine what skills are needed to find it

Accessing

Accessing is the wild card of the information cycle because at this stage, the pathways to be followed are totally speculative. One thing tends to lead to another which means that just

It's important to note that the techniques and skills used here are media independent. They are equally effective whether they are used with a book, a computer, microfiche, or a video. In making a conscious movement away from a single text or medium as the resource of choice, the focus on the accessing strategies become far more important than the specific tools being used; and thus the choice of tool is largely determined by the context created by the questions

The crucial accessing skills are:

1. ability to skim, scan and scour resources
2. effective filtering skills
3. ability to take smart notes
4. learning a variety of info seeking strategies independent of tool
5. ability to use variety of paper and electronic resources

Analyzing & Authenticating

Analyzing is where the AHA! experience is created. It requires putting the different pieces together. This stage is like knitting sweater. It requires that Jean Luc be able to look at data critically in order to see the patterns as they emerge. It required the ability to find the blanks; to deal with incomplete data; to use probability, trends, and best guesses in order to determine how credible the data is, to separate the facts from opinion and turn the data into usable information. More than anything, it requires Jean Luc to repeatedly revisit the data in order to get a better fitting sweater

Crucial analytical skills

1. organizing and summarizing info from variety of sources
2. ability to check for relevance
3. revisiting asking or accessing to complete info
4. ability to document, credit, take notes
5. learning to work with incomplete info - fill in the blanks
6. probability and extrapolation
7. list and distinguish between good, bad and ugly info sources
8. critical thinking skills...
9. differentiate fact from opinion
10. look for underlying meaning
11. look for bias for content and presentation
12. read between lines
13. judge authenticity and authority of sources

Application

At the application stage, Jean Luc uses the information to solve a problem, write an essay, write a report, create a graph, complete an argument, make a presentation or whatever else

assignment or problem to must be solved. Being able to access the data is nothing if he can't both analyze the data and apply the information that has been obtained.

Crucial application skills:

1. ability to restate task, outline research strategies and info found
2. ability to show conversion of raw data into newly synthesized knowledge
3. ability to show how problem was solved

Assessing

The assessing stage is the reflective, soul-searching step in the process. Alone in his quarters, Picard re-visiting and considers the pathways the followed to get from raw data to information and knowledge. At this stage, he wants to consider not just what was learned, but also how was it learned. What worked? What didn't? How could the product, process or solution have been improved? What needed to be done the next time around?

Crucial assessing skills

1. ability to ask questions about processes used and info obtained
2. ability to reflect critically
3. ability to act on reflections
4. ability to internalize new learnings
5. transfer learning to other situations

The 5 A's process is the essence of InfoSavvy, but how do we get from here to there?

The starting point: is to declare war on the old ways of doing things. To reject pureed, predigested, homogenized, formatted materials filtered through someone else's eyes and in doing so, to stop reinforcing a curriculum that continues to be s a mile wide but only an inch deep

To do this, we must reject a system that primarily tests then turfs (disposable info); rewards accumulation of vast amounts of useless, theoretical, obsolete info (info overload); that continues to stress and reward memorization (info bulimia); that collectively leads to intellectually starved students (info anorexia)

We need to shift gears to a critical thinking, problem solving focused curriculum that is based on the 5-stage process that leads to information fluency where the process skills are deeply embedded in a problem solving process that allows relevant content and processes to be internalized simultaneously.

For further information, contact:

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