



# “CATCHING THE KNOWLEDGE WAVE”

## REDEFINING KNOWLEDGE

## FOR THE POST-INDUSTRIAL AGE

OVER THE LAST FIVE YEARS OR SO WE HAVE HEARD A great deal about something called the Knowledge Society. The term 'knowledge' is appearing in places we wouldn't have expected to see it a decade or so ago. The media is full of references to the knowledge economy and the knowledge revolution; business discussions now routinely talk about knowledge management, knowledge resources, knowledge clusters, knowledge work, and knowledge workers; and policy documents argue for the need to 'catch' the knowledge 'wave'.

This proliferation of new terms is changing knowledge's meaning, and this change is significant. The new meaning of knowledge is very different from the one used in everyday conversation. It is also very different from traditional philosophical understandings of knowledge, and, because of this, it is a major challenge to our education systems. We cannot address this challenge by adding new ideas to – or tinkering with – existing structures. To address it we need to think differently about schools. We need to go 'back to basics', to re-think many of our current ideas about schools, their purposes, and the best ways of achieving those purposes.

**KNOWLEDGE IS NOW INNOVATION, INNOVATION IS QUALITY, AND  
QUALITY CONTROL IS KNOWLEDGE MANAGEMENT.**

This article looks at these ideas in three parts. The first part looks at what the term Knowledge Society means and where it came from. The second looks at where current ideas about schooling came from and explores how and why these ideas need to change if we are to meet the needs of 21st century learners. The final part of the article looks at how we could begin to make these changes.

### THE KNOWLEDGE SOCIETY: WHAT IS IT?

According to the (now very large) academic and popular literature on the subject, the term Knowledge Society refers to the social, economic and political changes that are taking place as countries move from the industrial to the post-industrial age. Knowledge (or intellectual capital), we are told, is replacing other more tangible assets (like labour, land or money) as the key driver of economic growth. Where industrial societies were based on extracting and using natural resources in manufacturing, knowledge-based societies, in contrast, are based on developing and exploiting new forms of knowledge. The shift from one to the other is linked with a major decline in blue-collar forms of employment, and an increase in job opportunities in the creative, technology or service-based industries. It is also linked with new business practices and new patterns of work.

The Knowledge Society is linked with developments in information and communications technologies and globalization. Our ability to digitize all kinds of information (including money) and to move it around the world at enormous speed has produced major socio-political



**EN BREF** Le nouveau sens du mot savoir constitue un défi de taille pour nos systèmes d'éducation. Nous nous voyons forcés de repenser les écoles, leurs buts et la façon de les atteindre. Les écoles de l'ère du savoir doivent *produire* – et non *consommer* – des connaissances; elles doivent développer une littératie multimodale, mettre l'accent sur le processus plutôt que sur le produit et aider les apprenants à se voir comme des bâtisseurs actifs de leurs savoirs. Les idées et les approches éducatives requises pour concrétiser ces concepts existent déjà dans la documentation de recherche en éducation, souvent depuis des années. Cependant, lorsque ces idées sont importées dans des systèmes d'éducation construits selon un modèle mental de l'ère industrielle, elles sont souvent diluées ou réduites à des slogans insignifiants. Avant de commencer à mettre ces idées en pratique, nous devons changer les modèles mentaux sous-tendant notre perception de l'éducation.



change. People's understanding of time, space, and place are changing, and the boundaries between countries are breaking down. We are developing new forms of information, new ways of presenting information, and new forms of money. There are new more complex forms of personal identity, and people are connecting with each other in new and different ways. In economic terms, the Knowledge Society is closely associated with the development of new forms of 'fast' capitalism, new forms of production, and new management systems. This new work order has a strong focus on knowledge, learning, and innovation and, as a result, these terms now have new meanings. Knowledge is now innovation, innovation is quality, and quality control is knowledge management. In other words, knowledge, in the Knowledge Society, has a different meaning from the one it has in educational contexts.

The sociologist Manuel Castells, in his book *The Rise of the Network Society*,<sup>1</sup> says that knowledge is no longer thought of as a 'thing', a kind of matter produced by human thought and then codified in disciplines or by expert individuals. Rather it is now understood as being more like energy, something defined by its effectiveness in action, by the results it achieves. It is not something that can be defined, pinned down, stored and measured, but a dynamic, fluid and generative force, or capacity to *do* things. For Castells, knowledge is now something that causes things to happen: it is no longer thought of as 'stuff' that can be learned and stored away for future use. It is something that is produced collaboratively by teams of people, something that happens in the relationships

*between* those people. It is a process rather than a product; it is constantly changing, evolving, flowing and re-generating itself into new forms.

French philosopher Jean-François Lyotard predicted this new meaning of knowledge in the mid-1970s in his book *The Postmodern Condition*.<sup>2</sup> Lyotard argued that in the future, knowledge will be important, not as it was in the past because of its relationship with truth, reason and certainty, but for what he calls its 'performativity', its energy or ability to *do* things, its 'use-value'. Knowledge will be mobilized on an as-and-when-needed basis to produce innovative new products. For Lyotard, the idea of knowledge as a set of universal truths is obsolete. Instead, *many* reasons, *many* truths, *many* knowledges are both possible and desirable. As a consequence, he says, traditional disciplinary boundaries will dissolve, traditional methods of representing knowledge (books, articles and so on) and expert individuals will be far less important, and new conceptions of learning will develop. According to Lyotard, learners will be encouraged to develop an understanding of an organized stock of public and/or professional knowledge ('old' knowledge), not in order to add to it, but to pursue 'performativity' – that is, to apply it to new situations, to use it and replace it in the process of innovation. They will be encouraged to understand the rules or established procedures of a discipline, profession or trade, not in order to follow them, but in order to see how they might be improved.



**OUR SCHOOLS ARE ORGANIZED TO MEET THE NEEDS OF THE INDUSTRIAL AGE. THEY ARE BASED ON TWO KEY IDEAS: THE IMPORTANCE OF TRADITIONAL DISCIPLINARY KNOWLEDGE AND THE NECESSITY TO SORT PEOPLE ACCORDING TO THEIR LIKELY EMPLOYMENT DESTINATION.**

So, to summarize so far, the Knowledge Society view of knowledge, learning, and minds is as follows:

**Knowledge**

- is a *process*, not a thing (or stuff);
- *does* things – more like *energy* than matter;
- happens in *teams*, not in individual experts;
- can't be divided up into *disciplines*;
- develops on an *as-and-when-needed* basis;
- develops *to be replaced*, not to be stored away.

**Learning**

- involves *generating new knowledge*, not storing old knowledge;
- is primarily a *group*, not an individual, activity;
- happens in real world, problem-based contexts;
- should be *just-in-time*, not just-in-case;
- needs to be *à la carte*, not en bloc.<sup>3</sup>

**Minds**

- are not containers, filing cabinets, or databases – places to store knowledge just in case – but *resources* that can be *connected* to other resources for the *purpose of generating new knowledge*.

This view differs in major ways from the ideas that underpin the current education system. The next section takes a look at these ideas

**OUR CURRENT EDUCATION SYSTEM: WHERE DID IT COME FROM?**

Our schools are organized to meet the needs of the Industrial Age. They are based on two key ideas: the importance of traditional disciplinary knowledge; and the need to sort people according to their likely employment destinations.

Why are these ideas important and where did they come from? The first idea can be traced back to the work of the Ancient Greek philosophers, in particular Plato and Socrates. Plato wrote a great deal about education. He set out a model for education that, he thought, would produce a stable, secure, just society. This system, while open to all, was specifically designed to educate the 'philosopher kings'



– or future rulers – of his ideal state. The curriculum of this system was explicitly *knowledge*-centred. Plato thought that exposing individuals to *particular* kinds of knowledge – the best and greatest knowledge that human minds have been able to produce – would allow their intellectual development to mirror the development of the best minds of the past. His model is the foundation of the traditional liberal or academic curriculum in Western education systems.

In most of the two and a half thousand years since Plato, however, only a very small proportion of the population received any formal education. Mass education is a relatively recent phenomenon. It is only in the last 150 years or so that public, state-funded, compulsory schooling for *everyone* has been the norm. Two imperatives drove this development: the political philosophy of *egalitarianism* (the idea that everyone should have an equal chance to succeed in life) and the *economic* need for people with the skills and dispositions necessary for work in the new Industrial Age enterprises.

While both of these ideas were probably necessary to the development of mass education, they conflict in important ways. This conflict was resolved through the use of a strategy that cleverly combines Plato's traditional academic curriculum with one of the Industrial Age's iconic concepts: the production line.

Industrial Age education systems are organized, like production lines, to mass-produce standardized products. Students are 'processed' through the system in 'batches' (known as year groups or classes). A pre-set curriculum is delivered to them in a pre-set order by people who specialize in different stages of the production. The tasks to be completed are broken down into bite-sized pieces. Students are guided through each stage in a way that, while it allows them to gain certain specific skills ('the basics'), actively prevents them from seeing and understanding the big picture of what they are learning. As they pass through the system, students are subjected to various 'quality control' devices, designed to assess whether or not they measure up to the system's standards. This production line approach is a very efficient way of dealing with large volumes of product. It is also a reasonably efficient way of ensuring that most of the product meets certain basic stan-





dards, while at the same time allowing the system to sort out which of its products have what it takes to go on for further processing. The main instrument of quality control, at high school level, is the traditional academic curriculum.

This one-size-fits-all approach is a pragmatic way of resolving the tension between the need to meet the human resource needs of an industrialized society and the need to produce equal opportunity. However, as educational sociologists have long argued, it doesn't actually produce equal opportunity. This system produces large gaps between the highest achieving students and the lowest achieving students. Large numbers of students do not measure up to the system's standards. These students are rejected and allowed to drop off the production line. This 'wastage' is an integral feature of one-size-fits-all systems. This system works in the Industrial Age context because Industrial Age societies have two main tiers – managers/professionals and workers – and Industrial Age education systems are required to sort people for these tiers. However, this model is not an appropriate foundation for a Knowledge Society education system.

#### WHAT SHOULD WE DO DIFFERENTLY THEN?

The first thing we need to do is to acknowledge that we're not in the Industrial Age any more. Then we need to move beyond Industrial Age ways of thinking about education. This will be difficult – because we have had these ideas so long, and because they structure our thinking in ways we are not even aware of. One way of thinking 'outside the square' of current ideas is to deconstruct – or look underneath – these ideas to see what drives them.

Industrial Age education systems are informed by a set of mental models of knowledge, mind, and learning. At their most basic, these models are as follows:

- Knowledge is stuff;
- Knowing certain kinds of stuff is important (because it develops the mind in important ways);
- Knowledge exists before learners learn it;
- The curriculum is made up of different types of knowledge. Some types are harder than others. These harder forms of knowledge can be used to work out who will benefit from higher education and who won't;

- Learning happens in individuals;
- Learning involves understanding stuff, storing it away somewhere, and reproducing it later. Some people are better at this than others;
- Minds are individual processing and storage centres.

These mental models are derived from – and designed to serve – the two Industrial Age ideas outlined earlier: the importance of traditional disciplinary knowledge and the need to sort people. They are very different from the ideas about knowledge, mind and learning we see appearing in the Knowledge Society literature. What does this mean? Do we need to throw out the old ideas? If so, what should we replace them with?

My view is that if we want to make our schools responsive to events in the world outside education while also maintaining a commitment to the collective good, we do need to throw out the sorting function of education, but keep the emphasis on disciplinary knowledge. However – and this is important – the reasons for emphasising it are now different.

In the Knowledge Age *everyone* needs the kind of knowledge and skills traditionally only provided in post-secondary education. We need new ways of organizing education based, not on the one-size-fits-all, production-line model, but on new models that allow flexibility, multiplicity, and new ideas about ability. Secondly, we need a new way of thinking about what we teach and why we teach it, a new way of thinking about the traditional disciplines that underpin the school curriculum.

**I THINK IT DOES MATTER WHAT STUDENTS ARE LEARNING, AND THAT THE OLD DISCIPLINES ARE STILL IMPORTANT. HOWEVER THE REASONS THEY ARE IMPORTANT ARE NOW VERY DIFFERENT FROM THE REASONS THEY WERE IMPORTANT IN THE PAST.**

Much of the future-focused educational literature emphasizes *learning* – learning skills, life-long learning, learning how to learn, and so on. Underlying this is the idea that it doesn't really matter *what* students are learning, as long as they are learning something, and the old disciplines no longer matter. I think it does matter what students are learning, and that the old disciplines are still important. However the reasons they are important are now very different from the reasons they were important in the past. In the traditional academic curriculum, the disciplines are important as ends in themselves. Knowing about – and being disciplined into – the traditional disciplines developed the mind in particular ways. That is the goal. The extent to which this goal is achieved in any one individual is measured by the assessment system (and students and teachers are judged by the results). In a Knowledge Society education system, I think we need to re-think this. Following Lyotard, I think we need to see the traditional disciplines not as ends in themselves, but as resources for pursuing 'performativity'.<sup>4</sup> Performativity is the ability to take elements from one knowledge system and put them together with elements from another, different knowledge system, re-arranging them to do something new and different. It involves doing things with knowledge: going beyond the mastery of existing knowledge to the generation of new knowledge. Doing this obviously requires one to know quite a lot about the knowledge systems one is using. It requires one to know about these systems, not at the level of their detailed facts, but at the systems or meta-level – how different knowledge systems work; what assumptions underpin them; how experts in those systems generate and justify new knowledge; how one system is different from (and similar to) other systems – that is, how meaning is made in different knowledge systems.<sup>5</sup>

To summarize then, developing a Knowledge Society education system involves approaches that can:

- Develop *new knowledge* – through real research, not teacher-initiated projects. Knowledge Age schools need to be *producers* – not consumers – of knowledge;
- Develop *multi-modal literacy* (understanding and using non-print modes of making meaning – images, sounds, gestures/body language and so on);
- Foreground the *relationships, connections* and *interactions* between different knowledge systems and different modes of representation;
- Emphasize *difference* and *diversity*, not sameness and/or one-size-fits-all approaches;
- Foreground *process* not product;
- Help learners build a sense of themselves as *active knowledge-builders* – as having a unique niche, role and/or point of difference/contribution to make.

This might seem like a bit of a tall order. But the educational ideas and approaches needed to put all this into practice are already out there in the educational research literature and, in many cases, have been there for many years.<sup>6</sup> However, when these ideas are imported into education systems that are built on the Industrial Age mental models outlined above, they are often diluted and/or reduced to meaningless slogans. Before we start using these ideas, we need to change the mental models that underpin our thinking about education. However, before we do this, we



need to have a debate about what we think our schools are for in this new age, about what we think students need and why, and about how we will know when we have been successful in providing those things. This article's aim has been to make a contribution to that debate. |

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#### Notes

- 1 M. Castells, *The Rise of the Network Society*, 2<sup>nd</sup> ed. (Oxford: Blackwell, 2000).
- 2 J.-F. Lyotard, *The Postmodern Condition: A Report on Knowledge* (Manchester: Manchester University Press, 1984).
- 3 These are Lyotard's terms.
- 4 This is Lyotard's term.
- 5 For an elaboration of this rather complex argument see Chapter 6 of my book: *Catching the Knowledge Wave?: The Knowledge Society and the Future of Education* (Wellington NZ: NZCER Press, 2005).
- 6 See, for example, the ideas discussed in C. Bereiter, *Education and Mind in the Knowledge Age* (Mahwah NJ: Lawrence Erlbaum, 2002); C. Bigum, "The Knowledge-producing School: Moving Away from the Work of Finding Educational Problems for which Computers are Solutions," *Computers in New Zealand Schools* 15, no. 2 (2003): 22-26; G. Kress, *Literacy in the New Media Age* (London: Routledge, 2003); C. Lankshear and M. Knobel, *New Literacy: Changing Knowledge and Classroom Learning* (Buckingham, UK: Open University Press, 2003).