



Rising to a Knowledge Management Challenge on a National Scale

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INTRODUCTION

At the first Knowledge Wave Conference, leaders from politics, business and the community committed to making New Zealand a ‘knowledge economy’. This commitment emanates from a firm belief in the link between knowledge and the well-being of society, including empowerment of individuals and the community through increased levels of skill and intellectual curiosity, and economic growth.

The rationale behind this link has been well articulated. This background note accepts the link as axiomatic, and does not explore it further. Rather, it focuses on the ‘how’; it challenges participants in the Leadership Forum to explore further the mechanics of successfully building a knowledge economy, and suggests a structure for doing so.

The underlying premise advanced here is that creation of a knowledge economy presents a **knowledge management** challenge, to which we must rise on a national scale. If, as a nation, we are to progress quickly down this path to become a knowledge economy, we need to maximise the creation of value from knowledge in all parts of our society: academic and educational institutions, commercial firms, government agencies not-for-profits, and the community at large. And that requires us to manage our knowledge systematically and efficiently.

This note examines knowledge management on three dimensions

- Cultivation of knowledge
- Dissemination of knowledge
- Use of knowledge

Each dimension requires a specific set of actions from society. If the actions are effective, the dimensions interact with each other to create a virtuous cycle, through which the benefits increase exponentially over time.

This note will first briefly define ‘knowledge’, highlighting an important distinction in the form that knowledge takes. It will then explore each of the three dimensions elements of knowledge management at a high level, and challenge conference participants to consider what our aspirations should be for each. Finally, it will examine the nature of the virtuous cycle.

KNOWLEDGE

There is much theoretical debate about the precise meaning of knowledge (for example, how it differs from applied knowledge or understanding). For present purposes, a simple dictionary definition will suffice: knowledge is awareness or familiarity gained by experience.

Within this broad definition, the most important nuance for present purposes is that knowledge may be either codified or tacit. Codified knowledge can be distributed without dependence upon the author. In other words, it has been written down or otherwise recorded. Examples include books, academic papers, patents and multi-media knowledge objects. Tacit knowledge is still inside the head of a human being, and its distribution is entirely dependent upon that person. An example is the accumulated wisdom of a school teacher with 30 years of experience, or the executive director of a not-for-profit foundation who has spent 5 years in Europe working with other foundations.

Successful knowledge management recognises that both categories of knowledge are important, and that they present very different knowledge management challenges. Some of the implications of the differences are drawn out below.

CULTIVATION OF KNOWLEDGE

The starting point for knowledge management must be the cultivation of knowledge. At a societal level, two factors have the greatest influence on cultivation: education and the research and development environment.

An effective education system cultivates talented individuals, and helps create an environment in which these individuals have the opportunity and the aspiration to develop their own intellectual capital to its potential over time, and develop new forms of knowledge. The payback to society is often longer term, but systemic and fundamental. A society is in a position to cultivate knowledge effectively through its education system if three conditions are met

- High-quality educational institutions exist at all levels, that will assist an individual to reach the potential of his or her intellectual capability
- Individuals from all socio-economic levels of society have access to those institutions
- A high proportion of individuals wish to take advantage of that access - ie continue their education beyond the minimum school leaving age into tertiary and post-graduate education.

Naturally, in order to assess whether these conditions are met, a society needs to take a proactive role in understanding and monitoring the performance of its education system.

Research and development is a more direct means of cultivating knowledge. The resulting knowledge often has a relatively short payback time in terms of productivity - new patents, academic papers and clinical medical trials, for example. In September 2002, the Knowledge Wave Trust released a report that recommended treating R&D as a national priority, by urgently addressing areas in which New Zealand's R&D system falls short of best practice. The report highlighted the fact that New Zealand's R&D expenditure was among the lowest in the OECD. Given the strong correlation between R&D expenditure and national wealth, this has serious implications for New Zealand's ability to reach GDP growth targets.

The report suggested that treatment of R&D as a national priority required four specific steps

- Setting up an Innovation Leadership Committee
- Consolidating the research sector based on performance
- Improving the global connectedness of New Zealand's R&D community
- Increasing R&D funding to match international benchmarks.

DISSEMINATION OF KNOWLEDGE

In order to drive growth, knowledge needs to reach the audiences in whose hands it will be productive.

Dissemination of knowledge must start with people. A society needs an environment in which individuals who develop knowledge want to share it. In addition, other highly skilled individuals need to be willing to act as knowledge intermediaries (teachers and knowledge workers) developing and delivering effective programs for disseminating knowledge. In order to create this environment, a society needs to

- Champion the dissemination of knowledge as a core value of society.
- Ensure that knowledge intermediary roles are attractive to highly skilled individuals, and that these individuals receive extensive training. Research shows that a teacher and her or his teaching are a highly significant source of achievement variance in schools (see Hattie, New Zealand Education Snapshot, prepared for this conference).
- Retain locally cultivated knowledge, ie ensure that the most talented individuals want to stay and contribute, or return after time spent abroad.
- Import the best global knowledge, through active global networks (including with ex-pats), conferences, visiting professorships, creation of employment opportunities that are attractive to international calibre talent etc.

Technology is a key enabler to support people. Digital technology makes it markedly easier for us to interact with each other, and therefore to disseminate and access knowledge with each other. The penetration and sophistication of three aspects of technology are particularly important for knowledge management in society

- High bandwidth -This allows radical improvements in the speed with which we can access knowledge. Moreover, it enables us to codify the knowledge in richer multi-media formats, through digital encoding and audio and video streaming technology. Real-time, inexpensive electronic, 'face-to-face' interactions will be a reality in the not-too-distant future.
- Search technology -As this technology becomes more sophisticated, we become more efficient at finding information that is relevant to us, even as the volume of available information increases.
- Access points -Increasingly, we do not need to be desk-bound to access this content. Improved access to data from any location at any time is becoming increasingly possible from an ever-wider variety of end-use access devices, both wired and wireless.

USE OF KNOWLEDGE

The previous section examined the supply side of knowledge: the importance of individuals wanting to disseminate knowledge and their ability to do so. The third dimension of knowledge management is stimulating demand.

In order for a knowledge economy to thrive, individuals must recognise the value of using knowledge, and be drawn to do so. Stimulation of demand requires building individuals' skill and will. A high degree of complementarity exists between the two (skill can beget will and vice-versa), but they need to be addressed separately.

Development of skill in accessing and using knowledge requires an education system that provides all cross-sections of society with the opportunity to learn how to access and apply knowledge. The necessary criteria are a specific application of those identified above for cultivation of knowledge: the institutions themselves must be of a high standard, individuals must have access to them and individuals must want to avail themselves of that access.

However, in this instance, the target must be extended beyond schools and universities, to adult education, on-the-job training and capability building services for not-for-profit organisations. The centrality of technology to knowledge access and use intensifies the rate of change. So it is impractical to suggest that even if an individual does gain the necessary skills to access knowledge while at a primary, secondary or tertiary institution, those skills will remain sufficiently current years later. Moreover, the advent of digitisation occurred long after many of our current workforce left those institutions, so they never had the knowledge in the first place.

Building will is the second part of the demand equation. Even when access to skill-building opportunities is available, the requisite skills cannot be forced on individuals. This is where a society's values are paramount. An individual's propensity to avail himself /herself of knowledge will be largely driven by the importance that he/she places on accessing knowledge. And that in turn is driven by the values prevalent in the environment through which he/she is influenced. This includes family, the workplace (a commercial firm, academic institution, government agency or not-for-profit organisation) and the broader community. In a society that successfully manages knowledge, each sphere of influence reinforces the importance of using knowledge. In a family this may be allocating discretionary spending to buying educational software or prioritising time to ensure that homework is supervised and completed thoroughly. In the workplace, this may be evaluating knowledge usage or attendance at training sessions as part of an individual's performance review. In the community, this may be championing our most successful students.

CREATING THE VIRTUOUS CYCLE

The previous sections suggest that in order to build a knowledge economy, a society needs to be effective at each dimension of the knowledge management process: cultivating, disseminating and using knowledge.

In addition to the benefits from each individual dimension, the three dimensions together create a virtuous cycle of knowledge, which leads to exponential benefits as the cycle progresses.

This arises from two factors. First, the dynamics of supply and demand of knowledge mean that more supply (cultivation and dissemination) creates more demand (usage), which in turn creates more resources for supply (cultivation), and so on.

Second, the knowledge development cycle is not linear; knowledge does not remain stagnant once cultivated. When knowledge is disseminated and used, it is often improved. A teacher who imparts knowledge adds his or her experience or interpretation; a student who uses the knowledge may conduct additional research. The three dimensions are to some extent blended. The student improves the knowledge, and the teacher in turn passes on the improved knowledge to the next student or the next class. And so the cycle continues.

The cycle is applicable in all different parts of society: primary and secondary educational institutions, academic institutions, commercial firms, government agencies, not-for-profit organisations and the community more broadly all have the potential to develop and benefit from the cycle, and indeed to work together to build cycles that exist beyond their individual frame of reference. For example

- The Robin Hood Foundation in New York developed a new approach to building the strategic planning capabilities of its grant recipients. By using this approach with a selected number of grant recipients each year, it not only proliferated the approach; it improved the approach each year using grant recipients' feedback. So each year the approach is an improved version of that used the previous year.
- Ford instituted a program whereby it systematically debriefed 1,200 employees in its car parts division, and codified their tacit knowledge. The dissemination and usage of that knowledge, and its improvement during that process, led to quality improvements of 25 percent per year over a 4-year period, compared with 10 percent for two comparable factories where the program was not conducted.

THOUGHT STARTER QUESTIONS

What are the right metrics for measuring our effectiveness in knowledge management ? For example

- Percent of GDP spent on R&D or education?
- Number of new patents registered?
- Class sizes?
- Percent of students from Decile 1–3 going on to tertiary education?
- Percent of students performing above PISA reading literacy Level 1?
- Size of the relative educational disadvantage?
- Percent of households with access to broadband?

How well do we currently understand and monitor the performance of our education system, and how effectively does it cultivate knowledge by helping talented individuals to reach their intellectual potential?

What is the most effective way to measure stakeholder satisfaction with our education system?

What specific steps can we take to champion the dissemination of knowledge as a core value of society?

How can we ensure that highly talented people continue to be attracted to teaching and other knowledge intermediary roles?

How good are we at accessing the best global knowledge?

Given the increasing cultural diversity in New Zealand, how should we think about a common body of knowledge, with common standards for usage?

How can we touch key influencers, in particular the family, to ensure that access and use of knowledge is considered a core value?

Where in New Zealand do we have the best opportunity to build the virtuous cycle of knowledge?

What are the first catalytic actions that we can take to start the virtuous cycle in those areas?