

“2020 VISION” and its Implication for Engineering Management Education

Steven Goh

USQ, Toowoomba, Australia
gohs@usq.edu.au

***Abstract:** The release of the “2020 Vision report: The Manager of the 21st Century” in 2006 by Innovation & Business Skills Australia has produce some immediate effects on traditional Australian managerial development and training, particularly at tertiary postgraduate levels such as the Master of Business Administration. The paper aims to briefly investigate the implication of the report for engineering management education at the postgraduate levels. The paper highlights the Vision 2020 Report’s findings, and develops a case for further discussion. The paper provides suggestions on the report’s implications on engineering management education, supported by case studies and anecdotal evidences as an initial investigation requiring further quantitative work. Finally, the paper provides recommendations on how universities can react and respond to the needs of industry and the engineering profession, and exploiting new opportunities in engineering management education.*

Introduction

The release of the “2020 Vision report: The Manager of the 21st Century” (2020 Vision Report) in 2006 by Innovation & Business Skills Australia (IBSA) has seen some immediate effects on traditional managerial development and training, particularly at postgraduate levels. This paper aims to briefly investigate the implication of the report for engineering management education at tertiary postgraduate levels such as Master of Business Administration (MBA). This paper will highlight the Vision 2020 Report’s findings, and develop a case for further discussion. The paper will suggest the report’s implications on engineering management education, supported by case studies and anecdotal evidences as an initial investigation requiring further quantitative work.

The report compiled by Boston Consulting Group (BCG) attempts to identify the attributes and skills needed for future managers to be properly equipped to manage effectively. The 2020 Vision report essentially is a review of current development in managerial training and the change in trends of workplace’s demographics, and was hinged on the “Karpin Report” released in 1995. The Karpin report and the current environment will be briefly discussed to provide some background on the 2020 Vision Report.

The Karpin Report

The release of “Enterprising Nation - Report of the Industry Task Force on Leadership and Management Skills” (the Karpin Report) by the Federal Government in 1995 had a significant impact on management development practice in Australia. The Karpin Report was instrumental in raising the general level of business and community awareness of the relationship between management capabilities at all levels of the organisation and company performance. It highlighted the critical importance of education, training and ongoing professional development to ensure managers had the knowledge and skills they needed to perform effectively in the workplace. Emphasis was placed on the important non-technical domains of management: leading and managing people, communicating, negotiating, resolving conflict, fostering creativity and innovation, managing change.

Twelve years on, many public and private sector organisations have embraced the underpinning philosophy and directional recommendations of the Karpin Report. Consistent with often heard

statements by organisations about the intrinsic value of employees as a source of business advantage, there is anecdotal evidence of greatly increased management development activity in Australia since the Report's release. This was reinforced by a study done by the Australian Institute of Management in 2003.

It is in this context, the Australian Institute of Management commissioned the "Management Development Practice" study into the Karpin Report in 2003. The objective of the research was to establish an empirical basis for understanding what is actually being done in organisations in Australia to develop the country's management talent and improve business performance.

The findings of the study were:

- The report suggests management development in Australia has come a long way since the release of the Karpin Report.
- Management development is now seen as directly linked to enhanced organisational performance.
- Human resource personnel and organisational issues are becoming significant contributors in the formation of business strategies.
- The key drivers of commitment to management development in the next 3 years (from 2002) are anticipated to be skills and competencies required to achieve business objectives, business growth, financial results, and the need to attract and retain talented employees.
- The outcomes of management development activities are, and will continue to be measured against hard criteria.
- The scope of management development activity is broad and there is an increasing recognition of the important role played by informal managerial learning in the development of capable managers.
- There has been a widespread increase in the use of non-classroom approaches such as coaching and mentoring in both formal and informal management development activities.

The enduring theme identified by Karpin included the need to develop an enterprise culture through education and training, the upgrading of vocational education and training to improve management skills, the value of harnessing diversity in the workplace, and the need for world-class management education. Karpin's vision of management and leadership practice by 2010 emphasised a commitment to personal and organisational lifelong learning. Managers would possess not only technical skills but also soft skills, including leading and managing people, communication, negotiation and problem solving, fostering creativity and innovation in the workplace, and managing change. With this environmental context, the Vision 2020 Report was compiled in 2006.

Vision 2020: The Manager of the 21st Century

The Australian senior executives and managers of 2020 will need very different attributes and skills to current business leaders in 2006, according to the "Vision 2020 Report". The report, entitled "2020 Vision, The Manager of the 21st Century", was released by IBSA, the Federal Government-funded Industry Skills Council that sets the training agenda in innovation industries such as information and communication technology, financial services and business services. The Chairman of IBSA, Mr John Vines, who was the deputy chairman of the Karpin Taskforce, and is also chairman of Chifley Business School, said the new report built on a study by BCG in the early 1990s for the Karpin Committee.

The report identifies major future changes in the business environment up to 2020:

- There will be three very different generations in the workplace for the first time. The needs and aspirations of Generation X and Generation Y are likely to prove very different from those of the baby boomers, which have dominated the workplace for the last 20 years.
- The services economy is likely to globalise (possibly following the path of manufacturing during the 1980s), creating a major change task and a much more complex management environment.
- A likely long term structural labour shortage will lead to much more flexible working environments, more organised to suit employee needs and desires. Flexibility will become the key to attracting and retaining high calibre staff.

- The obsession with short-term shareholder value, which dominated the last decade, will be replaced by a much broader perspective on the obligations of a company to a wider range of stakeholders.

These changes are likely to have major impact on the manager's skills will require:

- Managers will need to rethink their role in the years to 2020. They will be asked to balance a wider range of interests, under greater internal and external scrutiny. Managers will still be required to achieve good returns for shareholders, but the results they achieve will also be assessed on the basis of how well they have met a wider range of shareholder needs.
- The age of the generalist manager is coming to an end and there is likely to be a return to leadership by those with deep knowledge of their industry. Companies will increasingly seek managers who really "know their stuff".
- Managers will need to become more team focussed. The cult of the CEO, a world wide phenomenon of the last decade, is likely to decline, with greater focus on the team rather than the individual.
- Managers will face greater personal challenges about the balance in their own lives. Dramatic increases in remuneration will give them greater choices than their predecessors. They will need to become much better at managing their personal wealth, and will face more tensions and trade-offs between work life and personal life. Managers will need to spend more time thinking about their personal choices than any previous generation.

Case Studies and Anecdotal Evidences

Innovation & Business Skills Australia

From the IBSA website, it is noted that the Vision 2020 Report will again require educators to rethink the current status of management education and its delivery ("Australian executives of 2020 will need very different skills", no year). The following are quotes by John Vines indicating the purpose of the report: "The earlier work provided a snapshot of the 2010 senior manager and strongly influenced the Karpin Report. Its findings were adopted by many organisations as a blueprint for the development of their future leaders and managers and have retained their currency. The 2010 senior manager profiled in that initial research is widely accepted as reflecting contemporary best practice. Our goal in commissioning the new report was to ensure that organisations have a similarly useful model and government funded resources on which to base their leadership and management development strategies over coming years."

Mr Vines said the report also noted the past decade had produced little progress in the status of women in the executive workplace. "Over the next decade or so, successful managers will take on the personal challenge of bringing talented women into management ranks and keeping them there. Managers and companies will be increasingly measured on their success in retaining and promoting women."

IBSA's CEO, Sharon Coates, said the new report would have a strong influence on the agenda for training of tomorrow's managers, in the same way as its predecessor in 1995: "The 1995 report led to the implementation of widespread and effective frontline management training within enterprises. IBSA's training materials for business (Frontline Management) continue to be in high demand from companies and training providers. The new report creates a new and significant agenda for educators and those charged with developing Australia's future workforce talent. New skills and new approaches will be required that integrate technical and generic competence with the ability to think laterally and solve problems creatively. More capable people will be able to achieve better business through innovation."

Murdoch Business School

The new dean of Murdoch Business School (Murdoch University), Dr Michael Schaper (former Australian Capital Territory small business commissioner, and former Head of business school at Bond University), wants to engage local businesses to ensure the school is producing the graduates needed (Lindhe, 2007, July 12-18, p14). He was quoted, "We need to ensure that the education

provided by university business schools can provide students with both the skills needed for today and for the future.”

Faculty of Engineering & Surveying, USQ

The new dean of Engineering & Surveying, Prof Frank Bullen, is determined to capitalise on the university’s flexibility and increase the faculty research outcomes by engaging and building better relationship with industries (Ada, 2007, Winter Edition, p6). He was quoted, “I am discovering that there is huge potential for engineering education to be directed into business and industry around Australia and internationally. I want to develop better relationships with industry and also expand our student research base. The most important thing however is that we build on our strength of flexible delivery.”

Toyota

James Womack, founder of the Lean Enterprise Institute in Boston, says one consequences of lean thinking is that managers take more direct responsibility (James, 2007, March 22-28, pp54-55). Womack says Toyota’s 20 or so chief engineers are responsible for the profitability, market share, and customer value of the products they oversee. He was quoted, “Take Corolla, the most generic car. How many direct reports does the chief engineer of Corolla have? The answer is zero. He does have a secretary. He is responsible. That is the key word in the lean-thinking management system. Authority is the key word in the mass product management system. This is a world in which managers are responsible for the development process, the production process, the purchasing process – in many cases without any authority. What that means is that your chief engineer has to be a leader. Which is to say he or she has to be smart, needs to be right, needs to be fact-driven, needs to be respected, needs to be persuasive.”

Fletcher Building

Jonathan Ling, Managing Director and CEO of Fletcher Building in New Zealand (a mechanical engineer graduate from University of Melbourne), believes it is important for companies to customise their management training programs (D’Angelo Fisher, 2007, June 21-27, p64). He was quoted, “I’ve always had a very strong focus on leadership development. I have customised programs since the 1990s. I’ve never been a particular supporter of traditional management programs, other than for the development of specific functional skills.

Customised leadership programs produce totally different outcomes. They focus on people skills and self-awareness – skills such as giving and receiving feedbacks, motivating people, creating high performance culture, skilful discussion for achieving the best outcomes.

MBA’s and graduate diplomas are for building competence in functional skills. They produce totally different outcomes. I see that as an individual need. If we have an individual who feels an MBA or graduate diploma would help them, we would still do it.”

Jo McCabe, Group HR Manager of Laminex Group (part of Fletcher Building), introduced a customised leadership program for high potential managers in 2005, called “Transformational Leadership Program” provides key employees with opportunities to develop their leadership skills in-house (D’Angelo Fisher, 2007, June 14-20, pp42-43). The year-long program is conducted at Melbourne Business School’s Mt Eliza campus, and is recognised, and can be articulated into higher degrees. Strands of the program include strategic planning, managing continuous improvement, managing innovation and creativity, performance management and measurement, and handling difficult behaviour. McCabe says a benefit of the program is that it ensures a standardised approach to developing leadership skills. It’s also important that the managers are acquiring skills that are immediately applicable in the workplace.

IBM

Jay Hannon, University Relations and Development Manager of IBM Australia & NZ, liaise with university deans and academics to advise them on how the curriculum can be updated according to industry’s needs (Andrews, 2007, p73). He says that the troubles with graduates who apply to join

IBM are not suitable because there is a gap between their training at university and what the company needs. To deal with this, he started a program that offers course materials and guest lecturers to universities for a one-semester course called “science services” which makes the students equally aware of the needs of IT and the needs of business. The University of Sydney ran the course for the first time during the Semester 1, 2007. About 60 students enrolled are studying in IT, business, engineering, law, and earth science. Deakin University will be offering this course in Semester 2, 2007.

Coffey International

Roger Olds, Managing Director of listed engineering company Coffey International, says Coffey has improved its retention of engineering staff by offering more training to develop their leadership skills (Andrews, 2006 Oct 19-25, pp37-40). Olds says Coffey has attracted graduates by running specialist courses in several universities, such as the University of Melbourne and the Curtin University of Technology. The early exposure to students has helped the company recruit more after graduation.

Bendigo Bank and Swinburne Industry Solutions

Swinburne University in consultation with Bendigo Bank identified improvement potential and then customised a tailored program that focused on management and leadership skills at both the technical and interpersonal levels. (“Case Study – Bendigo Bank”, no year). The program was an integrated set of face-to-face workshops with workplace-based projects, each with a clear bottom line focus. Implemented over 10 months, the program utilised an application of Swinburne’s “Action Learning” model and provided participants with theoretical learning by using case studies and teamwork. Bendigo Bank also noted that the program may improve employee’s satisfaction.

New Dimension in Management Education at Universities

In a global economy powered by knowledge, innovation, and technology, the attributes of management and leadership (Tandukar, 2006, November 2-8, pp36-38) have taken on new dimension, and thus have impacted on management education. In 2007, flexibility, diversity and individuality define productive workplaces and business processes, while a deeply entrenched skill shortage is the common thread that runs through every industry. For Australian organisation, these challenges are placing a renewed focus on developing their leaders and high-potential talents. Business is again looking to business schools, but this time, business is setting and driving the direction.

There is a growing emphasis on customised executive education to meet enterprise specific needs, and is a critical challenge for business schools (De Bruyn, 2007, June 14-20, pp44-45 & D’Angelo Fisher, 2007, June 14-20, pp38-41). According to Simone Mears, a director of Profusion Group, an executive search firm, the generalist MBA is probably out-of-date. She says, “If you are going to do a MBA, it would be better to do a specialist MBA where the topics are tailored to support your experience and the career direction you want to go in. It’s not a key differentiator anymore.” She also says, “I think there is a great opportunity for business schools to let the past go and see where they can work closer with industry to make programs more relevant.” The CEO of CargoWise, Richard White says when he completed his specialist MBA course, a Master of Business in Information Technology, “I think the idea that learning can be decoupled from experience is flawed. A specialist MBA is a business-focused qualification and you need some way of translating that knowledge into real-world outcomes, by developing a connection between real problems and academic solutions.” Dr Richard Speed, the associate dean of Melbourne Business School says that while the MBA market in Australia is “extraordinarily heterogeneous”, providers need to keep evolving with the needs of students, and that “flexibility” in course delivery is highly valued and is supported by a dramatic increase in customised programs and EMBA.

The Corporate Universities

Another emphasis of customised management education is corporate ownership (D’Angelo Fisher, 2007, June 14-20, pp42-43). When ANZ bank established a partnership with Deakin University 1993, Deakin provided leadership programs for ANZ staff. But ANZ has since developed and managed its leadership programs internally, while maintaining relationships with a range of external providers,

including Deakin. ANZ has used Columbia University in the US and the London Business School to provide leadership programs for senior executives. In 2006, ANZ had 51,000 face-to-face courses completed as well as 250,000 online courses. According to the Head of Learning, Eric Zimmerman, the bank spent \$50 million on learning and development in 2006. It will also established a dedicated “leadership centre” in Melbourne which will be the hub of its international leadership program.

The corporate university model, popular in Europe and US is still the exception in Australia. There are an estimated 2000 corporate universities in the US, including Charles Schwab University and Oracle University. In Australia, corporate university has become a generic word for structured in-house leadership development program, eg. Coles Institute, established in 2002 in partnership with DeakinPrime, has won best practice award for its “high impact” programs targeted at managers, high potentials and senior executive leadership.

Australian engineering group GHD established the GHD Business School in 2005 to deliver technical, personal development and leadership skills training, providing employees with clearly defined career pathways (D’Angelo Fisher, 2007, June 14-20, pp42-43). The government accredited registered training organisation, has been developed in collaboration with Chifley Business School, which has worked with GHD to design a range of customised programs. The GHD programs include business fundamentals, client relationship management, proposal writing and minimising contractual disputes. Course content is also provided by Melbourne Business School’s Mt Eliza Centre for Executive Education. GHD’s CEO, Des Whybird says, “The school enables us to tailor training to the needs of our people and our business, and it allows us to leverage the experience and expertise of our senior people.” From 2005 to 2007, the school has delivered 800 programs to more than 8000 employees, mostly in Australia but also in the 15 countries GHD operates.

Consulting engineers, Sinclair Knight Merz (SKM) has established a “Future Leaders Program” within the company (Booth, 2007, July, p75). The program is based on the assumption that leadership presents a pattern of behaviours, habits and interactions that can be learned. The program is presented in a series of modules, conducted on a fortnightly basis. Topics include: Commencing the Leadership Journey, Team Development, Coaching, Change and Transition, Managing Tasks, Strategic Leadership and Continuing the Leadership Journey. The program emphasises the ability for participants to experiment, practice, reflect and hone skills around their everyday activities. More than 200 staff have completed or participating in the program in Australia, Chile and New Zealand.

Engineers Australia (EA) has highlighted the importance of leadership and management development in engineers by establishing the Centre for Engineering Leadership and Management (CELM) in 2002 with the aim to develop and promote business leadership and management for engineers in commercial and public companies, in response to the demand of the complex and changing environment engineers work in. (“Centre for Engineering Leadership and Management”, no year). CELM has developed a competency framework for EA members (EngExec) for leadership recognition, and established nationally accredited qualifications via their education service arm, Engineering Education Australia (EEA), such as the Diploma of Project Management in partnership with Deakin University. EEA has been offering short courses such as 2 days workshops in project management, contract management, managing self and others. It is also noted that EEA short courses can be adapted to meet specific client’s needs and delivered at the workplace at any location at any suitable dates.

Conclusions

Vision 2020 (built on work done in Karpin Report) has given an insight into the required attributes and skills needed for managers to work effectively in the future. The changing dynamics of management education is impacting on universities, and in particular, Australian business schools and how they create, structure and deliver management related courses. Emphasis is placed on customisation of program, tailored to specific organisation and industry, and strong demand for courses to leverage experience with knowledge that can be applied in the workplace immediately. Hence, partnership and working relationship between universities and industry has grown dramatically in the last few years.

However, it would seem that industry is the current driver of change in course content and delivery methodology. It tends to operate initially via collaborative links with teaching institutions that seems to be leaders in flexibility and customisation. Technical “up-skilling”, leadership development programs, and short-term workshops are seemed to be in high demand, and are used as part of a recruitment and retention strategy by industry. There seemed to be decreasing demand and less emphasis on traditional/generalist management education such as the MBA.

There is an acknowledgement from Vision 2020, that managers of the future have the following attributes and skills:

- Able to manage a global workforce and diversity in the workplace, and high adaptation to various cultures,
- Possess intellectual grunt, highly analytical and decision making skills, and a deep knowledge of the industry or enterprise,
- Possess high emotional intelligence and strong inter-personal and leadership skills,
- Possess a life-long learning and explorative attributes, and
- The ability to balance work/life demand requiring high energy levels and resilience.

The implications of the Vision 2020 on Engineering Management Education at Universities are that it present as an opportunity as well as a threat. The opportunity involves changes in how engineering management courses are structured and delivered. It is noted that the findings of Vision 2020 Report has be under-exploited by engineering faculties in most Australian universities, with the exception of Swinburne and Deakin. The course content may have to be highly innovative, and customised to specific industry, involve both technical “up-skilling” and leadership development, as well the different responsibility levels (Frontline, Middle, Senior) and strands of management and business skills. And it would require greater partnership and collaboration with industry and professional association to achieve this aim. The changes occurring in the business school does not seem to have spilled over to the engineering management sector, but there are sign it may not be long before it does (eg. EA, GHD and SKM examples). The threat may be that industry and the engineering profession would sideline the traditional educators such as universities, with the skilling of their respective employees and members. This scenario is evidenced in the US/Europe with the proliferation of corporate university. It can be noted that it has already impacted on business schools recently in that corporate Australia are withdrawing their leadership development program from universities to in-house operations, particularly in the financial sector.

Recommendations

The engineering faculties within universities can take a proactive approach in liaison with industry and professional associations to actively innovate in the delivery of professional development of engineers and technicians. This may involve high degree of customisation in course content and delivery designed around a particular organisation, industry or professional association. It may be advantageous to universities to combine expertise and resources in collaboration in approaching industry.

Engineering education at the postgraduate level may have to be flexibly structured to cater for a mixture of technical “up-skilling”, leadership development, management studies, and business studies, and differentiate between frontline, middle and senior management levels. This may be articulated into several strands of Postgraduate Diploma and Master Degrees depending on which strand the student focus on. This will provide the prospective student the ability to mix and match, and pick from a suite of courses in different strand that fits their professional profile and organisational needs.

Flexibility in delivery is crucial in maintaining the viability of universities to exist and be relevant to needs of industry, and also to the “time-poor” managers of today. This is evidenced by the favourable increase in short-term courses and workshops in both technical and management topics. However, this may be an opportunity to restructure courses to include an informal learning process into traditional course assessment. Ideally, a course should involve several methods of delivery and assessment, which may include traditional assignments and exams, as well as workshops and panel discussions.

Lastly, it is interesting to note that engineering faculties has been slow to incorporate leadership modules within their courses, as seen in the evolution of business schools and its adoption of the need to provide courses to fill the need of industry (as per Vision 2020 Report on manager's attributes). Since there will be an increase in the need of engineering managers to have deep knowledge of their specific technical skills, but yet possess highly effective interpersonal and leadership skills, and perhaps also possess some broad business skill base, it would be logical for engineering faculties (rather than business faculties) to exploit and respond to this need in skilling future engineering managers. Further quantitative work is required to further investigate the impact of Vision 2020 Report.

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