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Knowledge management in Technical and Vocational Education and Training

Abstract
Globally, we are moving from the industrial age to an era characterised by service industries and information/knowledge economies. In the technical and vocational education and training (TVET) sector (as in many others), there is now an unprecedented amount of information and knowledge about our clients, services and products. Particular aspects of this accumulated information and knowledge are used on a daily basis by people working in the sector, eg, teaching and administrative staff, middle and senior managers, policy and decision makers. Many authors are now advocating the value of managing the knowledge within organisations and industry sectors in a strategic manner. But how well is this done in the TVET sector?

This paper will focus on some of the issues surrounding the implementation of an effective knowledge management system in TVET organisations. It will draw on examples in Australia and overseas and focus discussion on effective ways of using knowledge management tools in TVET organisations. In particular, it will focus on the importance of accumulated knowledge in strategic planning for TVET organisations and the more effective use of and access to critical knowledge in day to day operations.

Introduction
There have been massive changes to the global economy over the past two to three decades, many of which have resulted from an increase in automation and a subsequent decrease in labour intensive industrial jobs. The simultaneous rise of the information age has led to organisations realising the importance of managing one of their most valuable assets – knowledge.

The majority (about 80-90%) of the knowledge management literature focuses on the use of information technology to capture and strategically use knowledge within an organisation. It views knowledge very much as a commodity to be utilised in such a way as to benefit an organisation and knowledge management is simply a way of achieving this objective; see, for example, Skyrme (1997). However, others such as Nonaka (1997) and Sveiby (2000) view knowledge as belonging to the individual who possesses the knowledge. Sveiby discusses the use of leverage in order to facilitate the use of knowledge within the organisation, a situation in which the agency resides with the knowledge manager. Nonaka, however, advocates personal agency. This approach is also echoed by the Community Intelligence Labs in California, whose web site discusses the notion of a knowledge ecology. (For further discussion on this topic see also Symons (2000).)

In a knowledge based industry, such as TVET, there are large amounts of knowledge residing within individuals, teams and organisations as a whole. The knowledge may be in such diverse areas as technical and academic expertise, educational pedagogies, research findings and policy developments, as well as organisational and sectoral practices and procedures.

The challenge to TVET institutes lies in being able to effectively use the sharing and creation of knowledge for the development of individuals and teams within the organisation and to manage the use of that knowledge in the achievement of corporate goals. This is particularly important in a climate of reduced budgets and increasing workloads where working smarter has become a critical issue.

Scope of study
The study focused on what Australian TVET providers were doing in terms of managing individual, team and cumulative corporate knowledge in their organisations. The study was qualitative and exploratory in nature, with only a small number of Australian public TVET providers contacted.
Interviews were conducted with relevant staff from seven providers – two each in Queensland and New South Wales, and one in the Australian Capital Territory, Victoria and Western Australia.

In addition, the Internet was to be used as a source of information about what may be happening in other TVET providers internationally. However, the information sought was often contained in staff only areas of web sites and so was inaccessible to the researcher.

In recognition of the differing concepts of knowledge management and the limitations of confining the research to one approach, the research questions focused on two aspects of knowledge management within TVET providers. The first part of the research focused on the use of knowledge management tools in areas such as workforce planning. The second part focused on opportunities for knowledge sharing and creating between staff. The specific questions are listed below.

Knowledge management tools
- What knowledge management tools are used in your organisation? (e.g., workforce planning)
- How is the information/knowledge gathered that is input?
- In what ways is the knowledge used?
- What challenges do you (as the gatherer/sharer of the resulting knowledge) face?

Staff knowledge sharing opportunities
- What mechanisms (e.g., forums, chat groups, networks) exist for staff to share knowledge? Within teams? Across teams? At similar levels? At different levels?
- How effective are these mechanisms at enabling staff to share their knowledge?
- What happens to the knowledge shared/generated via these opportunities for staff sharing?
- What challenges do you (as the facilitator of such networks) face?

Findings
Knowledge management tools
The use of formal knowledge management tools in Australian TVET institutes appears to be in a relatively embryonic stage. The respondents were often at a stage where knowledge management had been identified as an issue within their organisation (e.g., in strategic plans), but where the resources for implementing such a system were not yet fully developed.

However, many of the respondents were participating in activities such as age, gender, qualification, classification and equity group profiling, as well as looking at patterns such as absenteeism, retirements and staff turn over. Supporting information technology systems commonly included payroll systems, databases and data mining tools.

When asked about ways of gathering the information/knowledge input, most respondents referred to the collection of data through their personnel systems and some discussed staff surveys they had conducted. A few respondents cited the need to perform comprehensive staff skills audits (in the future) and two mentioned attempts at capturing and storing staff knowledge using electronic capture of chat groups.

Typical applications of the knowledge included:
- workforce profiling and strategic workforce planning, eg, what does our workforce currently look like? in what areas do we need to recruit?
- succession planning, eg, how are we going to cope with large numbers of staff retiring in the next five years?
- professional development, eg, where are our skills gaps? what skills do we need to develop in our staff?
- performance management, eg, what specific skills do we require of teams and individuals within those teams?
- accessing specialist expertise, eg, we have a visiting delegation from China; who speaks fluent Mandarin?
• program accreditation / registration, ie, demonstrating the required qualifications base of teaching staff in order to be eligible to deliver training programs

The challenges involved in managing this type of organisational knowledge included:
• establishing information technology systems capable of capturing and reporting the knowledge in a useful format
• gathering the information required – many cited difficulties obtaining detailed data in large TVET institutes, particularly when the institutes were geographically spread
• marketing the concept of knowledge management and the value of gathering and using organisational knowledge in this way
• ensuring that all relevant information and knowledge about the organisation was available to facilitate decision making processes

Staff knowledge sharing opportunities
There has traditionally been a culture of knowledge sharing between staff in Australian TVET providers, with staff seeking opportunities to engage in professional dialogue. TVET institutes are increasingly recognising this as an important aspect of their business and are actively engaging in creating formal opportunities for staff to participate in knowledge sharing and generation. Typical activities include:
• inter-and intra- institute forums for staff at all levels
• networks for particular target groups, eg, teaching staff, administrative staff, middle managers, senior managers
• meetings and planning sessions at the local level, eg, department, faculty and the institute level
• mentoring programs
• action learning groups
• electronic chat groups
• video and teleconferences
• informal networks based on common interests

When discussing the effectiveness of opportunities for knowledge sharing, most respondents commented that staff in TVET institutes tended to prefer face to face discussions. A couple of respondents specifically mentioned the social dimension of these occasions and commented that they thought it was a critical aspect for staff attending such sessions. There was often some resistance to technologically supported discussions such as those through bulletin boards, intranet sites and lists, although the use of these mechanisms was increasing.

Many respondents felt that the forums and networks were working particularly well in sharing knowledge. They noted that staff members were usually keen to participate and tended to learn a lot about others’ work and the organisation in general. Some respondents also reported that staff often left the formal forums and networks with new ideas about how to approach their work or things they wanted to try out. In doing so, they often formed project teams with people with whom they had not previously worked. Further, a couple of respondents reported that surveys had revealed that staff had an increased knowledge of their institute, a greater appreciation of others’ roles and an increased feeling of satisfaction with their work.

The knowledge shared and generated through forums, networks and chat groups was commonly used in a number of ways. At the most basic level, individual staff members were able to access knowledge new to them. They were also able to develop informal networks of colleagues with knowledge about other topics, ie, they could effectively form knowledge networks so they would know who to approach when they required specialist knowledge.

Respondents often reported that participants in forums and networks shared their knowledge with others in their work teams or informal networks who were unable to attend the formal sessions. In some cases, this was an expected outcome of participation, whereas in others, it was voluntary.
Some institutes reported having funding available to support new initiatives arising from the discussions in forums and networks. Further, in a couple of institutes, where they were not able to fund an initiative at a particular time, the idea was "stored" until suitable funding became available. The funding for such initiatives sometimes came from internal institute resources and sometimes from external funding, such as projects funded by ANTA (the Australian National Training Authority) and NREC (the National Research and Evaluation Council). One result for institutes supporting these initiatives was greater engagement of staff in their work, who also generally reported improved job satisfaction.

Organisers of the forums, networks and chat groups often cited the following challenges in their work:

- timetabling so that as many staff as possible could attend; this often included rotating both the times and venues of the networks and forums and was particularly difficult for large, multicampus TVET providers, especially where they were geographically spread
- finding/choosing topics to stimulate interest and motivate people to attend
- political and cultural climates within institutes and TVET systems, eg, knowledge sharing and collaboration can be difficult to encourage where there is a high level of devolution and competition
- having sufficient access to appropriate technology to facilitate chat groups; this was particularly difficult for institutes with campuses in remote locations
- having sufficient information technology literacy amongst staff for electronically mediated discussions
- gaining a voice for ideas and knowledge with senior managers; this was often addressed by seeking a senior management sponsor for forums and networks

Issues
There are many issues involved in knowledge-based industries such as TVET implementing knowledge management systems; however, discussion here will be confined to three areas: information technology; organisational culture, communication and planning processes; and staff engagement and empowerment.

Information technology
One of the barriers to implementing an effective knowledge management system in some Australian TVET providers is having information technology systems able to adequately support the process. The systems need to be capable of capturing, manipulating and reporting complex workforce data, as well as being able to handle large chat groups, capture major discussion themes and store new ideas for further development and innovation.

Organisational culture, communication and planning processes
The first challenge to TVET providers wanting to implement knowledge management processes is creating a corporate culture that both values and facilitates communication and knowledge sharing. Processes need to actively involve staff at all levels.

Organisations need to develop strategies to incorporate what is happening at the local level into the larger picture, particularly when examining issues such as workforce planning. This is particularly important when dealing with issues such as succession planning and the loss of corporate knowledge through retirements and staff turnover.

TVET providers need to ensure that the goals and directions of the institute reflect what people at the grass roots are doing and that what they are doing reflects the goals and directions of the institute. They also need to examine ways in which to incorporate external influences into corporate knowledge so that the organisation as a whole can act from an informed basis.

Staff engagement and empowerment
In encouraging knowledge sharing and creation between staff, it is critical that they have the time and space to participate in forums, networks and chat groups and that this is recognised as an important part of their work. Staff should be encouraged to build individual and team knowledge networks. They should also be empowered to act on ideas initiated during knowledge sharing with colleagues,
especially when it involves continued sharing of knowledge and expertise across organisational boundaries.

Conclusion
An integrated approach to knowledge management within TVET providers in Australia appears to be gradually emerging. To effectively implement such a system, however, providers need to be address many challenges. These include: appropriate information technology systems; organisational culture, communication and planning processes; staff engagement and empowerment.

References
Community Intelligence Labs web site: http://www.KnowledgeEcology.com/