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# Is higher education ready for knowledge management?

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## Abstract

Higher education institutions are in the knowledge business, since they are involved in knowledge creation and dissemination and learning. Examines the applicability of the concepts of knowledge management to higher education institutions in the United Kingdom. Identifies a number of existing facilities, systems or projects which contribute to knowledge management in higher education, such as libraries, and electronic collections of learning materials, networks for e-mail communication, and management information systems which provide data on the student profile. Then considers the challenges associated with the creation of a knowledge environment in higher education, and explores the opportunities offered by viewing knowledge as an asset. Concludes by noting that although knowledge based organizations might seem to have the most to gain through knowledge management, effective knowledge management may require significant change in culture and values, organizational structures and reward systems. The management of the relationship between knowledge and power is crucial.

Knowledge is permeable; technology is universal; universities are impermeable; the universities regulator is set in concrete. Something has got to give (Hague quoted in Goddard, 1998).

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## Introduction

Is knowledge management just another new management fad, designed to keep consultants and conference organizers lucratively employed and to distract organisations from a focus on bottom line results and customer orientation? Or, is knowledge management a useful metaphor or a new discipline that supports organisations in the environment facing organisations at the beginning of the twenty-first century? Knowledge management is certainly attracting attention, but much of the literature is in agreement that there are few, if any, demonstrations of the consequences of the adoption of knowledge management as a company wide concept or implementation. On the other hand, there is an agreement that the knowledge-based society has arrived, and that those organisations that will succeed in the global information society are those that can identify, value, create and evolve their knowledge assets. Many argue that knowledge has become the main competitive tool for many businesses. Drucker (1993) has described knowledge, rather than capital or labor as the only meaningful economic resource in the knowledge society, and Senge (1990) has warned that many organizations are unable to function as knowledge based organizations, because they suffer from learning disabilities. Companies must innovate or die, and their ability to learn, adapt and change becomes a core competency for survival. The forces of technology, globalisation and the emerging knowledge

economy are creating a revolution that is forcing organisations to seek new ways to reinvent themselves.

Universities and other higher education institutions are recognised to be in the knowledge business (e.g. Goddard, 1998), and increasingly they are exposed to marketplace pressures in a similar way to other businesses. It might, then, be reasonable to suppose that knowledge management might have something to offer higher education institutions. This article commences with a consideration of the nature of knowledge management, based on a review of some of the key contributions to the field. This suggests that there is as yet no agreement on a model which distills the essence of knowledge management. Approaches with their roots respectively in information management and knowledge processing, and the social construction of knowledge and organisational learning converge rather untidily. Experience in the adoption and implementation of knowledge management in other knowledge-based organisations such as consultancies is discussed, as a prelude to exploring the validity of the concept of knowledge management, and the consequences of its implementation, in universities.

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## Core themes for knowledge management

A study by the Delphi Consulting Group Inc, which included 36 vendors and more than 650 evaluators and users of knowledge management solutions revealed that 28 per cent of companies were currently using some form of knowledge management, and a further 70 per cent anticipated using it within the next four years. On this basis, knowledge management applications can be expected to escalate in number over the next four years. Davenport *et al.* (1998) studied a number of knowledge management projects and offer some insight into the range and



nature of the knowledge management projects that are currently being implemented. It is significant that their approach was project based rather than taking a broader organisational perspective. This approach was dictated by the absence of pervasive knowledge management implementations. Many organisations, like, for example, Dow Chemical, have sought to demonstrate that knowledge management can affect the bottom line by starting with quick fix solutions, rather than attempting to embed knowledge management in a holistic manner throughout the organisation. Dow Chemical started with a project that involved the systematisation of information on the company's 30,000 patents. Davenport *et al.* (1998) were able to categorise these projects on the basis of the project's objectives. They identified four broad types of project objectives:

- 1 *To create knowledge repositories*, which store both knowledge and information, often in documentary form. A common feature is "added value" through categorisation and pruning. Repositories can fall into three categories:
  - those which include external knowledge, such as competitive intelligence;
  - those that include structured internal knowledge, such as research reports, and product oriented marketing material as techniques and methods;
  - those that embrace informal, internal or tacit knowledge, such as discussion databases which store "know how".
- 2 *To improve knowledge access*, or to provide access to knowledge or to facilitate its transfer amongst individuals; here the emphasis is on connectivity, access and transfer, and technologies such as video conferencing systems, document scanning and sharing tools and telecommunications networks are central. There may be an attempt to create a repository of such knowledge, or the emphasis may be rather on access to the individuals that hold or can provide the knowledge. Identified expert networks are often part of such projects. Success with improved knowledge access will not be achieved without addressing organisational norms and values and confrontation of the relationship between knowledge and power.
- 3 *To enhance the knowledge environment*, so that the environment is conducive to more effective knowledge creation, transfer and use. This involves tackling organisational norms and values as they relate to knowledge. A range of different initiatives

might fall into this category. For example, one organisation sought to increase awareness of the knowledge embedded in client relationships and engagements, which, if shared, could enhance organisational performance. Other organisations focus on knowledge-related employee behaviour with, for example, contributions to the organisation's structured knowledge base attracting significant rewards and bonuses. One organisation has implemented decision audit programs in order to assess whether and how employees were applying knowledge in key decisions. Other organisations, such as Harris Corporation, have gone further and recognise that successful knowledge management is dependent upon structures and cultures. Harris has a decentralised management structure and a culture that encourages individuals' creativity: walls of fame where photographs of workers who contribute to intellectual capital are displayed (Mullin, 1996). In international organisations, there is a real challenge associated with establishing an organisational culture that transcends national culture; possibly this can only be achieved by transferring employees' allegiance from their country to the organisation.

- 4 *To manage knowledge as an asset*, and to recognise the value of knowledge to an organisation. Assets, such as technologies that are sold under license or have potential value, customer databases and detailed parts catalogues' are typical of companies, intangible assets to which value can be assigned. Assessments of other knowledge can be made on the basis of knowledge that increases revenue and reduces costs. For example, Skyrme and Amidon (1998) propose that knowledge can be measured using the balanced scorecard devised by Kaplan and Norton (1992). Using the balanced scorecard, an organization is valued on four dimensions, and not simply in terms of its financial performance. These four dimensions are: customer; internal process; innovation and learning; and financial. Metrics in the innovation and learning quadrant can often be improved by knowledge management activities. Although there is a continuing debate about the metrics that are appropriate in this quadrant, they have the potential to measure knowledge as an asset, and to support organisations as they seek to value their intellectual capital.

These four different categories of objectives identify four different types of perspectives on knowledge management, and emphasise the diversity of the concept “knowledge management”.

Other authors have sought to take a process, rather than project based perspective to the definition of knowledge management. Galagan (1997), for example, proposes the following as a sample list of knowledge management processes:

- generating new knowledge;
- accessing knowledge from external sources;
- representing knowledge in documents, databases, software and so forth;
- embedding knowledge in processes, products, or services;
- transferring existing knowledge around an organisation;
- using accessible knowledge in decision making;
- facilitating knowledge growth through culture and incentives;
- measuring the value of knowledge assets and the impact of knowledge management.

Demarest’s (1997) model is an example of the socially constructed models of knowledge management. This model identifies four phases of knowledge management within an organisation:

- 1 knowledge construction;
- 2 knowledge dissemination;
- 3 knowledge use; and
- 4 knowledge embodiment.

The model emphasises the construction of knowledge within an organisation, with both scientific and social contributions to this construction process. According to the model, constructed knowledge is then embodied within an organisation, both through explicit programs, but also through social interchange. Following embodiment there is a process of dissemination of the espoused knowledge throughout the organisation and its environments. Ultimately the knowledge is seen as being of economic use in regard to organisational outputs. There is also a recognition that the process moves back and forth between the different phases.

Models which emphasise the social construction of knowledge share common ground with work on learning organisations and organisational learning (Senge, 1992; Pedler *et al.*, 1991). Perhaps some of the most recent literature in this field which uses the term the knowing organisation (Choo, 1996) or the knowledge creating organisation (Nonaka, 1996), is closest to the concept of

knowledge management. This emphasises not only the strong association between knowledge and learning, but also the need for organisations to recognise that there is other useful knowledge beside that which is formal, systematic and quantitative, and that knowledge creation is more than information processing. Nonaka’s (1991) concept of a knowledge creating company is concerned with making individual insights available for testing and use by the company as a whole. Knowledge creating companies constantly encourage the process whereby personal knowledge is made available to others (articulation) for them to use to extend their own tacit knowledge base (internalisation).

In summary, a number of different writers have contributed perspectives on the nature of knowledge management. Davenport’s categories of knowledge management projects might be viewed as having their origins in the processes often recognised in information management, whilst other writers emphasise the social construction of knowledge. These two perspectives do not converge on a very tidy view on the essence of knowledge management. While the definition below seeks to embrace a range of these perspectives, it is important to remember that knowledge management is a complex process which will be understood differently in different contexts.

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### **Towards a definition for knowledge management**

The following definition seeks to embrace all of the different kinds of projects proposed by Davenport *et al.* (1998):

Knowledge management is concerned with the exploitation and development of the knowledge assets of an organisation with a view to furthering the organisation’s objectives. The knowledge to be managed includes both explicit, documented knowledge, and tacit, subjective knowledge. Management entails all of those processes associated with the identification, sharing and creation of knowledge. This requires systems for the creation and maintenance of knowledge repositories, and to cultivate and facilitate the sharing of knowledge and organisational learning. Organisations that succeed in knowledge management are likely to view knowledge as an asset and to develop organisational norms and values which support the creation, and sharing of knowledge.

Rowley (1998) argues that there are a number of general questions that emerge from this definition and that organisations need to ask in seeking to embed knowledge management:

- What is the central objective of knowledge management within an organisation?
- What are the levels at which knowledge management must be considered, and how can it be executed at the different levels?
- What is the scope of knowledge management in relation to the types of knowledge that it should embrace?
- What are the technologies and techniques to be employed in knowledge management?
- What organizational roles are needed to support knowledge management, and what are the associated competencies that both individuals and organisation need to acquire?

These questions are as relevant to universities as they are to other organisations. There will be no simple answers because in a diverse and changing environment, the nature of knowledge management is likely to be ever-changing (Galagan, 1997). Indeed knowledge management in different organisations may serve different organisational purposes. Some organisations, for example, may focus on knowledge of customers, others may be concerned with the building of knowledge capital, and others may be concerned with providing enhanced access to knowledge.

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### **Knowledge management in knowledge based organisations**

Consultancy organisations have recognized the central significance of intellectual capital to the success of their business, and have been at the leading edge of developments in this field. They view themselves as being in the knowledge industry, and some have used their knowledge based practices as a platform for the launch of universities. More traditional higher education institutions, which are partially public sector funded, and therefore often excessively controlled by public sector edicts on quality and governance driven by the public accountability agenda, may lose some of the more lucrative sectors of their market to such new global universities.

McKinsey and Co, in particular, has been involved in knowledge management for more than 20 years. Initially, they established working groups with the objective of developing knowledge in the areas of strategy and organisations. By 1987, McKinsey had launched a formal knowledge management project, which involved the development of the companies' databases of practice. It is significant that there was resistance to these initial moves, and that partners had to be

cajoled, begged and challenged to document their core knowledge. The role of practice coordinator was not taken seriously until the role was taken on by respected consultants. Knowledge management continued, but for a few years relied heavily upon personal networks. It received a significant boost in 1994, when a new Managing Director developed some new channels for learning. One of these was the Practice Olympics, an event in which regional teams compete in presenting ideas that they have acquired from their work with clients.

Ernst & Young have been focussing on knowledge management since 1993. Their objective is the leverage of intellectual capital, and re-use of practice based experience. One strategy has been the creation of communities of interest. There are 70 such company-wide networks of people with common interests and expertise. Each network is supported by its own database. For example, one network is focussed on the automotive industry. A network user could, for example, find out about product development times, and what kind of software automotive companies are choosing. The database also holds details of the consultants who are experts in the industry, and any specific relationships that Ernst & Young has with academic researchers.

Within Ernst & Young some of the databases on major topics have become huge, so Ernst & Young partners create PowerPacks of customised information, which can be downloaded on to the computers of individual employees. To keep these up to date, interns bookmark relevant Internet sites for review. New information is downloaded each time that an employee goes into the Ernst & Young global network for an update on a key topic. Two roles have proved to be key: those of database content manager, and knowledge network coordinator:

- The database content manager is a subject matter expert who is responsible for the quality of the content.
- The knowledge network coordinator is a consultant or coach to the people in the network, and their main role is to drive change in the way in which people do their jobs.

Access to external published information is partially provided by Infolink, which delivers more than 60 newspapers and magazines to all 23,000 US employees via their computers. Infolink users can set up profiles of their topics of interest, and on the

basis of these, articles are delivered to a requester's e-mail box.

The infrastructure for knowledge management is provided through the Center for Business Knowledge (CBK). The CBK handles content architecture, the application, definition and design of knowledge bases, the contract for buying external content, competitive intelligence, a research and analysis service, and the knowledge network program. Priorities are set by knowledge process committees associated with each business unit. A Chief Knowledge Officer, with overall responsibility for knowledge management, reports to the head of finance and technology.

Coopers & Lybrand manage their knowledge management program through the Knowledge Management Group. This oversees strategy, technology, and learning. A recent innovation is the Knowledge Curve, an intranet application which provides access to company and competitor information. This, for example, includes access to the Web sites of all of C & L's clients, the names and contact arrangement for experts, daily tax legislation updates, and the opportunity to ask questions of C & L tax experts. The CyberLyb offers stock quotes, exchange rates, and answers to FAQ. All Web sites mentioned in the Knowledge Curve have been checked out by the Web Content Team.

These cameos of the approaches taken to knowledge management by some knowledge based organisations can be summarized in the form of a list of key points that will need to be confronted by higher education institutions seeking to take a more proactive approach to knowledge management:

- respected individuals must be involved;
- people may be reluctant to document their core knowledge;
- knowledge management practices take a while to embed;
- communities of interest are central to knowledge management;
- mechanisms for structuring and updating knowledge are necessary;
- packaging of knowledge for non-experts is important;
- progress is only achieved if specific knowledge management roles are assigned; these are likely to include roles with a focus on the validation of database content, and support and coaching staff;
- structuring and targeting knowledge helps to make staff more effective and efficient knowledge processors.

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## **Knowledge management in higher education**

This section seeks to map some of the concepts of knowledge management to the process, systems, structures and roles in higher education, with a view to setting an agenda for the future. Universities do have a significant level of knowledge management activities, and it is important to recognise these, and use them as foundations for further development, rather than to invent a whole new paradigm. A series of unrelated knowledge based activities is not sufficient. Universities and their staff must recognise and respond to their changing role in a knowledge based society. Universities need to be consciously and explicitly managing the processes associated with the creation of their knowledge assets, and to recognise the value of their intellectual capital to their continuing role in society, and in a wider global marketplace for higher education. The term university in the preceding statements, must embrace all staff and students in the university, and not simply be an additional burden or agenda set by senior management. In order to achieve this degree of ownership the full embedding of knowledge management will be an evolutionary process. In order to assess the challenges that higher education institutions face in embedding knowledge management, we use Davenport's four types of knowledge management objectives as a lens through which to view higher education institutions: the creation and maintenance of knowledge repositories; improving knowledge access; enhancing knowledge environment; and, valuing knowledge.

### **Knowledge repositories**

Higher education institutions abound in potential knowledge repositories, from the corporate financial databases, and the marketing department's database of prospective students to the library and collections of documents, both electronic and print, owned by individual tutors. These various databases provide access variously to internally generated data about the organisation's operations (such as student records, or catering supply orders), and external, published documents and databases, accessed through libraries, bookshops, and the Web and other on-line services. Whether it is appropriate to describe some or all of these databases as knowledge repositories is an interesting question. Universities, whilst being in competition, also participate in a wider knowledge creation process which leads to

the creation of knowledge repositories on which future generations of scholars and researchers may draw. In this context journals, conference proceedings, and other publicly disseminated and validated output may be regarded as knowledge repositories, but these repositories are owned by the community, rather than individual institutions. What of the databases which support the operation of institutions? In most cases, these have changed and developed considerably in recent years, as universities have been incited to become more customer aware and market driven. But in many instances there is still scope for development before management information systems produce useful management information, let alone knowledge, which members of the university, mostly academic and non-academic managers, can use to inform their action and decision making.

In general, then, universities do not lack data, and in some senses, knowledge repositories, but few organisations have an integrated collection of knowledge, embedded either in one knowledge repository, or in a series of linked repositories. In order to facilitate the operation of a knowledge based operation these need to encompass both internal and external knowledge, and explicit and elicited tacit knowledge, in support of the evolution of the business. We are a long way from a scenario in which each member of the community that is the university has access to the combined knowledge and wisdom of others in the organisation, and has access to that knowledge in a form that is packaged to suit their particular needs. In general we have not made explicit the knowledge requirements of different segments in the university community. Many institutions have taken the first step, and have created converged library and information systems departments, but this restructuring is often more systems driven than knowledge driven.

#### **Knowledge access**

Access to knowledge across the academic community, and within organisations to published knowledge sources is good. Across the world, research funding bodies have invested heavily in network infrastructures to support communication. The best example of such a network is the Internet, which started life as a network to support communication amongst researchers. JANET, and more recently SuperJANET in the United Kingdom, has been an invaluable communication resource. Through such networks, researchers and academic staff have access to public knowledge, including a host of electronic documents, and specifically

electronic journals. E-mail through JANET has facilitated communication with other experts in higher education, research institutions and industry, worldwide. The BIDS service within the UK has negotiated with publishers to provide access to a range of electronic databases and other services at competitive rates. Within institutions, networks, sometimes based on intranet technology, have supported internal communication through e-mail, and access to databases and electronic documents. E-mail links have facilitated the further development of invisible colleges or communities of interest. Some organisations are experimenting with storing their committee and policy documents in electronic form, and making them available through their intranet. Most libraries in higher education have a Web page which not only acts as an advertisement for information about the organisation, but may also offer links to selected sources of information, including databases, and lists of experts.

The delivery of digital information has been viewed as so significant by various national bodies in the UK and elsewhere, that there have been a number of major national electronic library initiatives. The Follet Report (HEFCE, 1993) highlighted the importance of information technology in the delivery of information, and in response to this, the JISC established the eLib programme of projects. This has embraced projects in the following areas:

- document delivery;
- access to network resources;
- training and awareness;
- electronic journals;
- digitisation;
- images;
- electronic short loan collections;
- on demand publishing;
- pre-prints and grey literature.

All of these areas are concerned with electronic knowledge repositories and the dissemination of knowledge, often in the form of documents, throughout the academic community. An important distinction, however, between these projects and knowledge management projects in other organisations, is that the political agendas that are characteristic of the public sector context have encouraged cooperation and collaboration between institutions. Benefits have been sought for the sector (and ultimately society) as a whole. This is in contrast to the corporate, but often international, flavor of knowledge management in large corporations.

In summary, universities have been proactive in the areas of knowledge repositories and knowledge access, especially with respect to explicit and public knowledge. Further extensions in the use of knowledge repositories within organisations will raise issues of security, and access rights for different categories of staff and students. Interestingly, in the UK, at least, significant progress has been made in this area through collaboration, and many developments have been on a sector wide basis, rather than led by individual institutions.

### **Knowledge environment**

The creation of an environment in which knowledge management activities, such as knowledge creation, transfer and use, and being prepared to relinquish the power that comes with knowledge, is concerned with adopting appropriate organisational norms and values relating to knowledge. The roles of teacher and researcher demand that staff pose as the expert, and that their security and credibility with students and colleagues is dependent upon their knowledge base. Rewards are a central element of any culture. In higher education, the embedded and international reward structure places a high value on evidence of individual achievement in research and scholarship. Research and publications output are key in the award of the accolade of “Professor”, although conventions vary between countries. Reputation, salary, and opportunities to participate in the further creation and dissemination of knowledge depend significantly upon individual performance. The transfer market for professors with international reputations suggests that the knowledge bases are integrally associated with individuals. But, possibly this is only part of the picture.

On the other hand there are examples of knowledge sharing in higher education. Team working is common in some research environments, such as in respect of large scientific projects. In addition, as has been discussed above, there is some tradition of knowledge sharing, under the right conditions between academics in institutions that might otherwise be regarded as being in competition with one another. Indeed, dissemination is necessary for individual recognition. In the context of teaching, Boyer (1990) reminds us that knowing and learning are communal acts. Through reading, through classroom discussion, and through comments and questions posed by students, teachers are pushed in new creative directions. In the arena of teaching, higher education institutions have considerable

experience and expertise in knowledge sharing. Some have seen universities as the archetypal learning organisations or communities.

The norms, values and practices associated with knowledge creation, sharing and dissemination in higher education are complex. However, a number of factors may already be challenging the traditional values. The increasing globalisation of communities, coupled with emerging electronic journal formats which challenge the traditional processes of refereeing and reviewing that have acted as a validation of knowledge may herald changes in the way in which knowledge communities operate. These factors may contribute to an escalation in the speed of change of culture, but, in general, culture change is likely to be a slow and painful process.

### **Valuing knowledge**

Valuing knowledge in this context is concerned with viewing knowledge as an asset. In the sense that a significant proportion of the financial resources of a higher education institution are devoted to the payment of staff, whose primary contribution is to create and disseminate knowledge, it may be argued that there is an implicit commitment to the value of knowledge. However, universities have no experience of valuing their intellectual capital and entering those values on their balance sheets. If they did, their assets, and possibly turnover would be enhanced and they would give an appearance of being much more significant businesses than they do at present. Such valuation and representation of intellectual capital may be regarded as financial wizardry, but representing knowledge as an asset in this context makes a statement about the nature of the business. Further, a methodology for assigning values to knowledge assets will need to be developed. This process will have two valuable outcomes:

- 1 An enhanced and shared understanding of the role of knowledge in the university.
- 2 The opportunity to monitor the increases and decreases in the knowledge assets embedded in the organisation.

Both of these outcomes should allow the university to manage one of the key assets which underlies the effective operation of a university as a business.

Knowledge management has found much favor in knowledge based organisations, but there is one respect in which such organisations are very different from universities. Consultancy and other

organisations that have embraced knowledge management are global organisations, and implicit in their global nature is the sense in which they constitute international communities, independent of state or national and cultural agendas. How might universities move from the collegially networked institutions, with some international student base, towards an era in which strategic alliances allow the creation of a shared, global knowledge base? Is it possible to create a global university? Quite apart from the role of the state in such an endeavor, and the implications for the sharing of knowledge and the basis for learning across national boundaries, there is a real challenge associated with the concept of a "university". Universities have traditionally been defined by their diversity, and their role in relation to knowledge and learning across a range of different disciplines. We are probably moving into an era when such a lack of focus makes it difficult for universities to be at the leading edge in all areas of knowledge. However, in contradiction to this position, knowledge management tools may represent a golden opportunity for the creation of interdisciplinary knowledge.

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### Conclusion

Higher education is in the knowledge business. Core activities are associated with knowledge creation and dissemination and learning. This article has examined the applicability of the concepts of knowledge management to higher education institutions in the UK. Knowledge management projects can be categorised in accordance with their objectives. These objectives may be: to create knowledge repositories; to improve knowledge access; to enhance the knowledge environment; and, to manage knowledge as an asset. Other knowledge based organisations such as consultancy organisations have embraced knowledge management enthusiastically. An important characteristic that is common to both these organisations and higher education is that knowledge is power, since the main asset which determines the employability of individuals is their knowledge. This cult of the individual expert could be seen to be at odds with a knowledge based culture. In the areas of knowledge access and knowledge repositories, there has been significant sector led progress. Governments and other policy making bodies have pushed institutions towards the knowledge revolution. Even in these arenas there is

scope for further development. Many knowledge repositories are poorly organised and the relationship between the various repositories to which an individual member of staff may have access is not clearly defined. However, the greater challenge lies with the other two elements of knowledge management: in the creation of a knowledge environment, and the recognition of knowledge as intellectual capital, there is still scope for considerable progress. Although knowledge based organisations might seem to have the most to gain through knowledge management, effective knowledge management may require significant change in culture and values, organisational structures and reward systems. The management of the relationship between knowledge and power is crucial.

Finally, knowledge management for higher education in a global economy requires strategic alliances on an international arena, and the creation of global knowledge repositories, which are used to the competitive advantage of the partner in the alliance. The state influence over most universities and their myriad stakeholders may militate against the creation of appropriate global alliances.

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