

# RETHINKING OF KNOWLEDGE MANAGEMENT INTRODUCTION AT TEACHING UNIVERSITIES: THE FRAMEWORK DEVELOPMENT

**Vladimír Bureš**

University of Hradec Králové, Hradec Králové, Czech Republic  
E-mail: vladimir.bures@uhk.cz

**David Griffin, Denisa Hackett, Peter Kročítý, Erik Kubička**

The College of Management, Trenčín, Slovakia  
E-mail: dgriffin@vsm.sk, dhackett@vsm.sk, pkrocity@vsm.sk, ekubicka@vsm.sk

## Abstract

*The rapid penetration of information and communication technologies has been the main factor responsible for significant changes in the overall business landscape. Knowledge management (KM) implementation and building of learning organizations have become vital assumptions for a company's ability to compete in a knowledge society. However, in regards to these issues a lack of attention has been paid to universities as a specific type of organization. The essential problem to be addressed is the tendency of institutions of higher learning to keep knowledge to themselves, which has been proven by several authors. Therefore, questions such as, "Are businesses different from universities?" or "What does it imply for the KM implementation efforts at universities?" are considered in the paper. The goal of the paper is to map the changes in today's business environment, research differences between the functions and processes in businesses and academic institutions in the Czech Republic and Slovakia, and, based on these findings, propose a framework for knowledge management implementation focusing on a special type of academic institution – a teaching university. Consequently, this study can serve as a starting point for implementation of a student-centred approach to knowledge management.*

**Key words:** *framework, knowledge management, knowledge sharing, students, university.*

## Introduction

It has essentially been the philosophy of the knowledge society that information is a commodity that should be accessible to everyone without distinction which has brought about the rapid development of information technologies in recent decades. Together with massive penetration of information and communication technologies (ICTs) comes the fulfilment of the ultimate goal of information society. Access to information is no longer the main source of differences in society. Instead, there is an abundance of information and a need for individuals and organizations to handle the quantum of information and to be able to use it in a meaningful manner. Information society has been exploited to its fullest and has fundamentally fulfilled its mission, forming of a new type of society which is becoming still more and more visible – a society increasingly based on individual and collective knowledge, the goal of which is the elimination of differences between its members, resulting from ownership of or access to

information (Kelemen, 2007). The emergence of a knowledge society together with continuing globalization and innovations in the technological field substantially changes the way businesses must be administered in order to be successful in the new business environment, which is becoming increasingly complex and dynamic. This environment is typically described with the help of concepts such as “knowledge economy”, “new economy”, or “knowledge-based economy”. The knowledge economy has many characteristics; however, two of them can be perceived as predominant – intensive learning and deployment of information, communication and knowledge technologies (Kelemen, 2007). These characteristics and related principles are already applied in the business environment. Apparently, it has brought better accessibility of information and this, with no doubt, has helped businesses to make improvements in the way they operate (Laudon, 2010). On the other hand, it has been the main factor responsible for significant changes in the overall business landscape. Knowledge management implementation has become vital for a company’s ability to compete in a knowledge economy. However, in comparison to the business environment, a lack of attention has been paid to certain type of institutions which are closely related to learning processes – namely, universities. Therefore, the goal of this paper is to map the changes in today’s business environment, research differences between the functions and processes in businesses and academic institutions and, based on these findings, propose a framework for knowledge management implementation focusing on a special type of academic institution – a teaching university.

### **Problem Definition and Literature Review**

While changes in the business environment are reflected and investigated in many books or scientific journals, corresponding changes related to learning processes in the educational environment are still somewhat underemphasized. The most significant change can be witnessed in the area of “customers” for whom the educational system is taking place – i.e., students. Contemporary students are called the “Net Generation” (or Homo Zappiens (Veen and van Staalduin, 2009), or Millennials (Howe and Strauss, 2000)). The Net Generation is the generation of youth which is growing up with modern ICTs which powerfully shape their mental models (i.e., views on the world around them). Using multiple technologies, they are learning to develop new skills and exhibiting new behaviour patterns. This generation has several characteristics, which are summarized in Table 1 (Veen and van Staalduin, 2009; Oblinger and Oblinger, 2005):

- Preference for images and symbols as an enrichment of plain text;
- Seemingly effortless adoption of technology;
- Cooperation and sharing in networks;
- Usage of technology in a functional manner, i.e. not touching what they can’t use, and increasingly, this generation seems to take exploration and learning - discovering the world - into their own hands;
- Gravity toward group activity;
- Identification with parents’ values and feeling close to their parents;
- Fascination by new technologies.

**Table 1. Characteristics of Homo Zappiens (adapted from Veen and van Staalduinen, 2009).**

Characteristic	Description
Iconic preferences	Homo Zappiens' preference for icons is a very necessary attitude to survive in an era where older generations are confronted with 'information overload,' yet Homo Zappiens seems capable of handling this phenomenon (Veen and Vrakking, 2006). In its communications with peers Homo Zappiens uses icons and abbreviations as well. Lindström and Seybold (2003) have labelled this language of shortcuts 'TweenSpeak'.
Technology is air	Homo Zappiens is merely interested in technology if it works and will just as easily pick up something else if that suits their needs better. They often have little understanding of the fundamentals of the technology they are using, yet they can explain the functions that make a tool useful. Tapscott (1998) formulates this perception of technology as, "It doesn't exist. It's like the air"
Inversed education	Up to about the age of five, children seem to ask their parents how to use a personal computer. From the age of six most children have learned how to use the personal computer and will often first resort to asking friends before asking their parents. From the age of eight upwards, this generation is educating their parents on how to use PC's (Veen and Jacobs, 2005). This 'inverse education' is typical for this generation.
Networking is their lifestyle	To the Net Generation, living in networks is as normal as breathing. Homo Zappiens' networks include both virtual and physical networks. They are almost constantly connected to electronic networks, through which they stay in contact with their friends and the wide source of information available.
Cooperation	Homo Zappiens use their network of contacts to provide them with the information they need and if this network does not suffice, they ask an online community consisting of many individuals they do not know, but who are willing to help. For the Homo Zappiens, knowledge sharing is common even with those who you do not have much knowledge at all.
Virtual is real	Youth today does not make the same distinction between the 'real' world and the 'virtual' world that so much of society still does. To today's youth, when they communicate with a friend through chat or in a game, this communication is not any less real than a physical meeting. Communities and social networks appear to be physical, virtual and hybrid at the same time. (Oblinger and Oblinger, 2005).
Multiple identities	Homo Zappiens has online and face-to-face identities as illustrated by a boy describing a friend: "Online he is okay, but at school he is a nerd". (Veen and Jacobs, 2005). Young people are accustomed to playing with different characters or roles and feel the consequences of these different roles as other gamers react to them.
Multitasking	These children seem to be online, watch TV, talk on the phone, listen to the radio and write a document, apparently all at the same time. (Oblinger and Oblinger, 2005). Children seem to divide their attention across the different information flows, focusing only on one, but keeping a lower level of attention on the others. By using their attention flexibly, Homo Zappiens seems capable of handling much more information than previous generations (Veen and Vrakking, 2006).
Critical evaluation	As a consequence of multitasking, they instantly and almost subconsciously value different streams of information to decide where to place their attention. Homo Zappiens is confronted with a lot of information, not all of it to be taken at face value. Critical evaluation is what children do when selecting and filtering information flows.
Zapping	Homo Zappiens seems to show a zapping behaviour that is specifically aimed at filtering information from different programs at the same time. The purpose is to get the message in order to understand (Veen and Vrakking, 2006). It allows them to select only those bits of information from each channel that are critical for understanding what the program is all about.
Instant pay-off	The Net Generation has little patience and short attention spans. Their skills are aimed at processing various flows of different information quickly, but they have also come to expect this kind of high-density information streaming; anything less and they will become bored. Lindström and Seybold (2003) label them the 'Instant Generation.'
Self-confidence through self-direction	ICT offers youth control over not just devices but communication, networks and situations as well, situations which they will often have to master as adults (Tapscott, 1998). Through the use of technology, this generation has added options for exploring their own individualism. Games are a prime example of this, as they allow any gamer an infinite number of tries to attempt to reach certain goals.

An appropriate reaction to the above-mentioned changes is one the most significant challenges for educational institutions. Several tools have already been used for coping with this issue (e.g. implementation of virtual study environments or modifications in marketing strategies). Although the first attempts to connect educational institutions with knowledge management can be identified in the second half of the 1990's - for instance, Mikulecká and Mikulecký (1999) suggest using knowledge management in three basic areas: knowledge management lectures, in particular study programmes; knowledge management as the management approach of the university; and knowledge management used for the improvement of the education process - knowledge management is still one of those tools waiting for the opportunity to prove its full potential. Since educational institutions represent organizations with their own processes, management, employees, mission, objectives and other related aspects, the utilization of knowledge management seems to be meaningful. Thus, the introduction of knowledge management into educational institutions can be successfully performed since it is a managerial discipline based on a systematic work with knowledge at the organizational level (Bureš, 2009).

Knowledge management in the form of systematic coordination of people, technologies, and processes, achieved through creating, sharing, and applying knowledge, as well as through feeding valuable lessons learned and best practices into corporate memory, becomes a strategic tool for companies that not only fosters organizational learning, but assures the overall organizational ability to survive and develop in today's dynamic environment (Dalkir, 2005). As indicated above, today's environment is characterized by constant change (growing competition, societal changes, consumer preferences, etc.) and it is not only the case of business, but also education, which can be considered as a specific business sector, focused on trade with education and knowledge. Therefore, it goes beyond setting systems and implementing tools for dealing with information and knowledge (Bureš, 2007) or skilful application of techniques for handling impending changes and focuses on creating a complex conducive environment for competitiveness and productivity growth through learning, knowledge sharing, and innovations (Mishra, 2007). This also implies promotion of values such as cooperativeness, fairness, openness, and continuous learning.

These basic values then influence the overall setting of other key organizational aspects – the most important of them being reward systems assuring long-term performance and human resource development, organizational design with flatter structures, stressing cooperation, teamwork, and communication, cooperative management and leadership, providing opportunities for initiatives and able to communicate organizational visions, and systems for work with information and knowledge assuring collecting and fluent flow of information and providing infrastructure for informed decision-making and systematic learning. Although Cejthamr and Dědina (2010) mention culture, motivation, leadership, structures and information technologies as the key pillars of learning organizations, other traditional emphasis areas of businesses cannot be underestimated as well. Quality control is one of such area, having special importance not only for manufacturing but also for knowledge-intensive fields such as research and education. Another area is customer focus as a generally applicable principle, but particularly important for private service organizations (Hřebíček, 2005).

As previously stated, the **essential problem to be addressed** is the absence of knowledge management principles in the educational environment, which can lead to problems such as the tendency of institutions of higher learning to keep knowledge to themselves. For instance, Norris et al. (2003, in Santo, 2005) stress that “academic culture needs to change from knowledge hoarding to knowledge sharing” (p. 44). Santo makes a series of recommendations for schools of education (pp. 46-48), but has there been any progress in terms of academic openness and knowledge sharing among universities in the past six years since she made her assertion? More specifically, what is the knowledge-sharing environment like at universities in

the Slovak and Czech Republics? What framework, new or adapted, would serve well to foster the type of academic leadership that would effectively precipitate sharing of knowledge among universities - assuming this is a desirable goal?

Wu and Lin (2009) completed an empirical study that links competitive and knowledge strategies with firm performance and conclude that, "Companies are coming to view knowledge as the most valuable and strategic resource to be competitive in the new economy" (p. 799). You would think that higher education would therefore be on the forefront of this emphasis on knowledge, given that universities are traditionally bastions of knowledge and innovative research. Furthermore, as applied to business, Ma and Harmon (2006) assert that "to take full advantage of their potential to improve performance, we must develop the possible synergies that exist among knowledge management systems (KMS), electronic performance support systems (EPSS) and learning technologies" (p. 109). However, "the implementation of KMS, EPSS and learning technologies has typically been disjointed and uncoordinated" (p. 108). Among the sequence for adopting a KMS developed for implementation of their six-stage model by Xu and Quaddus (2005) are the steps to "develop a KMS plan/strategy", "allocate a budget for the KMS" and "appoint a knowledge manager or chief knowledge officer" (p. 371). Quite likely universities in Slovakia and the Czech Republic are largely unaware of any need for such a system - they are in a state of "unconscious incompetence". Two other steps Xu and Quaddus suggest, to "Persuade and educate people to use the KMS" and "Cut off people's old means of accessing knowledge" (p. 371), could more broadly be applied to create a milieu where the concept of a KMS could even be considered.

Goddard (1998, in Lee and Roth, 2009) creates a link or role between business and higher education, stating that universities "must be seen as knowledge businesses" (p. 22). What, then, is the key to effecting change in higher education, taking them from knowledge-hoarding, insular and isolated places of pseudo-learning to knowledge-sharing, open and connected places of real learning? Lee and Roth (2009) point to "the pivotal role of leadership in driving organizational change and adopting and implementing knowledge management" (p. 24). Further elaborating, they claim "leadership is also essential for knowledge management systems in matters such as decision making, assigning tasks, and integrating and communicating with people" (p. 24). Brewer and Brewer (2010) further assert that knowledge management concepts must be embedded in human resource management activities and curriculum in order to be effective (p. 334). Although applied primarily to students in an online learning environment, Beres and Turcsanyi-Szabo (2010) place emphasis on the pivotal role of an "online knowledge building" environment which can enhance "problem solving skills, preparing to solve non-routine tasks, working on project teams, and keeping up with permanently changing requirements" (p. 203). The literature therefore points to a KMS implementation that is both top-down and grass roots, affecting all levels of an organization. And if universities are indeed "knowledge businesses", the integration of KM concepts and a fully-elaborated system to support it would be that much more important.

Turning to issues that are specific to Slovakia and the Czech Republic, St. George (2006) "questions the assumption that increasing competition among higher education institutions is the best method of achieving a strong higher education sector in developing countries" (p. 589). She goes on to point out that "there has been increasing emphasis on the importance of higher education institutions for sustainable development, particularly because of their importance to the global knowledge economy" (p. 589). Via her comparisons among several Southeast Asian nations, she concludes that "there may be room to consider strengthening the ability of the state to direct funding to priority areas, rather than dispersing scarce funding among a variety of competing institutions" (p. 608). Such collaborative thinking again flies in the face of traditional fund-seeking approaches that foster exclusivity and competition. However, former Soviet-bloc nations like Slovakia and the Czech Republic may well be rather suspicious and



critical of any approach that undermines free-market forces in favour of more collaborative initiatives and may pre-emptively brand them as poisonously “socialist” in nature. Wedman and Wang’s (2005) “knowledge repository approach” may similarly fall under such criticism. Rowley’s (2000) question may then be rephrased as, “Is higher education in the Slovak and Czech Republics ready for knowledge management?”

### **The Research Methodology**

To contribute to the solution of the aforementioned problem the research was focused on the development of the knowledge management framework fitting the specifics of teaching universities. The conducted research described in this paper was based on several methods. First of all the analysis of available information resources was carried out in the Business section of the ProQuest database, where to appropriate scientific papers were identified. Results were used mostly for the development of the Literature Review section above. Secondly, the comparative analysis of the educational and business environments was performed. While the selection of the former is apparent, the latter, a mobile phone provider and operator, was chosen since it is a part of the industry sector that is considered as very dynamic, technologically advanced and highly developed (Mohelská and Tomášková, 2010). The comparison was based on criteria representing common organizational functions and processes described in general business management books, e.g. (Kotler and Keller, 2008). Thirdly, existing knowledge management frameworks described in scientific papers included in the ProQuest database and available in other resources such as (KM Frameworks, 2011) were identified and the structural analysis of their components was conducted. Consequently, based on results the basic requirements for a knowledge management framework suitable for teaching universities were determined. Finally, the spiral strategy from the systems engineering was used. The application of several iterations of the synthesis method enabled the development of the final version of the presented framework.

### **Comparison of Business and Academic Environments**

Since knowledge management has been developed in the business environment, it can serve as a benchmark for its introduction in to educational institutions. Before taking this step, a comparative analysis needs to be conducted to find out what similarities or differences should be taken into consideration. For the purpose of comparison of the functions and processes in business and academic environment, the comparison of a post-secondary, private, not-for-profit teaching university with a private, service-oriented business – a telecommunications company was conducted. This comparison of two companies is based on the same criteria which represent various functions and processes present in both companies. The criteria as well as the functions and processes descriptions and comparisons are listed in Table 2 below.

**Table 2. Comparison of Business and Academic Environments.**

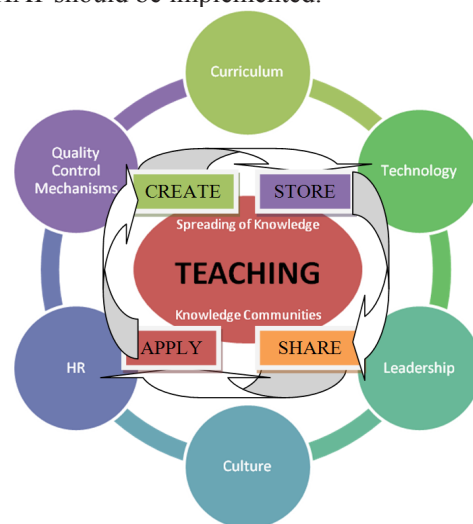
Functions/processes	Teaching university (post-secondary, private, not-for-profit)	Business (private, service-oriented) – e.g., mobile phones
Production	Teaching	Phones & accessories
Sales	Educational programs, delivered via teaching (F2F, online or mixed modes)	Selling and operating telecom products and services (programs)
Customer service (incl. complaints, feedback loop)	Student services: Admissions office, external affairs	Call centre F2F customer service at outlets
Feedback	End-of-course evaluations Online contact information Surveys Focus groups FAQs	Call monitoring Online contact information Surveys Focus groups FAQs
Management: decision-making, strategic planning	Academic Operational	Outlet: Manager, customer services reps – scheduling (shifts)
Quality control mechanisms	EOCEs & other feedback Classroom observations Academic policies and readmissions process Scholastic honesty system Grade grievance process System of departments Curriculum development system Accreditation standards Professional accreditation (e.g., ACSBP) Other accreditations (e.g., EUA)	Operating standards and procedures Regulatory standards – Telecommunications Regulatory Authority of the Slovak Republic (TUSR)
Marketing	Recruitment – high school visits Word-of-mouth Web pages Facebook campaigns TV campaigns Educational fairs	Web pages Media campaigns Word-of-mouth Events, fairs, exhibitions
Research & Development	Curriculum development, online platforms, e-books and other e-resources, online databases	3G/4G technologies Online services
Technologies	Databases Online teaching platforms Internal network Company email Website	Website Databases Intranet Company email Broadcasting/transmitting infrastructure
HR (NB training)	Recruitment and selection process (interview and teaching demo) Training (new employee and ongoing) Motivation	Recruitment and selection process Training (new employee and ongoing) Motivation
Financial issues	Tuition driven Grants (projects)	Profit driven
Regulatory compliance	Accreditation	TUSR and EU standards

The above table shows the four traditional pillars of a learning organization remain the same: Human Resource Management, Culture, Leadership and Technology. However, the academic environment of a post-secondary learning organization must be supported by two additional pillars: one in the area of research and know-how development - specifically curriculum - and a second in the formalized nature of the quality control mechanisms. In addition to curriculum, knowledge communities are becoming a focal point of the organizational design. The framework below illustrates this structure.

### Proposal of a Knowledge Management Framework for Teaching Universities

When considering the aforementioned changes related to educational environment and identified similarities and differences of this environment in comparison to the business environment, the need for development of knowledge management framework has arisen. The framework is of crucial importance here since it is “a set of assumptions or fundamental principles of intellectual origin that forms the underlying basis for action” (Popper, 1994). Therefore, in the case of knowledge management in an educational environment, the framework can be considered as a structure that comprises relevant entities or a set of guiding principles and ideas that support a discipline. The suggested framework depicted in the Figure 1 reflects the idea of solving the issue of knowledge hoarding instead of knowledge sharing in an educational institution using the knowledge management system.

It is important to note that although mutually interrelated, there is a significant difference between framework and methodology concepts. While frameworks, as defined in the previous paragraph, belong to the conceptual perspective of knowledge management (Bureš, 2009), methodology is “a set of recommended phases, approaches, principles, procedures, rules, documents, techniques or tools... which determines what should be performed, when, why and by whom” (Řepa, 1999) and has to be considered as a part of the implementation perspective (Bureš, 2007). Therefore from the systems engineering perspective the methodology should answer two basic questions – HOW and WHY anything should be implemented – while framework clarifies only WHAT should be implemented.



**Figure 1: Suggested KM framework for teaching universities (based on authors' research and (Heisig 2005)).**



As can be seen from the developed framework, there are six basic areas that form the pillars of a learning organization, representing the outer layer of the framework. As indicated above, four of the pillars are virtually typical of a learning organization - *viz.*, human resources (HR), culture, leadership and technology. To highlight some differences, **HR** at a teaching university should logically support the quality of the teaching itself. Among key HR activities are the hiring process, training and continuous professional development. Again, these steps are not unique but there are specific approaches that differ from other organizations. Specifically, a teaching demonstration - a short lesson delivered by a teaching candidate, in a role-play setting with administrators, other teachers and even students as his/her "class" - can effectively exhibit some of the "unquantifiable" aspects to good teaching. As for **culture**, an open, knowledge-sharing environment must be established. The current trend at institutions of higher education is a culture where knowledge is considered power, and knowledge hoarding is a norm. Change in culture at a teaching university translates into a student-centred approach, with an emphasis on practitioner faculty. Knowledge is gained from experience, and from sharing that experience with other colleagues. Building such an environment requires creation of opportunities to share ideas. Knowledge sharing among instructors through conversations, meetings, acknowledged best practices, databases, and questioning is to be supported within the knowledge communities, represented by particular departments (*katedry*, in both Slovak and Czech). **Leadership**, of course, plays a key role in supporting an open environment, not only via mission statement and policy but also with a do-as-we-do, practice-what-we-teach approach. A strategy of cultural change requires active communication from the management and the intentional creation of an informal atmosphere in which people feel comfortable asking others for help. **Technology** can effectively underpin every aspect of the school, from systems to support teaching/learning, curriculum and resource development/collection, to communication and management information systems that can support a school's administrative, employee and student service functions (e.g., the e-learning platform or registrar's office systems).

The last two pillars, curriculum and quality control mechanisms are significantly different from other organizations. **Curriculum** in and of itself is a unique to education, with its only corollaries being similar educational and training functions in other organizations. If the university has multiple and even international locations, well-elaborated curriculum and support materials (textbooks, e-resources, etc.) can be critical to enhancing consistency throughout the system. Also, if faculty members are practitioners in their fields of teaching - i.e., not necessarily professionally-trained teachers - well-developed curriculum can be the cornerstone of good teaching. A recommended curriculum development process would start with the "end users" (i.e., the graduates and representatives of the organizations that hire them) with questions such as, "What skills do you need/require in the workplace?" Information acquired from such questions can establish specific outcomes on which the curriculum can be based. This *backwards-working, outcomes- and goal-based approach* can help break things down into the necessary steps in order to effectively teach the concepts to meet them. And here is one key area where the final pillar, **Quality Control Mechanisms**, can be used to monitor and subsequently adjust the curriculum and teaching practices. A regularly administered end of course evaluation system can both identify problems in the classroom (literal or virtual) as well as give feedback on the effectiveness of every aspect of the learning process. Other internal quality control mechanisms include direct classroom (including online) observations, systems to detect and deal with academic dishonesty (i.e., plagiarism and other forms of cheating), checking of syllabi and course materials by department heads, focus groups of students and instructors, in addition to other university-specific processes and policies. External quality control mechanisms may include both various governmental accreditation processes (via self-studies, visits and reports) as well as professional accrediting bodies, with their rigorous standards and processes. Ultimately, it can be seen there is a high level of overlap and integration of the various pillars;

all are interconnected and support the know-how, the quality control processes and ultimately the people - the students and teachers.

The core of the framework is created by knowledge management activities, with a focus on creating, storing, sharing and application of knowledge. As indicated above, all six pillars should integrate the knowledge management process, as they all contribute by knowledge from different areas of expertise. Creation of knowledge is a formation of new ideas through interactions between explicit and tacit knowledge in human minds. All six areas involve processes supporting knowledge creation that is then being spread through knowledge communities around the educational institution. Most of the knowledge is *explicit*, in the form of memos, guides, policies, databases, files, books, etc. However, a great deal of *tacit* knowledge is also created through the experience of employees, whether via managerial positions or teachers involved in the activities of the six pillars of a learning organization. While the explicit type of knowledge can be easily stored and made accessible to a wide range of people, tacit knowledge is not. Proper knowledge sharing then requires creating a proper organizational culture. Therefore, the fragments of the SECI model, which is focused on mutual transformation of tacit and explicit knowledge and which was introduced by Nonaka and Takeuchi (1995), can be identified.

In practice, the framework can be used as a starting point for implementation of changes in particular knowledge communities, typically represented by departments at the university level. They consist of professionals in the same scientific field with a high level of expertise and experience, building a tacit knowledge base. Moreover, even particular departments can be fragmented into smaller communities which are focused on specific research areas. For instance, the research conducted in the Faculty of Informatics and Management at the *University of Hradec Králové* revealed that two departments focused primarily on informatics and quantitative methods can be further divided into sub-groups according to their research interest (see Table 3).

**Table 3. Knowledge communities at particular departments (adopted from (Mišičková, 2011)).**

Identified Knowledge Communities (N=54)		
Primary community	Secondary community	Tertiary community
Ambient intelligence	R & D support tools	Strategy and management of the faculty
Knowledge management and technologies	Systems sciences	Doctoral studies at the faculty
Cognitive science	Software systems	Informal community of national minorities at the faculty
Artificial intelligence and autonomous systems	Object-oriented approaches	Ecology
Computer graphics	Mental maps	Marketing
Computer networks	Operational research	
Mobile technologies	Process-based approaches	
Statistics	Programming	
Mathematics		

At this sub-department level it is easier to overcome certain barriers to knowledge management implementation such as the resistance to knowledge sharing. For instance, the reward system can be more focused or formal and informal communication channels can be more easily analysed. Consequently, it can lead to the necessary changes in communication patterns and thus to better relationships, which has to be considered positively since people are more willing to share with friends whom they trust (Bang, 2008). Brewer and Brewer

(2010) consider “work design, selection and training, orientation and socialization programs, performance appraisal and reward system as well as open and trusting culture to be practices for fostering effective knowledge management” (p. 332).

## Conclusions

Knowledge management as a managerial discipline has already been more or less successfully introduced into many organizations. However, these organizations were mostly part of the business environment. The mutual interrelationship of knowledge management and educational institutions is still quite rare. Although several authors pointed out anticipated problems or basic assumptions that need to be respected when implementing knowledge management into an educational institution, further elaboration is of high significance.

Knowledge management frameworks belong to the conceptual perspective of knowledge management, since they represent a simplified KM model, emphasizing only its most important elements and relations. The problem is that the majority of existing frameworks do not take into consideration the specifics of the educational environment, such as the necessity for intensive knowledge sharing and changes (e.g. the emergence of the Net Generation) that it has witnessed during the last decade. Therefore, a comparison of the business and educational environments in the Czech Republic and Slovakia was drawn and, based on the results, a knowledge management framework for teaching universities was developed. The framework is based on six main pillars - human resources, culture, leadership, technology, curriculum and quality control mechanisms – and four knowledge processes – creating, storing, sharing and application of knowledge. Although the framework is general in nature, it can serve as a starting point of all activities connected with knowledge management implementation in a teaching university. Since it is in compliance with the described changes and specifics of the environment, it can lead to the successful implementation of a student-centred approach to knowledge management.

## Acknowledgements

This research is financially supported by the SPEV project – Research of the Influence of Ambient Intelligence Technologies on Development of Intellectual Capital, which is a part of the GAČR project SMEW - project number 403/10/1310.

## References

- Bang, L. P. H. (2008). *Design and Development of a Knowledge Community System*. School of Computing, National University of Singapore. Retrieved 12/5/2011, from <http://www.slideshare.net/huubang/design-and-development-of-a-knowledge-community-system>.
- Beres, I., & Turcsanyi-Szabo, M. (2010). Added value model of collaboration in higher education. *Interdisciplinary Journal of E-Learning and Learning Objectives*, Vol. 6, pp. 203-215.
- Brewer, P., & Brewer, K. (2010). Knowledge management, human resource management, and higher education: A theoretical model. *Journal of Education for Business*, Vol. 85, pp. 330-335.
- Bureš, V. (2007). *Knowledge management and the process of its implementation: A guide for practice* (in Czech). Prague: Grada Publishing.
- Bureš, V. (2009). Conceptual Perspective of Knowledge Management. *E+M Economics and Management*, Vol. 12, No. 2, pp. 84-96.

- Carlile, P. (2004). Transferring, translating, and transforming: An integrative framework for managing knowledge across boundaries. *Organization Science*, Vol. 15, No. 5, pp. 555-568.
- Cejthamr, V., Dědina, J. (2010). *Management and organizational behaviour* (in Czech). 2<sup>nd</sup> ed., Prague: Grada Publishing.
- Dalkir, K. (2005). *Knowledge management in theory and practice*. Oxford: Butterworth-Heinemann.
- Goddard, A. (1998). Facing up to market forces. *Times Higher Education Supplement*. No. 1,358, pp. 6-7.
- Heisig, P. (2006). The GPO-WM<sup>®</sup> Method for the Integration of Knowledge Management into Business Processes. *Proceedings of I-KNOW '06*, Graz, Austria, September 6-8, pp. 331-337.
- Howe, N., & Strauss, W. (2000). *Millennials Rising: The Next Greatest Generation*. New York: Vintage Books.
- Hřebíček, V. (2005). *Knowledge Management and Human Resources Management* (in Czech). Retrieved 11/4/2011, from Masaryk University Information System, <http://is.muni.cz/?lang=en>. Available only after authentication.
- Kelemen, J. et al. (2007). *Invitation to knowledge society*. Bratislava: Iura Edition.
- KM Frameworks (2011). Retrieved 20/05/2011, from [http://editthis.info/km\\_frameworks/KM\\_Frameworks](http://editthis.info/km_frameworks/KM_Frameworks).
- Kotler, P., Keller, K. (2008). *Marketing Management*. 13<sup>th</sup> edition. Upper Saddle River, NJ: Prentice Hall.
- Laudon, K. C., Laudon, J. P. (2010). *Management information systems: Managing the digital firm*. 11<sup>th</sup> edition. Upper Saddle River, NJ: Prentice Hall.
- Lee, H., Roth, G. (2009). A conceptual framework for examining knowledge management in higher education contexts. *New Horizons in Adult Education and Human Resource Development*, Vol. 23, No. 4, pp. 22-37.
- Lindström, M., Seybold, P. (2003). *Brandchild: remarkable insights into the minds of today's global kids and their relationships with brands*. Kogan Page, London.
- Ma, Y., Harmon, S. W. (2006). Integrating knowledge management systems, electronic performance support systems and learning technologies: A conceptual model. *Performance Improvement Quarterly*, Vol. 19, No. 3, pp. 107-120.
- Mikulecká, J., Mikulecký, P. (1999). Knowledge Management in the University Environment (in Czech). In: *IV. International conference "Ekonomika a informatika na prelomu tisíciletí"*, Liberec, Czech Republic, pp. 125-127.
- Mishra, D. (2007). To Work Smartly and Efficiently. *Business Line*. Chennai: Jul 10, 2007.
- Mišičková, K. (2011). Knowledge communities in Universities (in Czech). Faculty of Informatics and Management, University of Hradec Králové, diploma thesis.
- Mohelská, H., Tomaskova, H. (2010). The use of mobile application in the business environment in the Czech Republic. *Applied economics, business and development (AEBD): Proceedings of the world multiconference*, Kantaoui, Sousse: World scientific and engineering academy and society, p. 175-180.

Nonaka, I., Takeuchi, H. (1995). *The Knowledge Creating Company*. New York: Oxford University Press.

Norris, D. M., Mason, J., Robson, R., Lefrere, E., Collier, G. (2003). A revolution in knowledge sharing. *Educause Review*, Vol. 38, No. 5, pp. 14-20, 22-26.

Oblinger, D., Oblinger, J. L. (Eds.) (2005). *Educating the Net Generation*. Washington, DC: Educause.

Popper, K. R. (1994). *The Myth of the Framework: In Defence of Science and Rationality*. London: Routledge.

Řepa, V. (1999). *Analysis and Design of Information Systems* (in Czech). Prague: Ekopress.

Rowley, J. (2000). Is higher education ready for knowledge management? *The International Journal of Educational Management*, Vol. 14, No. 7, pp. 325-333.

Santo, S. A. (2005). Knowledge management: An imperative for schools of education. *TechTrends*, Vol. 49, No. 6, pp. 42-49.

St. George, E. (2006). Positioning higher education for the knowledge based economy. *Higher Education*, Vol. 52, pp. 58-610.

Tapscott, D. (1998). *Growing up Digital: The Rise of the Net-Generation*. McGraw-Hill, New York.

Veen, W., Jacobs, F. (2005). *Leren van Jongeren: Een literatuuronderzoek naar nieuwe geletterdheid*. Utrecht: Stichting SURF.

Veen, W., van Staalduinen, J. P. (2009). **Homo Zappiens and its Impact on Learning in Higher Education**. *IADIS International Conference e-Learning 2009*, Algarve, Portugal.

Veen, W., Vrakking, B. (2006). *Homo Zappiens: Growing Up in a Digital Age*. Network Continuum Education, London.

Wedman, J., Wang, F. (2005). Knowledge management in higher education: A knowledge repository approach. *Journal of Computing in Higher Education*, Vol. 17, No. 1, pp. 116-138.

Wu, I., Lin, H. (2009). A strategy-based process for implementing knowledge management: An integrative view and empirical study. *Journal of the American Society for Information Science and Technology*, Vol. 60, No. 4, pp 789-802.

Xu, J., Quaddus, M. (2005). A six-stage model for the effective diffusion of knowledge management systems. *The Journal of Management Development*, Vol. 24, No. 4, pp. 362-373.



*Advised by Peter Hošťák, College of Management, Bratislava, Slovakia*

Received: *April 21, 2011*

Accepted: *June 15, 2011*

<b>Vladimír Bureš</b>	Doc., Ing., Ph.D., Associate Professor, University of Hradec Králové, Rokytanského 62, 50003 Hradec Králové, Czech Republic. E-mail: vladimir.bures@uhk.cz Website: <a href="http://www.uhk.cz">http://www.uhk.cz</a>
<b>David Griffin</b>	MA, Dean of Academic Affairs, The College of Management, Bezručova 62, 91101 Trenčín, Slovakia. E-mail: dgriffin@vsm.sk Website: <a href="http://www.vsm.sk">http://www.vsm.sk</a>
<b>Denisa Hackett</b>	MBA, Associate Dean, The College of Management, Bezručova 62, 91101 Trenčín, Slovakia. E-mail: dhackett@vsm.sk Website: <a href="http://www.vsm.sk">http://www.vsm.sk</a>
<b>Peter Kročitý</b>	MBA, Assistant Professor/Scholastic Honesty Committee Chair, The College of Management, Bezručova 62, 91101 Trenčín, Slovakia. E-mail: pkrocity@vsm.sk Website: <a href="http://www.vsm.sk">http://www.vsm.sk</a>
<b>Erik Kubička</b>	PhDr. MBA. Assistant Professor, The College of Management, Bezručova 62, 91101 Trenčín, Slovakia. E-mail: ekubicka@vsm.sk Website: <a href="http://www.vsm.sk">http://www.vsm.sk</a>

© 2011. This work is published under  
<https://creativecommons.org/licenses/by-nc/4.0/> (the "License").  
Notwithstanding the ProQuest Terms and Conditions, you may use this  
content in accordance with the terms of the License.