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Does Practice Reflect Theory? An Exploratory Study of a Successful Knowledge Management System

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***Abstract*—**To investigate the correspondence of theory and practice, a successfully implemented Knowledge Management System (KMS) is explored through the lens of Alavi and Leidner's proposed KMS framework for the analysis of an information system in knowledge management (Framework-AISKM). The applied KMS system was designed to manage curricular knowledge in a distributed university environment. The motivation for the KMS is discussed along with the types of knowledge necessary in an academic setting. Elements of the KMS involved in all phases of capturing and disseminating knowledge are described. As the KMS matures the resulting data stores form the precursor to and the potential for knowledge mining. The findings from this exploratory study indicate substantial correspondence between the successful KMS and the theory-based framework providing provisional confirmation for the framework while suggesting factors that contributed to the system's success. Avenues for future work are described.

***Keywords*—**Applied KMS, education, knowledge management (KM), KM framework, knowledge management system (KMS).

I. Introduction

THE framework proposed by Alavi and Leidner [1] provides a theoretical basis for the analysis of Knowledge Management Systems (KMS) based on the role and contribution of information systems. This KMS framework for the Analysis of an Information System in Knowledge Management will be referred to in this paper as Framework-AISKM. The design of the KMS described in this paper has a very close correlation with this framework. In [7], the authors recount the differences in how practitioners and researchers responded to a conference presentation on KM. In the example the chasm between researchers and practitioners was enormous. To bridge such chasms it is important for those involved in the field of KM to study the design, use and success of applied knowledge management systems. Consequently, we identify the components of our KMS relative to those of the framework and hence describe the application of the proposed framework.

The organizational domain in which our system is deployed is a multi-campus, multi-national university with over 100 physical locations. The worldwide university environment, described later in this paper presents some significant challenges related to gathering and disseminating knowledge. According to [9] the principal problem for distributed collaboration is one of managing mutual knowledge. These challenges clearly drive the design of an associated KMS, and overcoming these challenges therefore represents a goal of the design.

Standard categories of knowledge are discussed by Alavi and Leidner [1], and represent an integral aspect of their framework. As in the design of any KMS, the specific types of knowledge needed in the domain had to be carefully considered. The necessary knowledge in the present domain has a close correspondence with the standard categories proposed in the framework. This knowledge is stored in our KMS and is subsequently successfully utilized. Such ease of storage and utilization adds further support for the proposed framework.

The applied KMS described in this paper has been fully deployed and has yielded many significant benefits. Based on this correspondence of components of our system with that proposed by Alavi and Leidner, we identify the factors of the framework that support the success of a KMS.

Our successes appear to support the design of the proposed framework and by looking at our KMS through the eyes of the framework we are able to identify factors of the design of the KMS that have clearly contributed to its success. Directions for future work are also described.

II. Background

For the purposes of knowledge management, knowledge is generally accepted as either explicit or tacit in nature even though some [1] argue they form a continuum rather than discrete sets.

Explicit knowledge tends to be relatively well structured, and therefore generally straightforward to capture and communicate. By definition, explicit knowledge is "…articulated, codified, and communicated in symbolic form and/or natural language" [1]. Tacit knowledge on the other hand, is typically based on action or experience. Experience generates both technical skills and mental models that inform future efforts in shaping a positive outcome. In some cases,

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tacit knowledge is understood only subconsciously by the task expert and may be responsible for instinctive actions. As a result of the way in which tacit knowledge is built it is difficult to acquire, encode and transfer in a structured form. The effective transfer of tacit knowledge may rely on individuals sharing expertise via personal communication in verbal or written form. This conversion process is referred to as externalization [2].

III. Motivation for the KMS to Manage Curricular Knowledge

In today's increasingly global society, the ability to capture and subsequently share knowledge among a wide spectrum of individuals is becoming a more and more vital component of any institution's success. This is certainly true in a higher education institution: Providing a sound, state-of-the-art program to all student bodies, and ensuring accreditation are vital requirements.

Webster University's main campus is located in St. Louis, Missouri in the USA. However, it is uniquely positioned in that there are over 100 extended campuses, spread throughout the world. This type of distributed environment presents many unique challenges in terms of curriculum design and development, effective communication with faculty and administrators, and ensuring that a consistent program is conducted at all sites.

A key element of the success of a higher education institution is providing a high quality education to all students. In a distributed environment such quality can be difficult to control. Courses and programs must be consistent, with the same learning objectives being achieved regardless of the location at which a course is taught. A worldwide university, with thousands of faculty, clearly has a very significant body of knowledge. The challenge is to ensure that this knowledge is gathered and disseminated effectively, and not kept as localized knowledge. We want our faculty, and our students to benefit from this body of knowledge.

University wide and specialized accreditations provide a university with an essential stamp of approval. Accreditation authorities require many facets of an institution's procedures and practices to be successfully implemented. One vital component of a successful accreditation review is to demonstrate that assessment of courses can be performed in an adequate manner. This process involves significant data gathering, solid faculty involvement, and the ability for program leaders to easily monitor and analyze the data collected. This is particularly challenging if the institution is multi-campus, and even multi-national.

Another essential component of accreditation is the notion of continuous improvement. This requires the ability to easily analyze the data, and make judgments regarding current performance and opportunities for improvement. Each course must be assessed, implying that data must be collected from all offerings or a sample of each core course throughout the world. Once assessed, program leaders must then be able to easily analyze the data and make recommendations for course and program improvement. Both internal and external motivations for the KMS are described more fully in [3].

Both explicit and tacit knowledge are prevalent in a university setting, and therefore both must be captured and disseminated. Rules, procedures, and sets of valid choices are examples of explicit knowledge that historically have been articulated and lend themselves to storage in the structured format of traditional databases. In the environment studied, curricular knowledge was spread across several systems and locations. While course descriptions were stored in academic catalogs, an individual syllabus did not always reflect the course description or university policies found in the catalog. Variations in the elements included in syllabi for the same course were found. Further, learning outcomes were not always consistent from course offering to course offering.

Tacit knowledge on the other hand, is typically based on action or experience. Faculty members in a large educational institution have a significant amount of unstated, experiential knowledge, which ideally would be shared with other faculty and students. Such implicit knowledge can be very much more difficult to capture, and more challenging to communicate in an effective manner.

If students study at more than one campus, providing consistency across campus locations is essential. We advocate that students travel to at least one campus outside their home campus during their degree program. This is only possible if courses and programs are consistent throughout the Webster campuses. To achieve consistency, the explicit and implicit knowledge described above must be captured and disseminated effectively.

The academic desire to provide a high quality university education for our students, the need for improved assessment of learning outcomes, and the interest in specialized accreditation, drove the design and implementation of an effective KMS. The resulting system is consistent with the Webster University culture of sharing knowledge.

IV. Description of Resulting KMS

The need for a KMS outlined in the previous section gave rise to many fundamental requirements. The resulting KMS exhibits the following features:

- Available 24 hours a day, seven days a week (24x7) to instructors around the globe.
- Communicates curricula to instructors regardless of location or instructional delivery method. As mentioned earlier, it was important to note and capture the tacit knowledge of an experienced instructor in addition to the typical explicit knowledge found in a syllabus.
- Provides sufficient intellectual capital to guide instructors in delivering a consistent course yet allow the course to be tailored to a given group of students or instructor.
- Communicates program learning outcomes and assessment procedures and processes.
- Provides an electronic method to collect assessment data.
- Provides mechanisms to monitor its use and support

compliance audits.

- Supports the faculty in analyzing assessment data and closing the loop for assessment via continuous process improvement.

As is typical in practice, the system has evolved incrementally over time based on resource constraints. In this case most components went through pilot testing before being rolled out in phases. The next phase for the KMS, the Syllabus Generator, has been through two pilot tests. A key feature is generating a correctly formatted syllabus shell. The shell is automatically populated with current versions of all required text such as the course description. In addition the user interface provides direct access to the related Syllabus Prototype and Faculty Course Guide. This simplifies access to several components with the goal of improving use of the knowledge documents. The Syllabus Generator may facilitate a more detailed analysis of participants' KMS use patterns and their roles in knowledge conversion.

The KMS involves several components aimed at establishing channels of communication throughout the worldwide community of the university. As previously described, such a system must enable important course-related information to be effectively disseminated, allow instructors and administrators to monitor the courses being taught at all locations, and offer instructors the opportunity to contribute to the improvement of our programs by providing input based on their real-world experiences. The main components are:

- Syllabus Prototype Repository
- Faculty Course Guide Repository
- Course Information Interface
- Course Syllabus Collector
- Course Syllabus Repository
- Course Syllabus Viewer
- Assessment Data Collector
- Assessment Data Repository
- Assessment Data Viewer

These components are described in further detail in [4] and in subsequent sections of this paper along with their role in the Framework-AISKM. The repositories, collectors and system interface provide for two-way communication in the system. The repositories provide for the dissemination of the most recent version of curricular information. As digital repositories they are able to support the revisions and continual additions necessary in such a large and dynamic educational environment. In addition the Syllabus Repository and the Assessment Data Repository maintain a record over time of the actual syllabus used for every course offering and all assessment data collected through courses. These historical records provide the documentation that is useful for continuous improvement and are highly valued by accrediting organizations. An overview of the structure and main components of the KMS is shown in Fig. 1: Overview of Knowledge Management System.

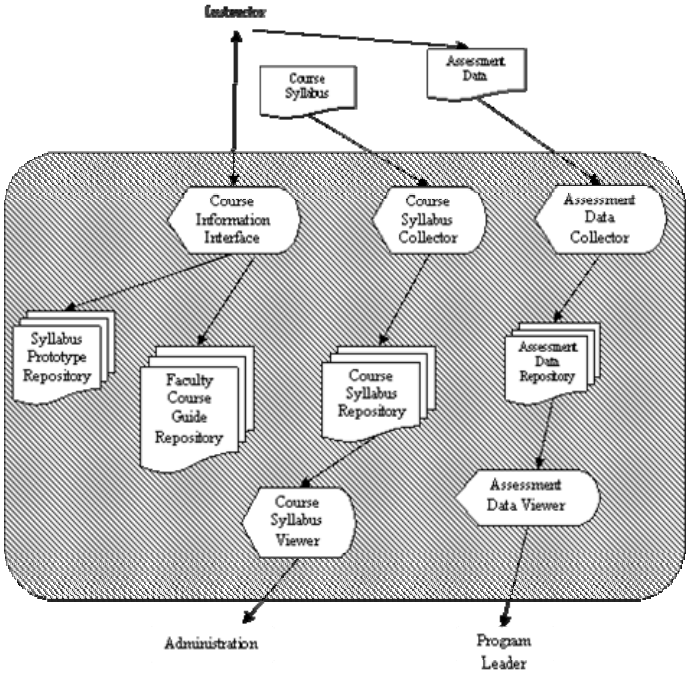

Fig. 1 Overview of Knowledge Management System

It can be noted from this diagram that instructors, administrators, and program leaders are all considered stakeholders in the system and therefore their needs must be accommodated.

Four major knowledge documents, or containers, serve to encapsulate knowledge for stakeholders. The major knowledge documents are: 1) Syllabus Prototype, 2) Faculty Course Guide, 3) Course Syllabus, and 4) Assessment Data. Each of the major knowledge documents in the system is briefly described below.

Syllabus Prototype. The syllabus prototype provides instructors with a sample of a syllabus that is consistent with the program curricula. The prototype includes some elements that are predefined by the school yet many elements that may be tailored by the instructor. In this way the syllabus can be adapted to different teaching styles, course formats and schedules while still remaining true to academic program.

Faculty Course Guide. The Faculty Course Guide (FCG) is designed to share instructor-to-instructor communication. The FCG content reflects the knowledge an experienced faculty mentor may share with a new instructor. For instance, the FCG may describe how the course fits in a given program, course topics that are mandatory, topics that are less important, important material needed but not included in the text, or soft skill development not outlined in the syllabus.

Course Syllabus. The syllabus prototype and faculty course guide assist instructors in preparing their own syllabi. All syllabi for each course offering are uploaded to the cumulative Course Syllabus Repository to provide a historical record of every course offered in the school.

Assessment Data. A web-based form collects assessment data for a given course offering the form collects quantitative

data that reflects student performance for given program learning outcomes. Additionally, the form gathers free-form qualitative data from instructors. The instructor may note, for instance, weakness in incoming skills, problems with course materials or suggest improvements. The data from each course and section is aggregated, summarized, and routed to faculty for analysis and potential action.

The resulting KMS has already yielded benefits for a variety of stakeholders. For example, positive comments from practitioner faculty teaching at extended sites indicate they have a better understanding of the curricula and the focus for the courses they teach. A striking indicator of success was provided via external validation by the Association for Collegiate Business Schools and Programs (ACBSP), one of two major accreditation bodies for business schools in the United States.

The ACBSP's accreditation standards are modeled on the Baldrige National Quality Program (http://www.quality.nist.gov/) and its Criteria for Educational Performance Excellence. As part of the accreditation process the School of Business and Technology conducted an extensive self-study and submitted exhaustive analytical reports. Further the ACBSP (http://www.acbsp.org/) conducted on-site visits to examine the school's systems, curricula and meet with various stakeholders. In the end, the ACBSP accreditation team named our quality assurance and academic assessment initiatives represented by the KMS as "Best in Class."

V. Framework for Analysis of the Role of an Information System in KM

Alavi and Leidner [1] conducted an extensive cross-disciplinary review of the literature on knowledge and the firm. On the premise that key concepts are likely to influence the design of a KMS, they reviewed definitions, perspectives and taxonomies of knowledge. Alavi and Leidner [1] summarized the variations in definitions of knowledge as well as the relationship between different kinds of knowledge. They found that perspectives on knowledge go well beyond the traditional information technology (IT) view of the data →information→knowledge hierarchy. Established taxonomies of knowledge were examined and summarized as well.

Based on the preliminary survey of concepts, Alavi and Leidner [1] developed a systematic framework to analyze and examine the role of IT in knowledge management systems. In this framework, organizations are viewed as knowledge systems in their own right. When organizations are viewed as knowledge systems, the systems are implemented by four basic knowledge processes:

1. Knowledge creation (or construction);
2. Knowledge storage and retrieval;
3. Knowledge transfer; and
4. Knowledge application.

Further, each knowledge process entails conversions of knowledge typically categorized as socialization, externalization, combined or internalization (SECI) as modeled by [5]. Externalization is the conversion of knowledge from tacit to explicit while internalization is the successful transfer of explicit to tacit knowledge. Socialization represents the exchange of tacit knowledge between two individuals typically achieved through face-to-face interactions. Combination in this case refers to the exchange of explicit knowledge between individuals. E-mail exchanges often involve sharing explicit knowledge.

The history of KM is examined in [8] and describes the major phases in the evolution of KM. [8] also surveys the literature on the forthcoming generation of KM. The framework by [1], designated as Framework-AISKM in this study, would be typically described as second generation KM. Second generation KM shift the emphasis away from a focus solely on IT systems to types of knowledge, knowledge conversion and a life-cycle approach. The literature indicates very low success rates for KM projects. The paper goes on to identify key themes as a model for the next generation of KM with a recommendation to test the model in practice. The model for next generation KM provides a direction for future research.

The following sections describe the major knowledge processes that form the Framework-AISKM. The KMS system will then be examined for its role and contribution to each of the major knowledge processes.

A. Knowledge Creation

Alavi and Leidner summarize organizational knowledge creation as a "…continual interplay between the tacit and explicit dimensions of knowledge… that moves through individual, group and organizational levels [1]." Yet knowledge creation, most often considered the conversion of tacit knowledge to explicit, is largely the domain of the individual. This conversion process is not linear in nature, rather it is an on-going process described by [5], [6] as "…a spiraling process of interactions between explicit and tacit knowledge". The challenge then is to encourage communication and facilitate the sharing of tacit knowledge.

Several of the knowledge documents play roles, albeit different roles, in the cycle of knowledge creation. Organizational knowledge was not only created in the knowledge documents but also through the processes to design and develop the system. While this paper focuses on the KMS and knowledge documents, an example of knowledge creation from the process of designing and developing the KMS follows.

The process of developing system components often reflects the knowledge creation cycle. For example, early efforts to collect detailed course information revealed wide variation in the content and format of syllabi. That finding alone may be considered a form of organizational knowledge creation that led to the development of the Syllabus Prototype. During an iterative design and development process significant differences across the departments were identified and coalesced into a workable model. One of the KM challenges identified by [1] is enabling a group's episodic,

context specific, memory to be shared across groups. The Syllabus Prototype is tangible evidence of sharing and applying episodic memory across groups.

Returning to the knowledge documents, the Syllabus Prototype created a formal guide to the elements and contents of syllabi across the school. The result established a school-wide standard that specifies elements that must be included (e.g. materials, learning objectives, policies, accessibility notice, etc.). In some cases, the standard specifies the content of a required element (e.g. course description, university policies, etc.). The standard also offers additional guidance via suggested course activities and schedule. However, the instructor has the ability to modify the content of such sections retaining flexibility in course delivery. The Syllabus Prototype thus holds the explicit knowledge compiled from various sources and begins to present formerly tacit information as suggestions. For faculty, particularly practitioner faculty distributed around the world, the Syllabus Prototype significantly expands and makes organizational knowledge accessible. A first audit of Course Syllabi indicated less than half of the syllabi met audit criteria and indicated a need to integrate the KMS into established processes. In contrast, the results from a second audit conducted after another semester reflected dramatic improvements with one department having 100% of syllabi meeting the criteria.

The Faculty Course Guide (FCG) endeavors to encourage and document knowledge typically converted via socialization or face-to-face communication. Face-to-face communication does not scale well nor is it easy in a multi-site distributed environment. The FCG attempts to fill a mentoring role for instructors and encourage sharing of heuristic knowledge. In so doing, the FCG documents tacit knowledge in the form of advice and attempts to mediate the risk of information overload that will be discussed in the section on knowledge transfer.

The process of creating the initial FCGs for every course was a daunting task. The sheer size of the effort affected most full-time faculty in the school and represented a significant investment of resources. While Webster University predominately has a culture of sharing knowledge, the required participation and formal use of information systems represented a shift in culture.

Early content in some FCGs closely resembled information found in the syllabus. Similarity in content may, based on anecdotal evidence, stem from several sources: 1) significant time and workload pressures when the first FCGs were created; 2) faculty buy-in was not universal; and 3) faculty may not have had a clear understanding of the type of content being sought. However, many programs added both program and course specific recommendations to the FCGs. Cultural shifts take time and an increase in acceptance has been noted over several years. The school plans to revisit the FCG content issue during the next update cycle. It is clear, however, that far more explicit guidance is now available to instructors throughout the world than in the past.

The primary role of the Course Syllabi is to document course offerings over time. In this way the Syllabus Collector provides evidence of quality and consistency. However, auditing the syllabi in the collector created new knowledge about instructor understanding of the KMS and compliance. The new knowledge was applied to refine instructions, enhance the information system and improve the effectiveness of the KMS.

The data collected for assessment represents data creation in that such data were not formally collected at the organizational level in the past. The data are largely quantitative, but represent a conversion of implicit knowledge at the course-section level to explicit data for analysis at the program level. In this fashion the Assessment Data knowledge document has lead to considerable knowledge creation.

B. Knowledge Storage and Retrieval

An important, if not critical, part of a KMS is the ability to solicit and house a collection of knowledge in a manner that enables uncomplicated retrieval. A challenge is determining how much knowledge, and perhaps more importantly, how much context to store [1]. The context is necessary for understanding, internalizing and applying the knowledge correctly. Each of the four knowledge documents is organized around established courses using course codes and numbers. That instantly provides an initial context and limits the scope for a given document. The predominant form of retrieval in this particular KMS environment entails an instructor obtaining documents for a given course. At least initially, this streamlines the retrieval process. Where appropriate, term and instructor identifiers provide for finer granularity in retrieval.

The KM literature reports major barriers to successfully gathering knowledge for storage and retrieval [1], [7]. Two major barriers are corporate culture and insufficient employee time in lean companies. The organization in this study experienced hurdles in these areas. After faculty developed the initial content, additional staff time was dedicated to document maintenance. This reduced the time pressure for some faculty. However it increased the time pressure for staff as they still had their normal responsibilities. As is common in the world of practice, the system was developed and implemented within substantial resource constraints. The constraints slowed implementation and required the use of improvised prototypes that were developed internally by the school staff. At times temporary assistance was brought in to supplement staff. After extended lobbying, some additional resources were allocated to the project. Most recently, the university IT department is now involved with the KMS. In addition, a staff member was recently hired to work with the Assistant Dean on this KMS as well as other school initiatives.

The Syllabus Prototype, Faculty Course Guide, Course Syllabi, and Assessment Data contain knowledge that is available to instructors via easy retrieval. Future efforts to improve storage and retrieval include: rolling out a formal update cycle to prevent the data from becoming stale;

increasing the mentoring knowledge in the FCGs, and improving the user interface by gradually bringing access to all four knowledge documents into one tool; and improving the storage and retrieval of the assessment data. The university is preparing to implement a single-sign-on system that will simplify access for instructors.

C. Knowledge Transfer

Knowledge transfer is the communication of explicit or tacit knowledge in a way that the recipient may understand, internalize and act on this knowledge. A primary research question according to [1] is the degree to which knowledge transfer increases at the organizational level. KM efforts in some cases may increase the amount of knowledge shared but not the number of recipients. Increasing the number of appropriate recipients of knowledge begins to raise transfer to the organizational level. At the organizational level it is important to ensure that knowledge reaches appropriate locations and can be used; a difficult goal in a widely distributed setting [1]. This is a particular area of success for the KMS.

Every instructor in the School of Business & Technology, regardless of geographic location, may access the KMS 24-hours a day, 7-days a week through a web-based interface. In addition, regional face-to-face meetings were implemented to support knowledge transfer and system adoption. The result is a vast improvement over prior knowledge transfer that often relied on 1) physical proximity to the home campus or 2) an established distance relationship with a faculty member. Such interactions were hit-and-miss at best, even absent for some practitioner faculty at extended sites. By communicating the curricula openly and dependably to all instructors the likelihood of consistency in courses is increased. Now instructors have access to the program's intended approach to any given course. Given a clear target, the instructors may be more successful in achieving the target. The KMS therefore succeeds both in reaching all organizational units and beginning to raise the transfer of knowledge to the organizational level.

The knowledge documents provide knowledge that was either commonly explicit or formerly implicit. However even the commonly explicit knowledge required retrieval from multiple locations with multiple log-ins. In the new KMS, knowledge that was formerly scattered has been consolidated. Additional problems for many KMS include information overload and finding the relevant knowledge. In this respect the KMS system in this study again benefits from being organized by course. The organization by course is both established and intrinsic to the academic environment, thus reducing barriers to adoption. As the curricula are at the very heart of the school's mission, the KMS addresses core knowledge for the organization.

Further, knowledge transfer and application may be advanced by embedding knowledge in daily activities or routine processes [1], [2]. The KMS system is now part of every instructor's preparation for teaching a course. If a course is selected for program assessment in a given term, the KMS becomes part of the closure for a course section. While the use of KMS knowledge can be confirmed through the Syllabus Collector, the degree to which instructors internalize the knowledge remains an open research question.

D. Knowledge Application

One of the dilemmas in KM is that improved availability of knowledge does not automatically ensure improved organizational performance. Rather, it is the successful application of knowledge that may contribute to competitive advantage. One approach that promotes knowledge application is integrating the KMS into organizational routines [1]. As mentioned earlier, the KMS is gradually becoming a part of the routine for instructors at the beginning of term. When the Syllabus Generator is rolled out it will include access to three of the knowledge documents through one interface. When single sign-on is implemented by the university, instructors may have more frequent visual contact with the KMS portal. The KMS, along with changes to school policy and procedure, are making inroads in instructor routines. As the information systems that support the KMS become more robust the KMS can be integrated into additional routine activities.

The four primary knowledge processes overlap in many regards. A noteworthy result of knowledge application is an increase in the internalization of knowledge. As knowledge is converted from explicit to tacit it becomes part of the recipient's experience. That experience and influence on the recipient's mental models may in turn contribute to additional knowledge creation. Hence the recurring nature of knowledge processes and conversion shed light on the spiral model proposed by [7].

The Syllabus Prototype encourages the adoption of knowledge created in building the repository. As recommended practices are incorporated into individual syllabi it will support the internalization of the practices. In turn, those practices will reach students in the classroom at least by way of the syllabus.

Moreover, the Faculty Course Guide (FCG) offers guidance specifically designed for instructors. Instructors may choose to adopt similar practices in the classroom and during their interactions with students. In this way the FCG knowledge may be applied by instructors and contribute to the student learning experience.

The items described thus far under knowledge application rely on fairly direct channels. The way in which Assessment Data involves the application knowledge is a bit less direct. The Assessment Data are aggregated and forwarded to faculty mentors after each term. Faculty mentors are responsible for analyzing the data and applying knowledge to make an immediate judgment. In this first round of analysis no action is taken unless an extreme problem is readily apparent. Regardless of the existence of such a problem, once a year, the knowledge created from the course mentor review is further analyzed across multiple terms. Participants in the

annual review include mentors, department faculty, chairs, program directors, and members of the school assessment team. The findings from the annual review are then applied to make any necessary curricula adjustments. The new knowledge generated is integrated into the KMS for use by instructors. The summary knowledge is forwarded to school leadership and the university assessment officer for auxiliary application.

The findings from this section are summarized in Table I. Correspondence between KMS elements and the four knowledge processes.

It is clear that the knowledge documents in the KMS are directly involved in knowledge creation, storage and retrieval, transfer and application. In some cases, such as Assessment Data, it can be argued that it contributes to knowledge application albeit indirectly. The historical nature of the Course Syllabi in the Collector may be analyzed to create new knowledge that may then be transferred and applied. Again, the route is less direct. Each of the four knowledge documents has been fully implemented.

An additional column is included for the Syllabus Generator, a new component of the KMS that is still in the pilot phase. The Syllabus Generator will enable automatic verification of course syllabi, integrate any predefined content as well as ensure more consistent formatting throughout worldwide campuses. Projected interactions with the four knowledge processes are noted.

VI. Conclusion and Future Directions

This study was motivated by KM literature that indicated the importance for those involved in the field of KM to study the design, use and success of applied knowledge management systems. The study continues the investigation into the correspondence between KM theory and KM practice. The need and requirements for a KMS to manage curricular knowledge in a distributed university environment was described. The KMS has enabled certain processes and procedures to become part of the normal culture of Webster's School of Business and Technology.

The KMS has been implemented and deemed "best of class" by the ACBSP, an external accrediting body. As a successful system it offered a worthy opportunity to examine an applied KMS system through the lens of a theoretical framework. Based on a review of interdisciplinary literature, the KMS framework proposed by [1], and designated as Framework-AISKM, was chosen and provided a foundation for the study. An exploratory analysis of the KMS vis-à-vis the Framework-AISKM was then presented.

A high correspondence between the successful KMS and the Framework-AISKM was found. More specifically the four primary knowledge documents in the KMS directly played a role in the four theoretical knowledge processes. That is, the knowledge documents participated directly in knowledge creation, storage and retrieval, transfer and application. Further, the exploratory study indicates that the knowledge documents may contribute to the four theoretical knowledge processes in an indirect way. By way of extension, a forthcoming addition to the KMS was examined in the same way using the design and experience from pilot implementations as input.

As an aside, the authors found the process of examining the KMS through the theoretical framework to be rewarding. The knowledge created during the study will be applied by investigating further revisions to the KMS such as consolidation of the user interface to include more direct access to all four knowledge documents.

A major contribution of this exploratory study is evidence that there is a significant correspondence between the Framework-AISKM and a successful KMS in practice. Based on the correspondence of framework to practical application it infers confirmation of the theoretical framework.. By considering the correlation between the framework proposed by Alavi and Leidner and our KMS we were able to analyze the mechanics of our system, and develop an understanding of reasons that contribute to its success.

A brief search for literature on KM in higher education finds many papers. However, most of the papers explore the potential for KM in higher education but few examine systems in practice. Additionally, within higher education the size and structure of Webster University and its School of Business and Technology are unusual. The KMS in this environment must address issues of scale and distributed locations. The study also leads to suggestions for future work.

Future directions fall into two categories: 1) Refinements and additions to the current KMS and its related processes and 2) Opportunities for additional research.

In the first category, proposed work on the KMS and organizational processes includes: increasing the mentoring knowledge in the Faculty Course Guides; rolling out a formal update cycle to prevent the knowledge documents from becoming stale; improving the storage and retrieval of the assessment data; and investigating the potential to improve the user interface by gradually bringing access to all four knowledge documents into one tool.

Avenues for future research include: a more detailed study of the participants and kinds of knowledge conversion occurring throughout the KMS; a detailed investigation into the measures of success for the KMS; analysis of the KMS using the model for next generation KM [8]; the impact of implementing the Syllabus Generator that is planned for Spring 2009; investigating the degree to which instructors internalize knowledge from the KMS; and the impact of a single sign-on system on instructor access and acceptance.

The strong correlation between an established, theoretical framework and our applied KMS provides a sense of confidence in the robustness of our system. Moreover, as the Webster University KMS evolves, we will continue to utilize the elements of the framework as a foundation thus enabling the expansion to take place efficiently and effectively. This foundation in theory is viewed as a significant benefit in the long-term planning of our system.

TABLE I
CORRESPONDENCE BETWEEN KMS ELEMENTS AND THE FOUR KNOWLEDGE PROCESSES

Status:	Fully Implemented				In Pilot Phase
Knowledge Process:	**Syllabus Prototype**	**Faculty Course Guide**	**Course Syllabi in Collector**	**Assessment Data**	**Course Syllabus Generator**
Creation	X	X		X	X
Storage & Retrieval	X	X	X	X	X
Transfer	X	X		X	X
Application	X	X	X		X

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