A MODEL FOR DYNAMIC CURRICULUM DEVELOPMENT SYSTEM FOR ADVANCED COURSES THROUGH KNOWLEDGE MANAGEMENT IN ACADEMIC LIBRARY

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The system of Knowledge Management (KM), practiced in the business world, creates value out of the intangible organizational knowledge assets providing strategies to get the right knowledge at the right time to edge over the business competitors. Although the concept of KM as developed in the organizational context cannot be directly incorporated in a library environment, the basic principles of organizational KM can be effectively adopted for certain types of information and knowledge processing goal in a particular type of library. For using KM in a library environment, certain conceptual and pragmatic modifications are necessary. This paper shows that curriculum development and syllabus preparation in an advanced academic situation can be taken as such an area of mission with teachers of a department as target group, project or mission team. The paper introduces briefly a general schema of library KM and chalks out the management aspect of fulfilling the mission of curriculum development with KM. Curriculum development is a continuous process and syllabus updating is needed every now and then. A dedicated portal maintained for curriculum development is shown schematically. The portal will act both as a repository and an archive. Teachers of a department or in a subject field may be made to form a 'community of practice and action'. Teachers, scholars, senior and students may input for the repository, but any access to the portal repository and the archive will be password protected. It is suggested that available technologies would suffice to maintain the KM portals for curriculum development in the library of a university or institute of higher learning. Use of semantics based ontology for indicating the topical changes potentially useful for the purpose has been discussed.

Introduction

Knowledge Management (KM) is a proven concept for success of a company if practiced properly. Traditionally, companies focused on the tangible or explicit knowledge assets (information) available in various types of documents within and outside the company. The tacit and the intangible knowledge assets remained mostly untapped and unmanaged. Explicit knowledge assets reside in the databases, knowledge bases, file cabinets and are quite easily packaged, codified, transferable and communicable. Tacit knowledge assets, on the other hand, are skills, experiences, individual beliefs, values, and ideas. Tacit knowledge is personal, context-specific, difficult to compose, difficult to communicate, distribute and transfer across the organization. Tacit and intangible knowledge made explicit and tangible may provide the organization with valuable, credible and insightful information. Combinations of these two types (tacit and explicit) of knowledge assets provide the perceived value of knowledge management (Nonaka, 1991).

Definition

KM has been defined as the skill and act of dealing with situation of putting together information, understanding, and skills gained by individuals through education and experience in an organizational context. KM is collection, selection, editing, organization and incorporation in a portal for organizational or community use by downloading and uploading relevant data and information. KM, is the skill and act of dealing with situation of putting together information, understanding, skills gained by individuals through education and experience in the context of organizational activity or community activity or R&D or project management activity including academic research projects. Sharing, context, accessibility and learning facilities are the more important aspects of KM. It also follows that age-old dictum of getting the right knowledge, in the right place, at the right time. The current practice of KM processes knowledge and information from all possible sources – human or documentary, digital or analog.

There are now Open Knowledge Networks (OKN's) for community benefits; and Open Archiving Initiatives (OAI) for specialized groups beyond the organizational bounds. Such initiatives have some implications for KM. Librarians are also groping around the sphere of KM to use the concept within library framework.

KM is a child of postindustrial information society; therefore any systematized KM is heavily IT based. For a successful KM any organization requires satisfaction of five factors - infrastructural and super structural support, money, manpower, technology and management. KM in most cases context and environment specific and project oriented.

Knowledge Management and Libraries

Traditionally direct knowledge transfer was a part and parcel of educational and training processes, i.e., the teacher pupil relation and peer group sharing. Indirect knowledge transfer process has been in the jurisdiction of the librarians. Information contained in documents was to be supplied or placed before the users and learners. Information communication technology (ICT) revolution started to change all these. The new breed of Knowledge Managers claimed the role of agents for both direct and indirect, tacit and explicit information processing and transfer within an organization. They got support of the top management authority of their organizations. Librarians were left out for working with documents, hard copy or soft copy or online, and placing them before the clients (readers) mostly on demand. Knowledge managers' role is insider and involved; librarians' role is outsider and 'not so involved'. A knowledge manager is a member of a project team. There is seldom any scope for a librarian to team up for any activity of a client or a client group. However we shall see that there are emerging areas where equipped with new tools academic librarians / libraries may well introduce KM practices and team up with client groups of interest and action (practice).

Librarians or library professionals provide, in principle, the right document to the right user at the right time. Currently the 'right' document has become the right information on a phone call or a google search. Some of the library thinkers consider KM in the LIS context as a "semantic drift" – just another name for information management (Davenport and Cronin, 2000). However KM should be considered as information management at depth.

Indeed there are certain subtle differences between Information Management and KM as also between library activities and KM. For making library KM a reality a number of 'matters' need to be considered and suitably tailored or modified or implemented.

Main characteristic of KM is dealing with different types of knowledge transfer processes and sources of knowledge as analyzed by (Nonaka and Takeuchi, 1995). They present a theory of creation and transformation of knowledge as cycles of four integrated processes, Externalization, Combination, Internalization and Socialization.

For establishing KM in an organization a KM portal is needed. A 'Portal' is an organized web-based resource having links to necessary web sites, relevant content organized by topic, and updated at regular intervals. For a KM portal input from different sources are required. The sources are human beings, documents of different kinds in hard and soft form including ephemera, meetings and virtual resources. Part of the portal should be kept as open archive (OA).

Classical concept of Open Archive is defined in the following manner. An Open Archive helps to disseminate information efficiently. It works as a repository or a storehouse of organizations and institutions willing to share or disseminate their research. The information manager of the OA should have the expertise to consolidate the information contained in the OA. In the library situation for KM as proposed here, requires the Knowledge Manager to manage OA also as a part of the library KM portal. Metadata protocols within the framework of some standard procedures are to be incorporated with the KM portal including OA.

For using KM in a library there is a need for a number of conceptual and pragmatic modifications. The organizational project orientation goal has to be replaced by mission oriented goal; KM system needs a type of globalized approach instead of localized approach of classical KM; unlike a librarian who is a provider of document or information the knowledge manager is to be a partner in knowledge processing and utilization; KM in a library would concern a target group of selected clients with a common mission instead of organizational project team members.

In the present paper we show that curriculum development and syllabus preparation in an advanced academic situation can be taken as a KM oriented mission with teachers of a department as target group. Although Library KM (LKM) depends on intelligent use of all the major components we focus mainly on management and contextual aspect and do not discuss manpower and technology aspects.

A Model of Library KM for Curriculum Development

(Kidwell et al, 2000) have suggested that 'college and universities have significant opportunities to apply KM practices to support every part of their mission'. They mention, but do not elaborate, five areas of application and benefits of KM – research process, curriculum development process, student and alumni services, administrative services and strategic planning. Except the 'administrative services' none else falls in the domain of classical KM. 'Academic strategic planning' should also benefit from KM. We are not sure about student and alumni services. (Hawkins, 1998) took a lead from Plater to focus on how to go about inventing a part of the future with this 'something entirely new'. This is understanding and providing for customers' needs, be they students or faculty. Although Plater and Hawkins concern themselves with the 'American' universities, their observations and futuristic speculations may well be applicable to any other country's context. The idea is that the academic libraries have to take a leading role in providing strategic guidelines and thrust to shape future courses of academic endeavors by tackling

information labyrinths and complexes with ever bursting chaotic traffic of data and documents.

Our vision is academic LKM to tackle the situation. It is more important for third world countries where there is flood of information of foreign origin and at the same time dearth and gaps of indigenous information. Academic libraries should not only arrange for access and navigation to as many sources possible but also for retro-conversion and transformation of data in current machine readable form and for accumulating data from diverse 'not easily accessible' indigenous background. They should also convert older mainly those generated before coming of the third generation PCs, hardcopy items of importance generated in the institution, especially in social science and humanities. Librarians should encourage and motivate academics and researchers to submit their information items to OA's and repositories. The portal of academic (and research) LKM should provide for connectivity to gateways and gateways of gateways such as CORC of OCLC (USA) or ROADS (UK).

LKM portal (vide Figure. 1) will have directory information, metadata and bibliographic data information and full-text information properly classified and indexed. There has to be very frequent interactions between the KM team and the members in respect of input and archiving. The portal shows the system at work with activities and connections in different groups. The first group contains major activities of LKM staff in need and gap analysis, KDD, mining, discovery support, digesting, CM, readability test etc; the second group comprises connection and input of members, persons, repositories, etc., the third group has the knowledge corner; the fourth group consists of connections to archives, databases and different gateways. Gateways for online shared (and hence leveraged) cataloging resources are now being available. (Dutta 2007)

Curriculum Development is an area where Library KM can be highly effective. The syllabi or course curricula can be put up in an open archive or portal. Teachers of a department or in a subject field may be made to form a 'community of practice and action'. Willing teachers of related subject fields and outside experts on the subject should act as resource persons for contributing criticism, comments, suggestions, modifications, or change of orientation for the syllabus of that subject. Senior students or outgoing students can be asked to give feedback and suggestion. The portal manager may supply syllabuses of some other institutions, which are not 'almost the same' to those already kept in the Portal. A knowledge manager should also store / display / input new developments occurring in the field as and when necessary. This can be done by using a

type of technology or procedure to capture ontological changes occurring in a field (academic, professional, technical or practical).

Every few months (preferably three to six months) a portal should be properly updated; contents readjusted; information redirected or reconsolidated. Thus using KM methods portal can be used to effect change in the syllabus every now and then (may be one, two or three years). This KM procedure can only be applicable in case of higher studies, particularly in master's and M Phil levels in case of India. If the institution concerned deals with large number of courses in different subjects then there has to be a portal or a partition of a portal for each course. There should have to be provision for referring to any course portal by members or persons concerned of any other course curriculum for facilitating interdisciplinary inputs. There should also be a provision for referring, accessing, consulting a course curriculum or syllabus of any institution of the world on demand. This sort of KM portal in a library can be useful in a country like India. In India course curricula are usually modeled after one or more course curricula of advanced countries, usually UK and US. The change in syllabus is normally effected by a gap of half to one decade on average. The new changed curriculum remains backdated by several years. The main problem is probably the difficulties in availability of relevant materials and sharing of knowledge and information. Thus the specialized LKM for syllabus can be of immense help.

A recent trend in KM support for developing systems and technologies is through semantics based ontology. Ontology, as a branch of metaphysics, is the study of nature of 'existence' or 'entity' or 'being'. In a sense it is an attempt to capture the conceptual worldview; therefore it has a deep semantic aspect.

If we consider a microstructure of ontology through concepts in discourses and minute development of information or knowledge, then concepts and semantics (or meaning) of all sorts of terminology and 'propositional functions' should be considered ever changing. If such micro entities of language behold together the 'worldview' or 'viewpoint' of a particular development at a particular point of time, then by studying semantic changes, ontological changes may be understood in a particular topic, subject field or context. Haase et al propose that ontological changes may be captured by changes in functional semantic behavior of data users and digital library resources. They suggest this should be incorporated in KM practice. They have however stretched their use beyond the classical definition of ontology (Haase, Volker and Sure, 2000). The knowledge manager can very well follow the ontological developments in the relevant subject of the curriculum by analyzing terms in titles and abstracts appearing in

secondary services related to the subject. Primary publications are places where new knowledge is created in a nascent state. It takes some time for stabilization. No such new knowledge enters a formal syllabus even of the most advanced course unless stabilized and accepted by the community of experts. Reviews, advances, progresses etc. provide synoptic views, digests or consolidations of recent developments in a topical area of knowledge and learning. So these items are the best indicators of new developments in a subject field or even for early stage of development of a new emerging field. So these items will be most suitable for ontological analysis. The knowledge manager can very well follow the ontological developments in the relevant subject of the curriculum through analyzing secondary services and such items as reviews, advances, progresses etc. The results when put up in the portal or pushed to the teacher members of the relevant community of action, will assist them to decide on topics of importance for curricular development and change.

The syllabus or a course curriculum can be put up as an open archive in a portal having three parts (vide Figure 2). The first part of the portal is the repository accessed by the teachers, experts, scholars and senior students for input. The second part of the portal is the Knowledge Managers database where information harnessed from all external sources whether hardcopy, softcopy, or online sources are kept The Knowledge manager will study and analyze the input of the repository, other sources such as potential Web documents, Secondary Services, Syllabi of different Institutions, and other relevant documents and put them preferably on preliminary consultation with members of target group or / and experts. The third part is the archive. The teachers concerned will access and share information of this part and prepare the new syllabus and submit it to the Knowledge manager. Knowledge manager will upload this to the third part of the portal for read only access. The content of the Knowledge Managers database has to be pushed to the members of the community of action. The whole cycle should continue as updation. Library knowledge management team can maintain more than one such portal each for a particular subject or department and can help in interdisciplinary activities and exchange of knowledge. Libraries of a number of institution of higher learning may also form consortia or exchange of information for their respective curriculum development.

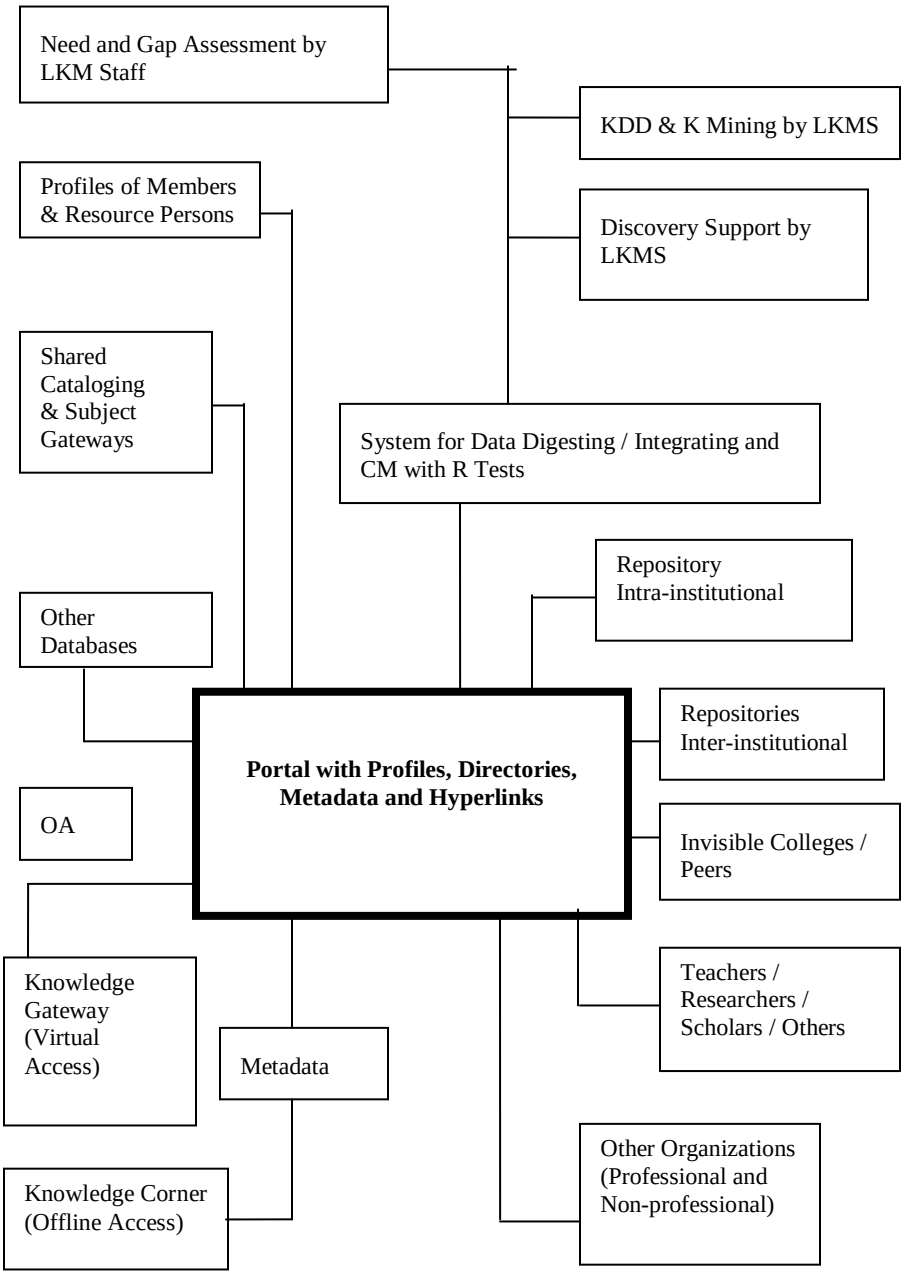

Figure: 1. LKM portal spectrum scenario

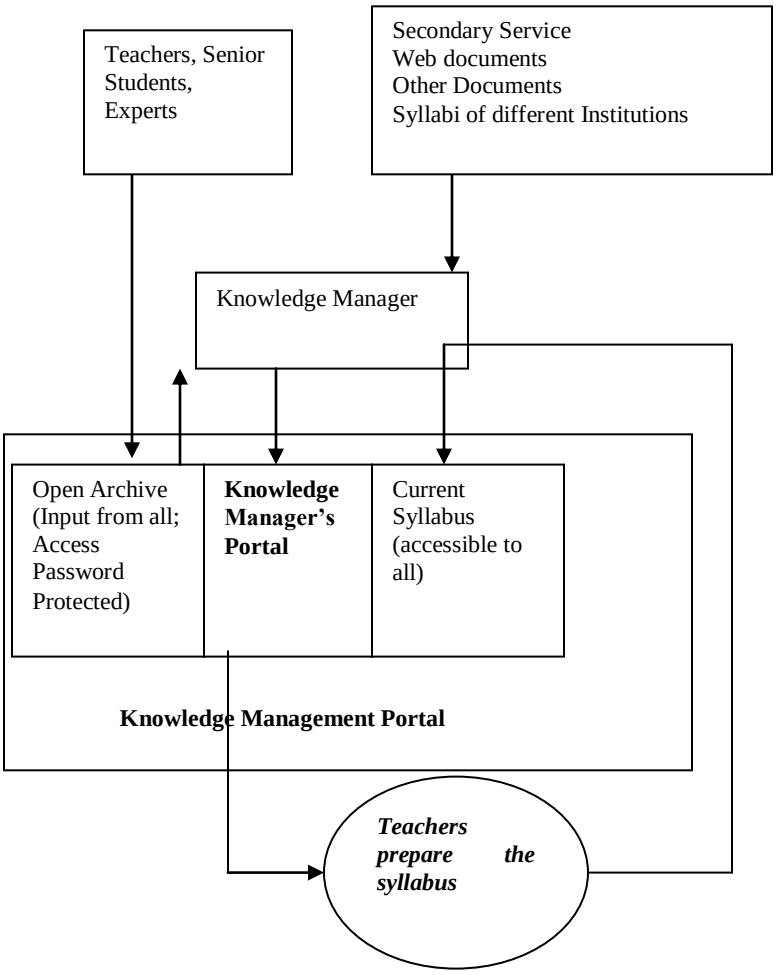

Figure: 2 Schematic Presentation for Knowledge Management model of Syllabus Development

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