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Knowledge Management Framework Proposal – Case Study "Babeş Bolyai" University

Based on production process in companies we developed a model of knowledge management that can be implemented in our university. This model is using organizational knowledge base of three entities: the research engine, the production engine and the learning engine. We try to identify several direct and indirect feedback from the production process and research process linked with external demands and internal university objectives. This model can be implemented on World Wide Web and Internet technologies using collaborative model.

1. Introduction

More than a decennium, idea of public higher education that has come to dominate is that of an industry, rather than that of a social institution and identified three interrelated mechanisms: 1) academic management, 2) academic consumerism, and 3) academic stratification. [1] Academic management assume that managers are expected to monitor the organization-environment interface, determine appropriate strategies, and develop effective bridging and buffering mechanisms. In academic consumerism public universities and colleges serve needs and interests of several types of consumers (e.g., taxpayers, employers, research funders, students) come to mind, when considering who. Now the students are consumers of public higher education, and treat those as potential or current employee who seeks workforce training. Academic re-stratification[1] based upon the increased use-value of particular knowledges in the wider society and exchange-value in certain markets and involve academic subjects and academic personnel [2].

Knowledge is the defining core of academic work and academic workers, higher education has central knowledge functions. For those reason, several concepts and technologies like: Group Support Decision (GSS), Computer

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[1] Knowledge is "the prime material around which activity is organized ...Knowledge materials, and advanced ones at that, are at the core of any higher education system's purposes and essence. This holds true throughout history and across societies as well" [2], p. 13

Supported Cooperative Work (CSCW), Web Based Learning (WBL), Web-Base Course Environment, Open Distributed Processing – Reference Model – Enterprise Viewpoint[2], and CommonKADS methodology KMM methodology can help us to find a model for an academic virtual enterprise, based collaborative paradigm, in which we centre Knowledge management and intellectual capital [3].

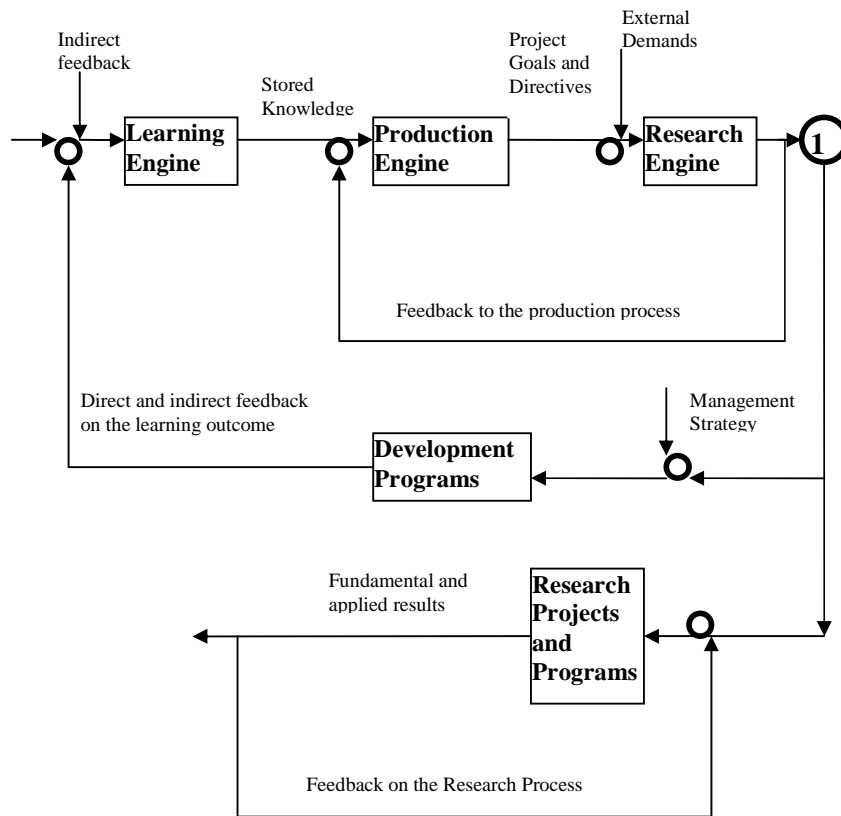## 2. Conceptual Model of Knowledge Management Framework

Gravin defines the learning organization as one that is "skilled at creating, acquiring and transferring knowledge, and at modifying its behavior to reflect new knowledge and insights" (p. 80) and the members of a learning organization are continually creating knowledge and increasing their capacity to produce results and take effective action [4], [5]. Knowledge management is defined as a process through which organizations create, store and utilize their collective knowledge. his process includes three stages: organizational learning (the process of acquiring information) knowledge production (the process of transforming and integrating information into usable knowledge) and knowledge distribution (the process of dis-seminating knowledge throughout the organization) [6].

In universities like any organization knowledge creation is changed from tacit to explicit in four modes: socialization, externalization, combination and internalization (SECI). [7],[10]. The *hypertext organization* has "a strategic ability to acquire, create, exploit, and accumulate new knowledge continuously and repeat-edly in a circular process" ([7], p. 34). In our model we present a conceptual model of knowledge management inspired by Nonaka's concepts, adapted on virtual enterprise paradigm and linked on Strategic Plan in "Babeş Bolyai" University [11]. We have developed and applied the concepts of knowledge management, Nonaka's *hypertext organization* and learning organizations to the university context, based on Piccoli approach, and we try to provide a framework for drawing on the capabilities of faculty and students and managing information [10] in order to increase *intellectual capital* and *academic stratification* for staff and faculties, in perspective of globalization.

We use engineering representation with several feedback's loop depending on several management processes, provided by three entities: *Learning Engine*, *Production Engine* and *Research Engine* (figure 1).

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[2] ISO/IEC documents for conceptual modeling in virtual enterprise (eg. holonic, fractal and bionic)

Figure 1. Conceptual model of Knowledge Managemenent

Learning Engine has the aim to manage knowledge utilization, by giving students possibilities to use, apply, absorb the stored knowledge. Knowledge acquisition and generation are made in faculty and researchers' teams in the *Research Engine .* This *engine* monitoring progress and evaluating results and provide guidance for *Development Programs,* depending on a set goals for the organization. *Research Projects and Programs* has a role to increase intellectual capital and generate a high value of knowledge. In the *production engine*, stored knowledge are using to produce and codify knowledge as part of knowledge generation and knowledge storage. This engine has a feedback from Research Engine, as a supervisor of managing knowledge.

As we saw, we have three different feedbacks, depending on external influences in every loop. First we have *Direct and indirect feedback on the learning outcome* gived by *Development Programs,* and *Indirect feedback.* Development Programs are depending on *management strategy* from university and major goals from Consortioum Universities or partnership with other universities from globalization perspective. *Indirect feedback* depends on interaction with social, economical environment*.* Second loop link Research Engine to *external demands* (international programs, national strategy, educational priorities) to the Production Engine, as a slave engine coordinate by increased knowledge storage from *Project goals and directives*. Third loop has major role to knowledge quality, by measuring intellectual capital as a quantification of fundamental and applied results from *Research projects and Programs*[3].

3. Actors and their role

Learning Engine (LE) coordinates and makes guidance for undergraduate and graduate students, and is main user of knowledge created by others engine. Production Engine(PE) has concerned to graduate students or post graduate students and Research Engine (RE) bring together faculties, postgraduate student, doctoral candidate and other researcher.

For LE and PE we have several particular situations in "Babeş Bolyai" University (BBU):

- undergraduate students in two different universities;
- undergraduate students in one faculty (BBU) and graduate students in other university;
- post graduate students in one university and graduate students in other faculty/ university (BBU);
- post graduate students in BBU and graduate students in other faculty/ university (BBU);
- undergraduate students in one specialization, and graduate students in other specialization, in same faculty (BBU);
- graduate students in one specialization, and post graduate students in other in same faculty (BBU);

For this reason we will meet same actor (student) in LE and PE in same time. Learning is a continuous and cyclical process that provides participants at different

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[3] These results are available as research activities in several projects:
"*Higher Education Institution Efficiency in Romania focused on dinamics' educational and informational demands*" Grant Consortium CEEX05-D08-66/2005-2007, director Prof. Ion Gh.Roşca, PhD and
"*Collaborative Support Systems in Academic Activities – Case Study Babeş-Bolyai University*" Grant Consortium UBB 2/2005-2007, director Prof. Stefan Niţchi, PhD

levels in the organization either with the necessary information or the means to obtain it.

RE has membership from different departments from same faculty/ different faculties, or different faculties from same universities/different universities, research centers, different postgraduate students and researchers. Their role in the research engine is:

- select research areas to explore;
- identify theories and hypotheses to formalize the exploration;
- operationalize these theories and hypotheses in development projects;
- establish guidelines and provide direction for learning and development;
- assess the validity of the hypotheses and theories;
- ensure the quality of the final product.

Actors from production engine can be able to:

- research the content areas of the required knowledge module;
- acquire the technical skills required for its development;
- confirm the final requirements for the knowledge module;
- design and develop the module;
- assure its quality.[Piccolo,2000],

Learning engine describes how stored knowledge can be employed as a teaching tool. The courses are designed for undergraduate students but could be targeted to employees in any organization. An application and teaching offer the material and simultaneously allows the students to practice each skill. The graded assignments are structured so that the students cannot just passively follow the tutorials, but instead must actively apply and than verifying them. [10]

4. Conclusions

Internet technologies and KM paradigm, web-based learning environment facilitate a "cumulative knowledge building" [9]. In our model we try to three engines play a specific role in the knowledge creation process, while membership in the different engines is flexible. Most important think is how undergraduate student follow this process and is coordinate by every engine until became a actos in RE or a specialist in economical or social environment. Even in this case he can became an actor in PE or RE.

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