A ROLE OF KNOWLEDGE MANAGEMENT SYSTEMS IN QUALITY ASSESSMENT AND ENHANCEMENT WITH RESPECT TO HIGHER EDUCATION.

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Abstract

The use of Computer technology has increased to a large extent throughout the world. The society without Computers would be very difficult and hard to imagine just like electricity applications are said to have called fire applications without its presence it negatively affects the society and its absence makes hard to perform daily activities. The present day computers are changing and are becoming intelligent and are ready to solve experts problems and solve the society’s problems and make the life easy. This is possible through advanced programmers, tools and methods. The programmers are not solving now routine problems in the business, since many business applications have very advanced software’s (SAP, ERP, Cloud Computing, Communication Tools etc.) The knowledge is acquired after collecting related information from particular domain. The paper entitled, A Role of Knowledge Management Systems in Quality Assessment and Enhancement with respect to Higher Education will identify the status of the technological presences and need to use knowledgebase systems to improve the quality in higher education for academic activities. Higher Education has become the crucial areas with respect to education sector. The extraction of knowledge from the human experts and transferring this into computer codes and storing it in the knowledgebase for the proper utilization and further processing which is knowledge engineering are the important stages in constructing the expert system.

In this paper we have reviewed the applications of knowledge management system in quality assessment and enhancement with respect to higher education. The review is aimed to find the important areas for applying the expert system, major developments and research articles for quality parameters with respect to higher education. Research gaps are identified, conclusions are drawn and Directions for future research are suggested.

The researcher would conduct the study in area of creating the knowledge library. A system in which a knowledge of human experts of particular domain is extracted and stored in knowledgebase of an expert system and it can be used whenever required to solve experts problems and help the society. We can take benefit of expert in his absence as well we can keep his expertise, skill alive in future for solving problems of next generation.

Keywords: Fuzzy logic knowledge, Knowledge base systems, expert System, quality assessment, higher education, Knowledge Library.
1) Introduction

The youth of any country is involved in education field for 10 to 17 years of his life in which he has to learn various skills, theories, subjects. He has to complete degree or post graduate course in particular time frame and successfully complete education. These students become the citizens of the country. It is very important to evaluate the quality of the education. The researcher are going to find out the present situation in higher education in state of Maharashtra. Design and develop the knowledge Management system for assessment and enhancement of quality in higher education sector.

The Higher Education is becoming the important sector in the present situation of globalization throughout the world. To pay proper attention in delivering the knowledge to the youth and maintain the quality standards to give proper justice to the students community as a whole. The use of advance technology tools techniques and expert system will definitely enhance quality of higher education. This paper is aimed at finding the existing research on the topic and use models to prepare the suitable model for quality assessment and enhancement in higher education in line with NAAC and NBA guidelines also referring International Standards bodies involved in formulating the policies of higher education.

It is very interesting to quote following thoughts before starting the review which really are amazing and thought provoking:-

"It was said that….
1) “I think there is a world wide market for maybe five computers (Thomas Watson, Chairman IBM, 1943).

2) This telephone has too many shortcomings to be seriously considered as a means of communication. The device is inherently of no value to us. (Western Union Internal memo, 1876)

3) But what is it good for? (Engineer at the Advanced Computing Systems Division of IBM, 1968, commenting on the microchip)

4) “Computers in the future may weigh no more than 1.5 tons. (Popular Mechanics, 1949)

Source: www.ideamerchant.com/go/useful/facts-quotes.htm

2) Literature Review

Basic Concepts about the Knowledge based systems

The basic concepts are explained by the authors for the readers to get the idea of AI, ES Knowledge base system etc. Artificial intelligence (AI) The subfield of computer science that is concerned with symbolic reasoning and problem solving. expert A human being who has developed a high level of proficiency in making judgments in a specific, usually narrow, domain. expert system shell A computer program that facilitates the relatively easy implementation of a specific expert system. Similar to the concept of a decision support system (DSS) generator. inference engine The expert system component that performs reasoning. knowledge Understanding, awareness, or familiarity acquired
through education or experience. Anything that has been learned, perceived, discovered, inferred, or understood. **knowledge acquisition** The extraction and formulation of knowledge derived from various sources, especially from experts. **knowledge base** A collection of facts, rules, and procedures organized into schemas. The assembly of all of the information and knowledge of a specific field of interest. **knowledge engineering** The engineering discipline through which knowledge is integrated into computer systems to solve complex problems normally requiring a high level of human expertise. **knowledge representation** A formalism for representing facts and rules about a subject or a specialty. **production rule** A knowledge representation method in which knowledge is formalized into rules containing an IF part and a THEN part.

The authors now study and review the literature on:

### 2.1 Knowledge Base systems and Expert Systems Review

Knowledge is the power and in the present the knowledge applications will enhance quality at all the stages of teaching and learning the authors have reviewed the articles, papers journal and number of on line references to find the major contribution and to find out the research gap to continue the future research in this area. The expert system have developed from a branch of Computer Science known as Artificial Intelligence (AI). AI is primarily concerned with knowledge representation, problem solving, learning, robotics and development of computers that can speak and understand human like languages.

**Satya Singh et al. [1]** The authors in their paper have explained the effective utilization of multimedia user Interface and Artificial Intelligence in Teaching and Learning. The study is based on Felder and Silverman Learning Style Model (FSLSM), Artificial Intelligence, Agent Technology and Multimedia Use Interface Technology. The success depends on intelligent context oriented presentation of the domain knowledge. They conclude by: AI Provides revolutionary advance and knowledge base will help in quality improvement and quality enhancement in teaching and learning process.

**Dheeraj Mehrotra [2]** The author has traced on the infrastructural facilities in India and compared the real difficulties of learning by having such scarce resources which affect the present situation to improve, the availability of Internet with proper bandwidth in India still is having a large scope. Though the students have access but still large population is deprived of quality at all levels of education system.

**Paranto, S. et al [3]** The authors describe the results of using a simulated testing package to assess student performance in an advanced computer applications course. A pre-test/post-test format was utilized in assessing whether the level of knowledge and skills attained by students who completed the advanced course increased significantly when compared to the knowledge and skills the students possessed when entering the course. The students assessed through the scientific test.

**Maithili Arjunwadkar, Dr. R.V. Kulkarni [4]** have studied on robust security model for biometric template protection in which prevention technique is used to secure template by session key. The session key is generated using chaotic phenomenon. The session key generated using this approach, makes this model robust to avoid risk of guessing of session key. The security of any system plays an important role to manage the systems.

**Dr. R.V. Kulkarni et al [5]** The authors have suggested the rule based intelligent intrusion detection and prevention model for biometric system that contains scheduler to prepare schedule, when to check different logs for possible intrusions, detectors to detect normal or
abnormal activity. If abnormal activity found the rule engine fires the rule to detect intrusion point and type of intrusion. The model also contains an expert system to detect source of intrusion and suggest best possible prevention technique and suitable controls for different intrusions. This model is also used for security audit. The researcher can also use these models in Institutions of higher education as a security model.

Dr. R.V. Kulkarni, S.S. Gulwani [6] have reviewed a framework for knowledge management methods its practices and technologies in their paper knowledge management methods are required for extraction of knowledge from experts from the domain. The domain knowledge is stored in knowledge and through inference the analysis is done.

K.P. Tripathi [7] The knowledge base with respect to business organization is reviewed on the topic knowledge based expert system its concept and architecture for Birla corporation human resource data is used to test the system. He has highlighted on special issues of inference engine and knowledgebase.

Dr. V.M Chavan & A.T. Gaikwad [8] the authors have designed the expert system model to trace the security issues in banks with special reference to State Bank of India. The present day banks are performing number of operations which require accuracy, looking for the measures to safeguard their assets and expert systems will surely help in providing technological solution to the security issues.

Mr. A.T. Gaikwad [9] The author have given the vedic science approach to Artificial Intelligence, vedic science a science in which all sets of knowledge with implementation is given in the form of hymns. This knowledge can used and applied in different fields like engineering, medical, education to take conceptual base. The new developments will have reference to the old Vedas which are now studied for future new technical developments.

2.2. Knowledge Management System In Higher Education

Jenny Lee et al [10] the authors have given the more importance to professors and farmed as the knowledge workers in the higher education system. They have studied their salary, workload and specializations which will be beneficial to students. They have studied an analytical theories which have effect on their quality.

Leonard L. Baird [11] The author has explained the college environment and climates, their assessment and their theoretical assumptions, he reviews evidence for the unique power of environmental and climate variables to affect student outcome, describes the current efforts to use environmental assessments for research and practical purpose, critiques those efforts, and suggests some new theoretical approaches that could lead to better assessments.

Stephen L. Des Jardins, Robert K. Toutkoushian [12] The authors have explained rational thought and its applications to student choice. They have studied the concept of rational behavior, review role of these concepts as used by economists and highlight some of the common misperceptions that exist regarding rational behavior.

Carl J. Huberty et al [13] The authors in this paper have discussed the design, data inspection, analysis decision and analysis of a real data set obtained from a sample 592 community college students. Suggestions for reporting the results of a cluster analysis and references for cluster analysis specifications are presented.

Raymond P. Perry et. al [14] The authors have traced on goal commonly shared by undergraduate students, graduate students, faculty members in academic achievement setting. They deal with perceived academic control as critical student difference affecting college students which lead to scholastic development and with instructional treatments designed to enhance academic control and performance in failure prone college students.
Liang Zhang, Scott L. Thomas [15] Economic theory suggests that private investments in higher education will be commensurate with the private return realized. Escalating costs of attendance and scarcity of seats at more prestigious colleges and universities. The research suggests that on average, the economic advantage conferred is not fully consistent with every observations used to rationalize ambition of attending more prestigious institutions or with predictions of economic theory.

Aswin Kumar,[16] The author has explained IT based knowledge management for Institutions of higher education with respect to quality and its effect on education system in University news. The knowledge can be stored in knowledgebase and further it can be used for taking inferences.

Ashish Kumar et al.[17] The Quality of Education being offered in institutions of Higher Education is a question being debated widely. With the growing cost of Higher Education in India, the question has become specially pertinent for all its stakeholders – students to policymakers alike. This paper attempts to look into IT based Knowledge Management as a techno-management tool for redressing their concerns.

2.3 Quality Assessment and Enhancement in Higher Education

The pragmatic definition of quality in Higher education differ from different interest groups or stakeholders in higher education. The focus is different for example the focus of students and lecturers is on process of education, the focus of parents may be on finance, Government on policies and industries on employability and problem solving capability. The researchers have reviewed the concepts, quality parameters & policy decisions regarding enhancement of quality in higher education. The advanced technology used in present situation

Mr. Natalia [18] The author has explained the stakeholders role in quality enhancement. The public accessibility to the reports, findings and follow-up actions arising from internal (university-managed) and external (IUQB-managed) quality assurance processes, while respecting institutional autonomy, independence and diversity. Enhancement of higher-education quality with a focus on the major stakeholders. The results are also reported to the concern for quality improvement.

Hazem M. El-Bakry[19] Quality management standards are seen as a major pillar supporting the drive for continuous quality improvement through total quality management. Planning brings to decision making the capability of being proactive and thus anticipate future events and the necessary actions to meet those events positively. Reaching high level of Quality Assurance (QA) has become an essential goal for educational institutes. Therefore, we have to construct an intelligent computer-based system to manage the quality standards and the evaluation processes within universities.


Prof. Dr. Arun Nigavekar[21] has traced in quality inline with the present situation of the higher education. The higher education system in India has grown in a remarkable way, particularly in the post-independence period, to become one of the largest system of its kind in the world. However, the system has many issues of concern at present, like financing and management including access, equity and relevance, reorientation of programmes by laying emphasis on health consciousness,
Prof. Yoginder Verma[22] has explained the need to maintain and enhance the quality of education cannot bear fruit without active participation of the students. In the recent years, the quality consciousness, as a result of NAAC's efforts, has set the ripples for pondering on the issue of sustaining quality with the active participation of students along with other stakeholders.

Dr Jagannath Patil[23]'Student participation in Quality' is the recent initiative launched simultaneously by the NAAC and PQN- Asia Pacific Quality Network. The APQN project on Student Participation in Quality Assurance aims to collect, analyse and disseminate theory, good practices and experiences of student participation in quality assurance in Asia Pacific Region.

Dr. M Anandakrishnan [24] Has traced on involvement of students in the quality enhancement processes of their academic life yields substantial personal returns on their investment of time and effort during their learning phase, besides creating an enduring bond with their institutions in later life.

Dr. M.S. Prasad, S.A. Kadam [25] The education environment has evolved through various generations, leading to the present fifth generation. The fifth generation of education advocates the use of Information Technology and advanced tools. They studied the role of IT in teaching–learning process. They conclude by providing conceptual frame work for virtual learning in higher education. The applications of knowledge management system and artificial intelligence tools and techniques for teaching in higher learning stage is discussed.

Baisakshi Chakraborty [26] he has explained the role of knowledge management in E-governance for quality of growth in short he has highlighted the knowledge acquisition, knowledge storing and extracting the knowledge from the knowledge base. He discussed the associated benefits of knowledge to quality of growth and quality of life.

Sanjay T. Singh, Prateek Singh [27] have explained the data mining frame work for business intelligence which relates to data mining concepts which are popularly known as knowledge discovery in database (KDD). The main objective is to use discovered knowledge for the purpose of explaining current behavior. The similar concept can be explained for extracting the knowledge of human experts in higher education as well.

3) Conclusion

This review of literature reveals that the knowledge management systems have the wide scope in higher education to assess the quality which can be beneficial to the stakeholders of the higher education. Academic experts for assessment and enhancement of quality in Higher Education will add to quality.

The researchers can study the topic further and find the interesting and important points related to higher education. Therefore the intensive research study can be carried on “Role of knowledge Management system in Quality Assessment and Enhancement with respect to Higher education”.

4) Future Research

The researchers can take any one quality parameter and design the knowledge management system or even expert system for quality assessment and enhancement with respect to higher education. This would be an innovative study. The overall objective of this study is to design efficient and intelligent model to improve and help sustaining the quality in higher education.
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