



“APPLICATIONS OF EXPERT SYSTEM FOR QUALITY ASSESSMENT IN HIGHER EDUCATION”- WITH RESPECT TO STUDENTS PERSPECTIVE.

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ABSTRACT

The Higher Education for any country is a important area since the students would turn into good or bad citizens in a sort span of time when they complete the higher education. The policy of the higher education should be such that it is inclusive, student centric and trace on quality of the teaching and learning. The Paper highlights on use of advanced software's and tools in the form of expert systems to improve the quality in higher education.

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 expert system as a techno-management tool for redressing their concerns. Various probable avenues are discussed where expert system could make an impact on the existing Indian Higher Education system. For example by affecting the overall quality of Higher Education in India and in addition making it more stakeholder friendly. An insight about the priorities assigned to various IT based KM interventions in different areas of Indian Higher Education System is suggested based on the inputs from a cross-section of Indian Academia. Adoption of the proposed system shall not only improve the “Quality of Service (QoS)” but also decrease the economics of Higher Education in India. It will directly affect the society as a whole.

It is the expert system that is able to automate QMS. An expert system is a self-teaching system. Authors offer to organize the knowledgebase of the expert system for QMS from several levels differing by a degree of detailed elaboration of the information. They describe briefly the knowledgebase structure of the expert system.

Keywords: Information Technology, Knowledge Management, Indian Higher Education, Quality factors , Expert System , Inference Engine



Introduction of Existing status in Higher Education

Higher education In India in the present scenario is in growth stage as compared to developed nation. The India education system follows 10+2+3 pattern .The professional courses constitute the students from various streams of sciences and social Sciences. The Government of India and University Grants Commission is responsible for maintaining the activities of the Higher Education . Due to various social and financial problems the students enrolled in higher education studies is only 7% as per the survey of Indian Survey Agency data- 2010.

Factors in Quality Management in Higher Education

Quality in Higher Education will directly have impact on employability and nation development as a whole we can enlist some of the important factors involved in maintaining quality in Higher Education. The researcher will use parameters in line with NAAC parameters for quality assessment of the Institutes . The quality in the Institutes can be assessed by using following areas-

1. Teaching & Learning
2. Student Support & Progression
3. Infrastructure & Learning Resources
4. Research & Extension Activities
5. Governance & Leadership
6. Innovative Practices
7. Best Practices

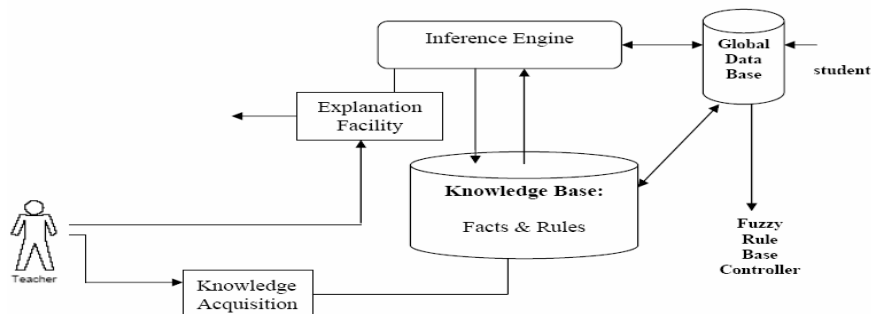


Figure 2- expert system for Education System

LITERATURE REVIEW

Expert Systems

The expert systems have been in news from the year 1980 when the business applications of expert system was found out by the scientist and programmers. We can review the development of expert system by finding the areas in which they were introduced and the way they were implemented .

Expert systems 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 the development of computers that can speak and understand humanlike languages (Townsend, 1987). An expert system is a computer program that uses knowledge and reference procedures to solve problems that are difficult enough to require



significant human expertise for their solution (Townsend, 1987). Simply stated, expert systems are computer programs designed to mimic the thought and reasoning processes of a human expert.

Expert system can be developed for many kinds of applications involving diagnosis, prediction, consultation, information retrieval, control, planning, interpretation and instruction (Edmunds, 1988; Liebowitz and DeSalvo, 1989; Peart, 1989). However, diagnosis still remains the primary application of expert systems, particularly for personal computers (Townsend, 1987). They are used in applications where the procedures or algorithms for the problem do not exist or are poorly defined, but good rules of thumb or heuristics are available. Although the use of expert systems in horticulture is still limited and their primary function is as a tool for human experts, expert systems are rapidly being accepted for use by the nonexpert to solve problems when human expertise is expensive, untimely or unavailable. Today, better development tools are available and closer interdisciplinary cooperation is resulting in agricultural researchers gaining more insight into the theory and concepts necessary to build effective systems (Crassweller et al., 1993; Holt, 1989).

Several notable expert systems have been developed in recent years. For example, CALEX is an expert system which was developed for the diagnosis of peach and nectarine disorders by the University of California (Plant et al., 1989). Like most experts systems, CALEX is rule-based system and uses certainty factors, so that the knowledge-base consists of production rules in the form of IF, THEN statements. The inference engine pieces together chains of rules in an attempt to reach a conclusion. The knowledge base of the CALEX/Peaches diagnostic system contains approximately 600 rules for the diagnosis of 120 disorders of peaches and nectarines, representing most of the disorders in California (Plant et al., 1989). CITPATH, a computerized diagnostic key and information system, was developed to identify five major fungal disease of citrus foliage and fruit in Florida (Ferguson et al., 1995). CITPATH also utilizes a rule-based approach which provides hypertext-linked descriptions and graphic displays of symptoms with reference to chemical control methods (Ferguson et al., 1995).

The Penn State Apple Orchard Consultant (PSAOC) is an example of another type of expert system which has demonstrated the advantage of using specialists from different areas to develop large integrated modules. Horticultural applications presently developed include modules for weed control, foliar analysis interpretation, trickle irrigation scheduling and visual diagnosis of nutrient deficiencies. The expert system are now becoming the common like any other devices in the society.

Knowledge Acquisition

Knowledge acquisition is a time consuming process in which the knowledge engineer works along side the participating expert and extracts, structures and organizes the information to be represented in the expert system. The extracting knowledge is tedious job for the programmers.

Knowledge Representation

After the domain has been identified and knowledge acquired from a participating expert, a model for representing the knowledge must be developed. Numerous techniques for handling



information in the knowledge-base are available; however, most expert systems utilize rule-based approaches. The knowledge engineer, working with the expert, must try to define the best structure possible. Other commonly used approaches include decision trees, blackboard systems and object oriented programming.

Verification

Prior to testing a expert system with outside experts, every query response which should lead to a correct conclusion or diagnosis should be systematically verified with the knowledge-base.

Validation

The validation is an important activity in expert systems it should be done by the primary expert who was involved in the systems knowledge base development and knowledge representation. This phase provides the expert with the opportunity to explore the functioning expert system and make suggestions for changes in the interface design, image database or knowledge-base. Generally, the system should be challenged by the expert by presenting contrived problems or queries based on past field experience. Again, the system should be adjusted to eliminate any conflicts or design problems.

Testing Expert Systems

When the knowledge engineer and the expert are satisfied that the expert system is complete, the system should be tested against an agreed upon performance criteria. At this time other experts can be invited to evaluate and use the system for testing purposes.

The Students are the crucial part of education system which requires the main focus we can identify the areas in which expert system can be applied.

- a** an updated database on entire institutions resources, policies & procedures related to admissions, examinations, financial aids, fees, student counseling facilities, etc.
- b** a portal for career placement services hosting information about probable employers, their contact details, packages offered, etc.
- c** a repository of student affairs, services for faculty and staff to ensure all constituents understand existing services & can provide proper counseling.
- d** a portal for alumni to keep track of their professional growth, etc.

Expert system tools can assist Curriculum Development Process of which will help in-

- a** A Database of curriculum revision efforts that includes data about research delivered, best practices, lessons learned, etc.



- b Modularized content reposition to facilitate interdisciplinary curriculum design and development.
- c Information related to teaching & learning with technology.
- d Clusters of information in various disciplinary areas including updated data bank on subject resource materials, recent publications, applicable research etc.
- e A knowledge base or repository of pedagogy and assessment techniques.
- f Analysed data on student evaluations updated each semester for lessons learnt & emerging best practices.
- g Maintaining a portal for new faculty with guides for developing curriculum, working with senior faculty, establishing effective teaching styles, advising do's & don't's, supervising research scholars, etc.

Role of Students in Higher Education

The youth of the age group between 18 to 30 constitute the higher education sector in which the students also has to play an important role in higher education to take maximum benefit for self and society as a whole, some of the factors students should take care are

- 1) Punctuality in Classes and other academic activities
- 2) Discipline in the campus
- 3) Sincerity in learning
- 4) Responsible behavior towards social issues
- 5) Research Orientation
- 6) Ethics in Education

Expert System with respect to Students Perspective

In the 21st century the Computers have proved to be reliable and beneficial to various business organizations as tool to improve the quality and faith of the customers. The Education sector also uses maximum programs to enhance the teaching and learning tools. The expert system can be developed for following areas.

- 1) Syllabus Setting
- 2) Exam Test Generation
- 3) Evaluation of students performance in various activities during the study period
- 4) Simulation test to give real life situation experience in case of technical courses.
- 5) Expert system using Rule based input for assessment for quality factors.

Conclusion

In order to create the interest in the students of higher education to sustain and learn the required skills to develop the nation. The author has made a small attempt to trace the advanced tools and techniques to be used in future like expert systems in education field. It will surely help the readers to contribute to for the cause of academics.



The expert system have been successfully implemented in business over a decade and now it is time to put them at work in academics for various teaching learning processes, The experts from the academics can share their knowledge for the quality assessment and enhancement of the higher education sector.

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