

## **CHAPTER 5**

### **CONCLUSIONS AND SCOPE FOR FUTURE WORK**

#### **5.1 INTRODUCTION**

Traditional class rooms, still play a major role in the present day education which is an interactive environment between the teachers and the students to communicate with each other freely with methods of voice, expression and gestures. There are varieties of opportunities for using the technology to implement the paperless classroom. It is the means, to increasing learning efficiency. One can use technology, to a better display of information to increase access to information, to improve information sharing and to organize better class presentations. Technology is not a panacea for educational problems, but by combining technology with applicable learning models, the overall quality of education is enhanced.

This thesis presents an approach fortifying the traditional education, by applying online learning environment to it, which is nothing but enhancement of the e-learning technology by using SCORM and semantic Web.

#### **5.2 CONTRIBUTIONS AND CONCLUSIONS**

The detailed process adopted in developing an intranet learning system known as “KnowledgeNET” which is proposed for Computer Applications department. It acts as a supplement to the traditional teaching

and learning methods. A detailed survey was conducted, on the subject of the development of intranet learning system by distributing a questionnaire. Large number of responses came from students about the developments which gave us the enthusiasm for the positive approach towards the development of the learning system. The analysis was conducted for developing the learning system, by designing through water-fall model, E-R Diagram and OOAD development life-cycle methodologies. After a number of iterations and modifications, a final model of the learning system was made out of it. The coding is developed using Pre Hypertext Processor, Apache Web Server and Mysql as the back end and other tools such as Dream weaver and Flash was used. The name is given as “KnowledgeNET which helps the students in transforming online learning which is connected to their peers. The collaborative and interactive learning enhances the student’s success in an online learning environment. It provides an effective tool to teachers to access and build, quality digital resources, thereby allowing teachers to be able to set engaging, multimedia based work without, always having to reinvent the wheel. The advantages of KnowledgeNET are as follows:

1. It induces the students to work in an online environment.
2. Students learn the material many number of times.
3. Teacher can upload their own customized material in their own login for the specialized UG PG subjects to the students.
4. Students browse the learning material through their own login.
5. Students can assess their knowledge by undergoing an online quiz.

**Limitations are as follows:**

1. Hyperlink page are static in nature.
2. Longer duration needed to develop the code.

The process involved in enhancing the existing KnowledgeNET learning system by analyzing the semantic web technology which is discussed below

1. Semantic web layer cake consisting of three important components
  - a) Metadata Layer: It is a framework which can be expressed in terms of vocabularies (or) taxonomies which can be attached to each web resource.
  - b) Schema Layer: It is used to specify simple ontologies in order to define hierarchical description of concepts & properties for a given resource.
  - c) Logical Layer: This layer introduces ontological languages that are capable to model, complex ontologies.
2. Agent technology based on JADE framework
3. Applying ontology to Object Oriented Methodology (OOM).
4. Ontology tools like protégé, onto edit etc., are available as open source.
5. Jena – Open source API for Semantic Web Framework.
6. Artificial Intelligence capabilities.
7. SCORM environment supports interoperability, accessibility, adaptability of the learning content.

8. Open source authoring tools are available to develop the learning content.
9. Learning content organization and validation tools are available.
10. Web services in education.
11. Object Oriented System Design using UML.
12. XML based environment

The existing learning system is nourished with semantic web capabilities by applying the above mentioned points, results in Simplified E-learning System. How it is arrived at, is discussed in what follows:

1. Applying XML data types for variable parameters.
2. A Theoretical analysis is being applied to “Agent based E-education & course authoring system and packaging using SCORM”. It works on the points mentioned below
  - a) Agent Technology works on the principle of JADE Framework.
  - b) Course authoring tools like Xerte and MOS-Solo are used for content development.
  - c) Learning Content packaging using SCORM environment which meets the six functionalities of accessibility, adaptability, interoperability, reusability, affordability and durability.

3. Re-Load Editor is used to organize the Learning Content
4. ADL Test Suite is used for validating the Learning Content.  
The validation will be carried out as a part of future work.
5. A theoretical study was carried in the area of artificial intelligence methodology where adaptability, personalization, inference mechanisms is applied to the existing learning system which results in simplified e-learning system.

### **5.3 FUTURE ENHANCEMENTS**

Adaptive Hypermedia (AH) is one of the most promising areas to offer personalization on the e-learning field. It tries to overcome the problems of having users with different goals and knowledge by using the information represented in the user model to adapt the contents. To conclude we look for a new conception of learning experiences for simplified e-learning system by adding adaptation capabilities, inference mechanisms where the learning content can be retrieved by learner preferences and tastes. To construct these experiences we will try to implement the simplified e-learning system to select, relate and personalize the learning content which will be developed using an agent-based architecture and artificial intelligence mechanisms. XML Web Services has to be incorporated in future for further research. Research is being analyzed on open source tools with regards to the learning system. A Simple Object Access Protocol program was developed by using PHP which will be incorporated in future for further research.

Further research pursuits are progressing in the following areas connected with E-learning Applications

1. Service Oriented Architecture.
2. Web Services.
3. Jena-Semantic Web Framework.
4. Cloud Computing.
5. Ontology Development.
6. SCORM with Adaptivity.