PROJECT REPORT ON

PORTAL FOR ORGANISATIONAL LEARNING, COMPETENCY DEVELOPMENT, TRAINING AND COLLABORATION

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DECLARATION

I Shelika Arora student of EMBA 2015-2017 batch of Delhi School of Management, Delhi Technological University, Bawana road, Delhi-42 declare that the term project **Portal for Organisation Learning, Competency Development, Training and Collaboration**
submitted in partial fulfillment of Executive MBA program is the original work conducted by me.
The information and data given in the report is authentic to the best of my knowledge.
This Report is not being submitted to any other University for award of any other Degree, Award and Fellowship.

Place: New Delhi   SHELIKA ARORA
Date:

CERTIFICATE OF ORIGINALITY

This is to certify that the project report entitled "**Portal for Organisation Learning, Competency Development, Training and Collaboration"** submitted to Delhi Technological University in partial fulfillment of the requirement for the award of the degree of Master of Business Administration is an original work carried out by me under the guidance of Dr. Vikas Gupta . The matter embodied in this project is a genuine work done by Shelika Arora to the best of my knowledge and belief and has been submitted neither to this University nor to any other University for the fulfillment of the requirement of the course of study.

Signature of the student   **Signature of the Guide**

ACKNOWLEDGEMENT

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Chapter 1

Introduction

1. Introduction

Organizational capabilities are key intangible assets. These capabilities – the collective skills, abilities, and expertise of an organization – are the outcome of investments in nurturing values, opportunities for augmenting competencies, ambience for professional development, advocacy, communication, grooming of talent and leadership abilities at all levels.

Organizations that excel are good at making important changes rapidly. The ability of organization to respond effectively and adapt its capabilities for evolving solutions to complex problems, also relies increasingly on, grooming talent within the organization, sharing information across the enterprise, transparency of transactions to enable all concerned to reflect and provide inputs that add value to such transactions, and adopting flexible postures required for problem solving.

Transformation is taking place in organisation through office automation, business process re-engineering and by means of undertaking Human Resource Initiatives. The objective is to maximize the collective benefits for all the stakeholders of organisation involved directly or indirectly with the organization.

Reasons behind the transformation are to infuse enhanced levels of proficiency, build a dynamic team culture that leverages solutions for improved quality of services to our internal and external stakeholders, reinvent policies and practices for building our enterprise to guarantee results and look at opportunities rather than problems.

Requisites to achieve the goals are:

- Constantly improves its practices iteratively leveraging on experiential insights
- Institutionalizes productive methods and practices as learnt behaviors within the system.

1.1 Competency

Competency is the ability of an individual to perform a job properly. The term has been popular since its use by Richard Boyatzis. Competency is also used as a more general description of the requirements of human beings in organizations and communities.

"Competence" can be also seen as a combination of knowledge, skills and behavior used to improve performance; or as the state or quality of being adequately or well qualified, having the ability to perform a specific role. For instance, management competency might include systems thinking and emotional intelligence, and skills in influence and negotiation.

Competency is sometimes thought of as being shown in action in a situation and context that might be different the next time a person has to act. In emergencies, competent people may react to a situation following behaviors they have previously found to succeed. To be competent a person would need to be able to interpret the situation in the context and to have a repertoire of possible actions to take and have trained in the possible actions in the repertoire, if this is relevant. Regardless of training, competency would grow through experience and the extent of an individual to learn and adapt.

Development of Competency:
1. Who will participate?
2. How will it be defined?
3. How will it be entered, tracked and managed?
4. Which is the best suited evaluation mode?

Examples of competencies are Decision making, Analytical thinking and Problem solving, Adaptability & Flexibility, Process Excellence, Execution Excellence, Personal accountability, Building External & Internal partnerships/ alliances & collaborations, Interpersonal effectiveness/ team work, Coaching & Mentoring, Vision and Strategic Orientation

A given competency can be seen as a set of behaviors.

It is also appropriate to consider there being different levels of competencies.

Further, a matrix can be defined which identifies certain competencies as also different levels of competencies as critical to a given level or position in the organization.

Mapping Behaviors to Roles

Roles to be successfully performed would required the demonstration of a behavior

Given a set of behaviors, a matrix is defined which specifies - which role when performed, is an evidence of a given behavioral demonstration.

Evaluation and Recognition of Competencies
- Battery of tests
- Offline assessments
- Peer appreciation vault

1.1.1 Competency framework

Success in a role requires a specific set of competencies that relate to the job, as well as to the organization's goals. A competency framework is related with the outcome of the task given or performances by a person. For example, employee in E-III section has to do recruitment, training, counseling, etc. If we develop framework for HR it would include all the fields of the work performed by the employee. So we measure each of the tasks done by him on the performance given by him.

Competencies can be categorized into three major levels:
- Core Competencies
- Managerial Competencies
- Leadership Competencies

Given below are some examples of the above mentioned competencies identified :

Core Competencies

1. Accountability:

   Takes personal responsibilities for completing tasks as per defined norms Collaborates/seeks help/provides help to respond to queries/complaints Takes ownership to realize and sustain change at his/her workplace.

2. Communication:

   - Communicates clearly and concisely
   - Asks questions/ clarifications to understand the query/complaint
   - Uses techniques like influence/ persuasion to achieve the desired result

- Listens attentively to the audience and attempts to display understanding of the same

3. Process Excellence:

- Understand the processes and adheres to them in own area of work
- Designs suitable/ appropriate standards to facilitate effective working (work-flow)
- Takes into account factors that help in contributing to high Quality standards

4. Planning & Executing:

- Plans and prioritizes tasks to be completed efficiently
- Ensures adherence to plans and deadlines by reviewing actions against plans
- Escalates and also informs all concerned on the progress/ deviations
- Provides update to the concerned on the status of query/complaint
- Undertake corrective action to address deviations/ delays/ process inefficiencies

5. Objective Decision Making:

- Collates data through multiple sources (like document study, team and inter-departmental interactions)
- Conducts analysis of the data collected to enable decision making
- States / communicates likely impact of decision on all concerned and possible countermeasures

6. Continuous Improvement:

- Identifies and suggests possible areas of process improvement
- Initiates and implements efficient working systems
- Promotes use of technology in daily operations
- Seeks opportunities for learning, exploring a variety of methods for self and others in the workgroup (experience of self, knowledge of others, reading, training etc.)

7. Team Work:

- Puts team goals above self and works collaboratively with other members of the team
- Identifies issues and resolves differences to build consensus on a common decision to promote appropriate levels of collaboration

Managerial Competencies

1. Delegation:
- Delegates and empowers his/ her team
- Communicates the expectations clearly to his/ her team
- Monitors performance and conducts reviews
- Sets expectations to resolve the query/complaint

2. People Development:

- Provides constructive feedback on the performance of the team
- Helps his/ her team in identifying solutions/ solving problems
- Guides and mentors his/ her team

3. Domain Expertise:

- Has an in-depth understanding of his functional area and stays up-to-date with the relevant developments/ changes
- Is able to guide others, clarify queries/ complaints related to his/ her area of expertise
- Is considered a role model in his/ her area of expertise

Leadership Competencies

Long Term Perspective:
- Converts the vision into an action plan
- Is able to think holistically, understand trends and integrate different views to develop a broad based perspective

Resource Management:

- Identify ways for utilizing resources (both human and machine) effectively
- Sets up systems/ processes for effective utilization of resources
- Mobilize resources to achieve the mission/ plans of the organization

Accountability to Stakeholders:
- Takes leadership in building and promoting the organization's vision and mandate through direct, indirect involvement with the stakeholders
- Sets up policies/ systems and rules that provide direction to the functioning of the organization
- Build systems to ensure adherence to laid down policies and rules

To work towards this vision, requisite is to make employees capable to handle complex situations and deliver the outcomes. Adoption of new processes, transition into new roles and responsibility and willingness to learn would have to be addressed.

The approach demonstrated below demonstrates the enabling milestones in the change process. At an overall level, it is a sequential process. However, for each initiative within the change program this approach is iteratively used:

- Envision - defining the aspiration from the initiative; visioning
- Energize - building awareness and enhancing readiness to change
- Expose - sharing what is possible; through what exists outside
- Educate - providing inputs around new skills
- Experience - creating an opportunity to apply new skills at workplace
- Equip - providing resources to perform effectively
- Encourage - providing motivation through recognition
- Use of proper advocacy material to enhance zeal, zest and enthusiasm in employees

Towards achieving the above stated purpose; counseling, mentoring and training is indispensible for overall growth of the employee and organization

1.2 Training and Development

The training would help align the organization's priorities with the aspirations of the employees and employ practices that enables the development of empowered, responsive and competent human capital. It will aid in the transformation of Organisation into a performance–driven, knowledge-centric organization by inculcating a culture of learning, innovation and team work.
It is necessary to train employees so that they can perform their jobs well
The training program includes courses of Personality development like Stress Management, Leadership Skills, and Emotional Intelligence that would help grooming of employee as a person. They would refine employees so that they can work better for the mandate and mission of the organization.
It is decided that 20% of employees would be engaged in capacity building training on regular basis.

1.2.1 Importance of Training and Development

Training and Development aids in organizational development i.e. Organization gets more effective decision making and problem solving. It helps in understanding and carrying out organizational policies.
It also helps in developing leadership skills, motivation, loyalty, better attitudes, and all other aspects that good employee usually display. Enlisted below are points which are deliverables of training.

1. Optimum Utilization of Manpower – Training and Development helps in optimizing the utilization of manpower that further helps the employee to achieve the organizational goals as well as their individual goals.
2. Development of Human Resources – Training and Development helps to provide an opportunity and broad structure for the development of human resources' technical and behavioral skills in an organization. It also helps the employees in attaining personal grow.
3. Development of skills of employees – Training and Development helps in increasing the job knowledge and skills of employees at each level. It helps to expand the horizons of human intellect and an overall personality of the employees.
4. Productivity – Training and Development helps in increasing the productivity of the employees that helps the organization further to achieve its long-term goal.
5. Team spirit – Training and Development helps in inculcating the sense of team work, team spirit, and inter-team collaborations. It helps in inculcating the zeal to learn within the employees
6. Organization Culture – Training and Development helps to develop and improve the organizational health culture and effectiveness. It helps in creating the learning culture within the organization

7. Organization Climate – Training and Development helps building the positive perception and feeling about the organization. The employees get these feelings from leaders, subordinates, and peers

8. Healthy work environment – Training and Development helps in creating the healthy working environment. It helps to build good employee, relationship so that individual goals aligns with organizational goal.

9. Quality – Training and Development helps in improving upon the quality of work and work-life.

10. Health and Safety – Training and Development helps in improving the health and safety of the organization thus preventing obsolescence

11. Morale – Training and Development helps in improving the morale of the work force.

12. Image – Training and Development helps in creating a better corporate image

13. Profitability – Training and Development leads to improved profitability and more positive attitudes towards profit orientation.

1.2.2 The Organisation Training System

A System is a combination of things or parts that must work together to perform a particular function. An organization is a system and training is a sub system of the organization.
The System Approach views training as a sub system of an organization. System Approach can be used to examine broad issues like objectives, functions, and aim. It establishes a logical relationship between the sequential stages in the process of training need analysis (TNA), formulating, delivering, and evaluating.

1.2.3 Present Methods of Training

There are various methods of training, which can be divided in to cognitive and behavioral methods. Trainers need to understand the pros and cons of each method, also its impact on trainees keeping their background and skills in mind before giving training.
Cognitive methods are more of giving theoretical training to the trainees. The various methods under Cognitive approach provide the rules for how to do something, written or verbal information, demonstrate relationships among concepts, etc. These methods are associated with changes in knowledge and attitude by stimulating learning.
The various methods that come under Cognitive approach are:

- Lectures
- Demonstrations
- Discussions
- Computer based training (CBT)
- Intelligent Tutorial System (ITS)
- Programmed Instruction (PI)
- Virtual Reality

Behavioral methods are more of giving practical training to the trainees. This approach allow the trainee to behavior in a real environment. These methods are best used for skill development.

The various methods that come under Behavioral approach are:

- Games and Simulations
- Behavior Modeling
- Business Games
- Case Studies
- Equipment Stimulators
- In-Basket Technique
- Role plays

1.2.4 Challenges in the existing Training and Development System

The challenges that currently facing in existing system is enlisted as follows:

- Old systems & Practices, thereby leading to delays
- Less optimal utilization of resources
- Poor information dissemination
- Lack of well maintained information repositories
- Un-automated processes
- Manual & redundant data entry
- Less effective training system

1.2.5 Challenged faced by the Organisation in organising Training Programmes

The followings are some of the challenges faced by the organisation in the area of learning:

- Huge cost and effort required to organize and conduct Instructor Led Training program (ILT) such as trainer engagement, venue, and training materials, Infrastructure requirements and training communication.
- Carrying mandatory training programs on time.
- Difficult to carry on the induction program from the date of employees joining
- Tracking employees training progress, training feedback and rewarding them by issuing training completion certificate.
- Tracking Trainers efficiency of delivering the session and learner's attendance, and conducting classroom assessments and grading.
- Training Managers to manually manage, post training records such as training status, feedbacks and preparing training MIS reports are more cumbersome.
- Managers to monitor their teams' ongoing training progress in the regular interval and enabling their necessary training needs.

1.2.6 Initiatives taken

The comprehensive set of initiatives that are being taken up, aim at 'transforming 'of an organization to embrace a performance culture –

- Leverage process re-design and automate administrative and managerial processes
- Implement electronically enabled work places, electronic self-services
- Develop practices for transparent mechanisms to facilitate decision support/enhanced efficiency at all levels
- Enhance collaboration/ networking
- Develop clarity in definition of roles
- Analyze required skill sets for various roles and augment team performances
- Develop a culture of workplace learning and mentoring, knowledge sharing and support the same with technology tools
- Infusion of a professional performance culture in organisation, with institutionalization of a culture of Excellence, Continuous Learning and Innovation.
- Transform organizational units of organisation as agile, vibrant, outcome focused efficient & proactive entities.
- Developing and nurturing strategic leadership capabilities, competencies, attitudes, belief systems & behaviors and grooming talent in individuals to demonstrate a repertoire of required competencies and skills in their jobs.
- Constituting and investing/ instilling in varied cross functional teams mandated for key operations the required complement of competencies for effective outcome focused performance.
- Adapt competency development to the profile of jobs and roles performed in various Divisions.
- Facilitate staff to effectively leverage and employ multiple skills for everyday purposive and persistent problem solving and continuous improvements in the system.

To enable adoption to new processes, structure and build a professional work culture, the capability of employees in organisation needs to be enhanced. This capability building exercise would focus on two aspects - functional skills and behavioral skills. These skills have to be first defined. The functional skills would be addressed during process redesign and restructuring and would be role specific. However, a set of behavioral skills would be required to realize a professional work culture.

1.3 Learning

Learning is acquiring new, or modifying existing, knowledge, behaviors, skills, values, or preferences and may involve synthesizing different types of information.

- Learning is not just important to ensure that we keep up-to-date with developments in our particular field. It is also an important source of motivation, stimulation and job satisfaction
- Helps in acquiring knowledge, to construct personal meaning, and to grow.
- Learning is a prerequisite to individual growth
- Helps in Career progression (Development Path).

1.4 ELearning

Electronic learning (or e-Learning or eLearning) is a type of education where the medium of instruction is computer technology. No in-person interaction may take place in some instances. Learning through network, mainly on Internet, Anytime Anywhere and Self-paced Learning.

1.4.1 Benefits of e-Learning

Benefits of e-Learning are as follows:

- Cost reduction - Reduces the cost of planning, administrating and conducting corporate trainings. For example, reusability of e-Learning course content, effortless recording and retrieving of training records and considerable amount of cost reduction in travelling and trainer engagement.
- Training Plan - Training Manager and employees can plan the trainings for the calendar year
- Accessibility- e-learning content from anywhere, at any time the employees can access the course
- Self-paced learning modules allow learners to work at their own pace
- Availability- just-in-time
- Personalized - it meets their own individual requirements in terms of content and assignments.
- Classroom Training-Class work can be scheduled around personal and professional work
- Online Assessment- as assessments can be created using software tools and adapted and reused as needed.
- Instant evaluation - The system evaluates assessment instantly and publishes grades accurately and it saves the efforts of the Training Managers and Trainers.
- Saves travelling time - In case of on line course, travelling time to the training centre is saved.
- Anywhere access - Learners can study and assess wherever they have access to a computer and Internet
- Online course catalog - Learners have the option to select the courses from the catalog and that meets their level of knowledge and interest
- Online Collaboration - Employees can access Course/Program FAQs; participate in the discussions, such as Discussion
- Forum threads and Ask an Expert to clarify their course related queries.
- Different learning styles are addressed and facilitation of learning occurs through varied activities

- Successfully completing online or computer-based courses builds self-knowledge and self-confidence and encourages employees to take responsibility for their learning
- Virtual Classroom - Trainer/Experts can conduct on line virtual classroom session using tools such as Whiteboard, A/V streaming, chat and file sharing. It is one of the most convenient ways, where the employee and the trainer/expert can collaborate from remote locations.

1.4.2 Challenges to be addressed by the Portal

e-Learning portal addresses all the business challenges. It is easy to use web application and does not require installing any software and no interruptions on everyday operations. Portal helps manage entire corporate learning and training process from online course management, classroom training management to delivering tests and assessing learners.

1.5 Objectives of the Project

- The learning methodologies in the organisation are learnt
- The various processes and frameworks are defined for the learning
- The Traditional learning approach and elearning approach are learnt.
- The various frameworks were created to gather the knowledge about the traditional and elearning processes
- The new processes for elearning are defined

Chapter 2

Requirement Analysis

2.1 Requirement Analysis: Introduction

Requirement analysis is a software engineering task that bridges the gap between the system level requirements engineering and software design. In the proposed project, software requirement analysis has been divided into five areas of effort:

- Problem recognition
- Evaluation and synthesis
- Modeling
- Specification
- Review

Before the requirements can be analyzed, modeled or specified, they are gathered through an elicitation process. Context free question were asked to the employees and management people regarding how they would characterize a good output that would generate a successful solution, what kind of problems will this solution address, how they describe the environment in which the solution will be used, and will special performance issues or constraints affect the way the solution is approached.

The aim is primarily to develop an understanding of the problem facing the user and the nature of the operation. We need to understand how each activity operates requires access to the information.

Kind of Information   Information Describing

- Policies.
- Goals
- Objectives
- Organization Structure

- Authority Relationships
- Job Functions Information Requirements
- Interpersonal Relationships

- Training Methods
- Training Schedules

Organization

Employees

Training Department

to

Information Gathering
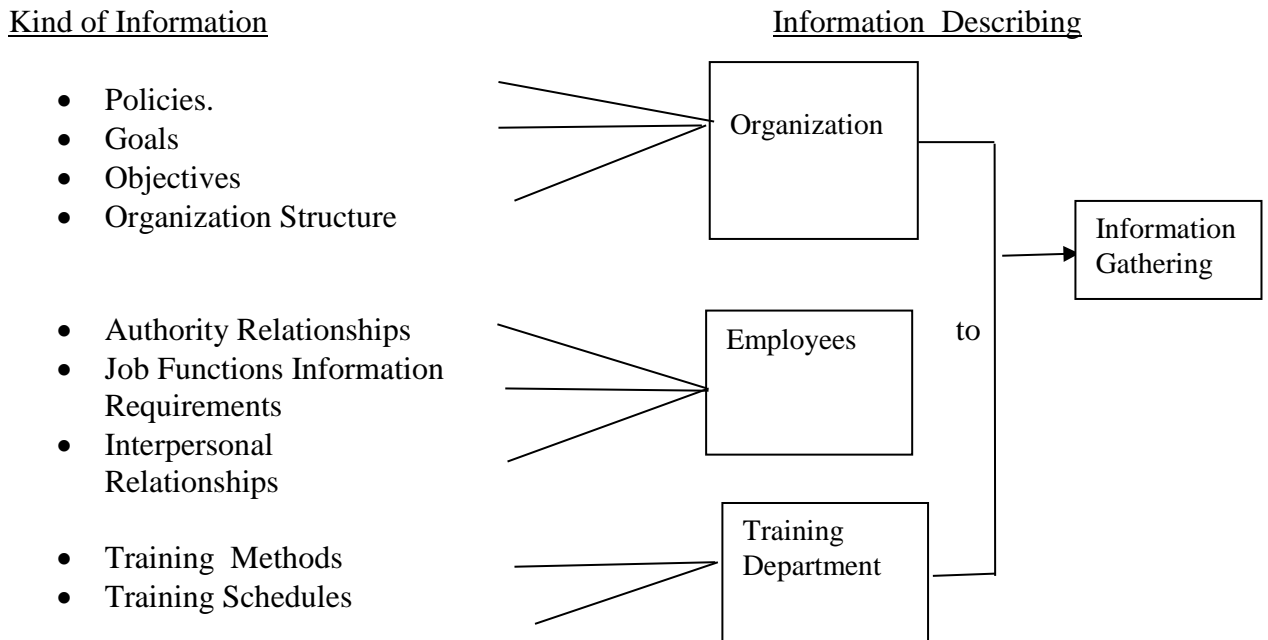
Fig 2.1 – Information Gathering

2.2 Information Gathering Tools

Information must be acquired accurately, methodically, under the right conditions and with minimal interruption to user personal.

1. Review of Literature, Procedures, and Forms

   Procedure manuals and forms are useful sources for the analyst. They describe the format and function of the present system
   Included in the study is a close look at the existing forms. Objective is to understand how the forms are used. Following questions may be useful:
   Who uses the portal?
   Do all the necessary information is included?
   What items are to be added/deleted?

2. On-Site Observation

   The objective is to get as close as possible to the real training system being studied. It is important that knowledge about the general makeup and activities of the system is acquired. The following questions serve as a guide for on-site observations:
   What kind of system it is? What does it do?
   Who runs the system? Who are the important people in it?
   What is the history of the system?
   Apart from its formal function, what kind of system is it in comparison to other systems in the organization

3. Interviews:

   Interviews can be a useful information-gathering tool. The interview is a face-to-face situation in which information can be gathered by asking questions (which may be previously designed) about a problem area. It can be used for two main purposes:
   - As an exploratory device to identify relations or verify information, and
   - To capture information as it exists

4. Discussion with IT Experts

   The most important phase of any project development is the have a clear picture of the basic requirements and desired output.
   We started our project with the discussion with the Project Coordinator to have a better understanding of the project. On the basis of the discussion we stated with the designing the Use case diagram. Our project coordinator then reviewed these and necessary changes to be introduced were told.
   Then we proceeded with the designing of the evaluation software with HTML Screens. The screen design we were in regular touch with our project coordinator who provided us the feedback. After completion the project was made live. Based on the use we got to know further requirements and enhancements that could be done.
   When the web application was complete and the respective users were comfortable and satisfied.

2. 3 Final Requirements

After the discussions the following features were finalized:

- Centralized Database: Centralized Database was required to eliminate redundancy and to allow sharing of the information
- Client / Server
- Increased Efficiency
- Improved Security and Reliability
- Faster response time
- Efficient Reporting
- Easily maintainable

Chapter 3

Developing the Elearning Platform (elearning Portal)

ELearning Portal

3.1 Objectives

To Design and Development of a Portal for Learning, Assessment of Skills/ Competencies and Associated Repositories for Dissemination of Knowledge and Practices for Organization Learning. The development of application for Learning, Competency and Skill Management, Assessment, Reporting which would also facilitate:

- Collaborative Learning through interaction
- Knowledge Management of all the necessary resources
- Development planning
- Sharing and Learning Progressive Practices for Leadership, Accountability, Transparency and Management of various Operations
- Disseminate Ethics & Values and Policies for compliance

To create a value and knowledge based organization by inculcating a culture of learning, innovation and team working.

To facilitate the Transformation of organisation (as a **Learning Organization)** leveraging continuous improvement facilitated by Units for Training, Innovation, Capacity Augmentation and Learning)

Aligning the Organisational priorities with the aspirations of the employees and employing practices that enable the development of empowered, responsive and competent human capital.

3.2 Advantages of eLearning Portal

e-learning portal facilitates with the features including online/offline learning, counseling, Competency mapping, tools for accessing Competency of the individual and team, Training, Training Management System, automated workflow of training, group discussions etc. Given below are some screen shots from e-learning portal which showcase portal features.

Training in the Organisation using ELearning Portal

The e-learning portal is a Robust Validated Online Solution Framework which provides for the management of the following processes, activities:
- Knowledge Inputs in Course module forms for competency development, talent grooming and skill up gradation.
- On the job learning
- Undertaking exercises for assimilating knowledge and practices related to specific roles, Self – assessment modules.
- Conduction/ scheduling of Evaluations, Assessments, Tests Online.
- Competency & skill management.

- Communication/ Collaboration required for learning support.
- Feedback to Learners and Results management.
- Performance Reports management.
- Configuration of Learning Solutions to meet diverse needs for skill development and its Administration to various target groups.
- Flexibility for Content management.
- Use of a wide range of Collaboration Tools such as Blogs, RSS, Podcast and interface to Sites such as Wiki podia, Discussion Forums, Text Chat, Audio / Video conferencing and Whiteboard.
- Tools for Authoring of Assessment Routines/ Evaluations etc with a wide range of flexibility in testing competencies must be implemented to facilitate mentors/ assessors in examining users for their attainment of competency standards.
- Ability to engage the learners online in a variety of ways.
- Capability to Import/ Export learning content prepared by other agencies in standard forms conforming to IMS/ SCORM.
- Advanced Search mechanisms for locating content based on various criteria.
- Learning resources must be capable of being classified, indexed, meta-tagged in a variety of ways
- To enhance user experience – a wide variety of configurable GUI templates must be available to the users to choose from for customized experience.
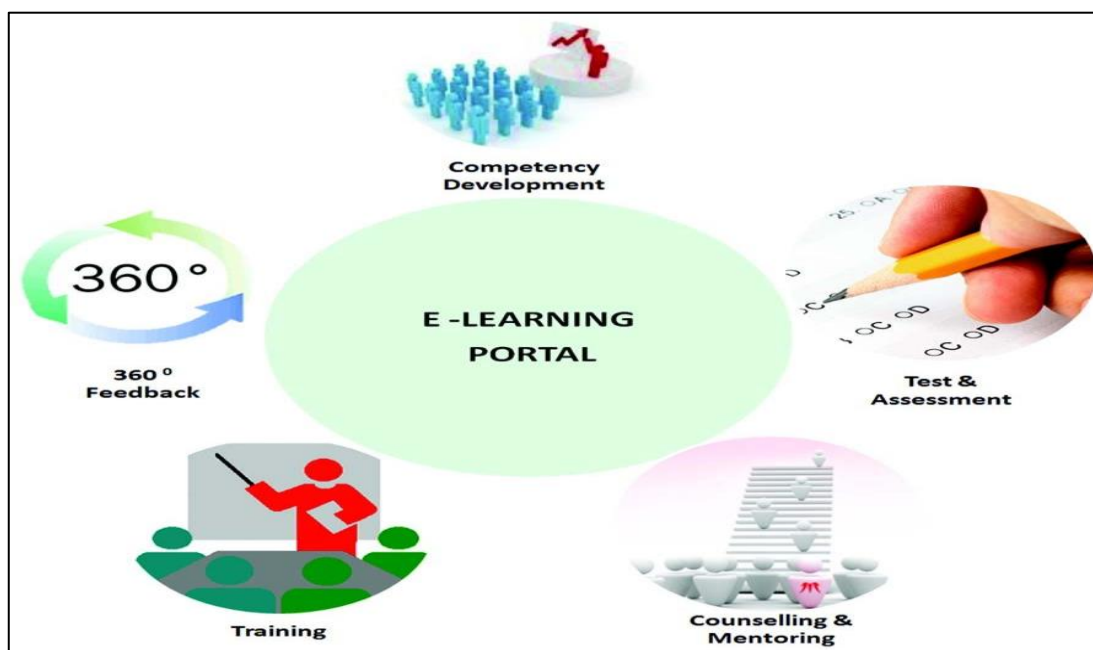
Figure 3.2.1: eLearning Portal

3.3 Frameworks
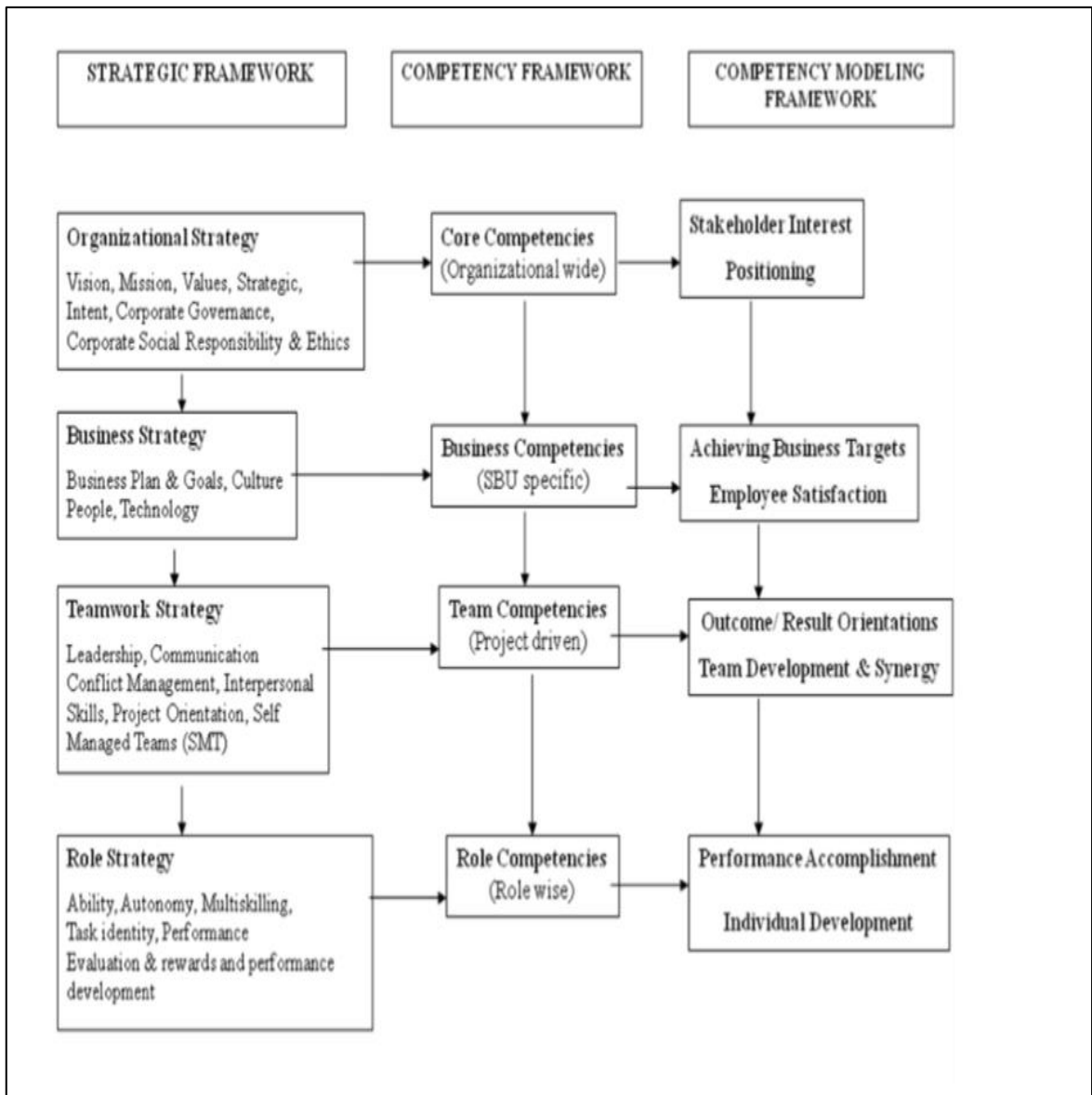
Fig 3.3.1: Macro view of Competency Management

Overview of the System: The below framework describes the overview of the system for the management of Knowledge Resources
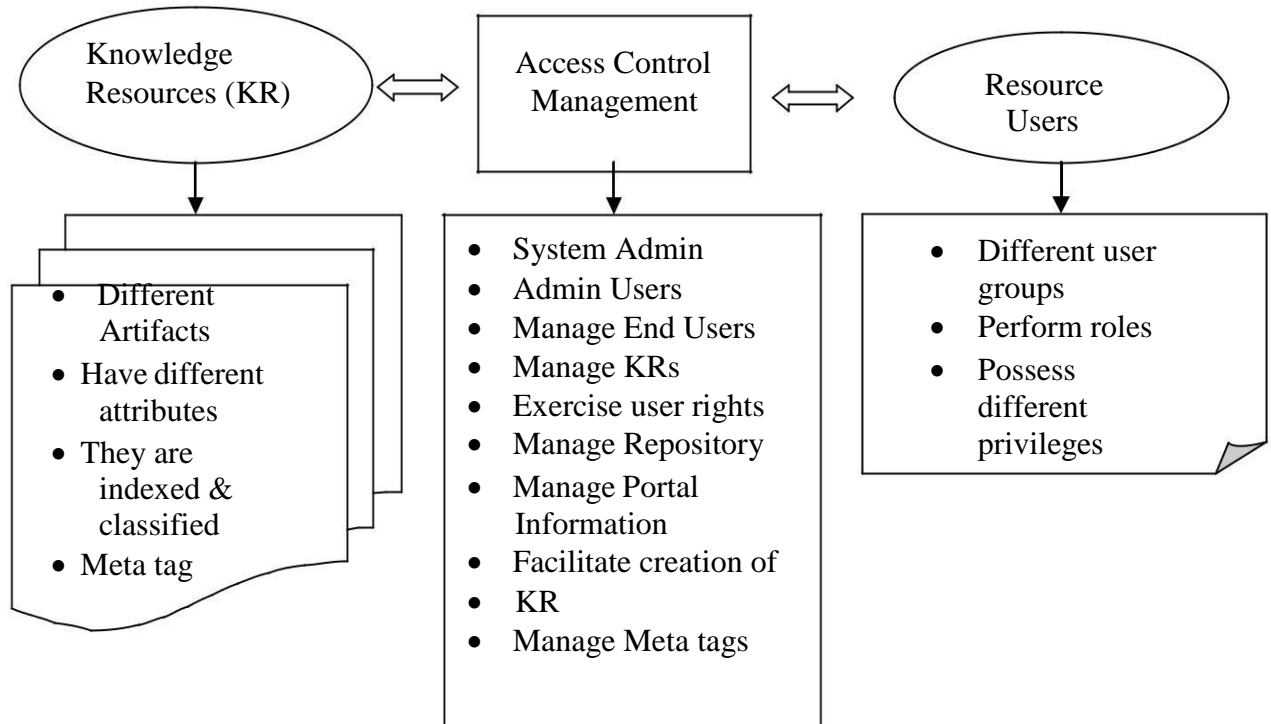
Fig 3.3.2: Overview of the System

Resource Users:

The below framework describes all the users of the Knowledge resources
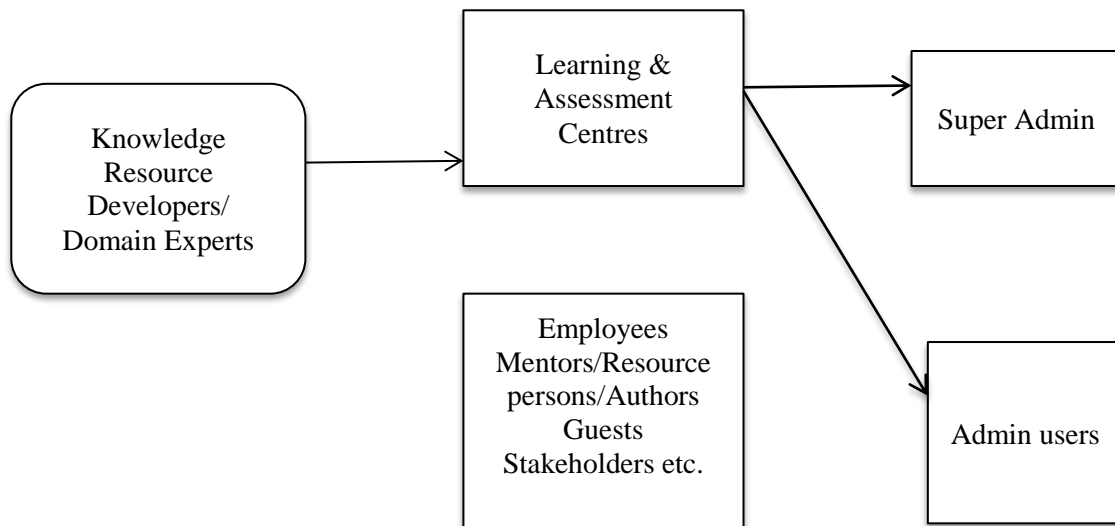
Fig 3.3.3: Resources Uses

**Knowledge Resources:** The framework of the management of knowledge resources created by various Domain Experts/Authors
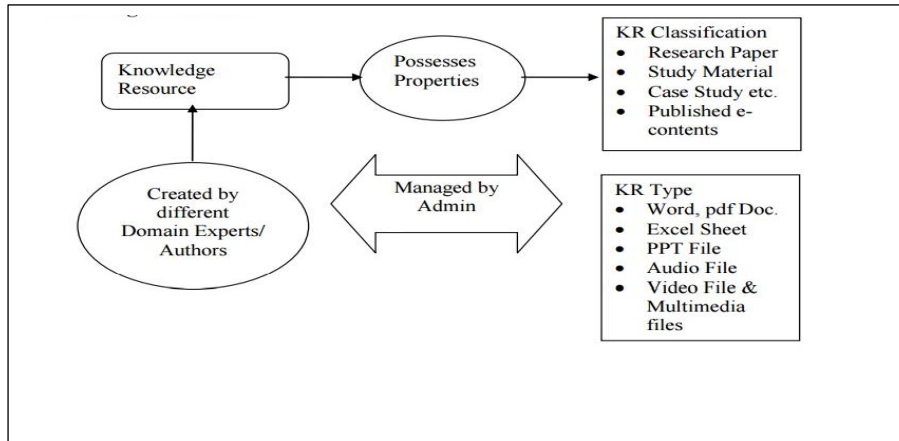
Fig: 3.3.4: Knowledge Resources

Access Control Management

The access and control of the various knowledge resources
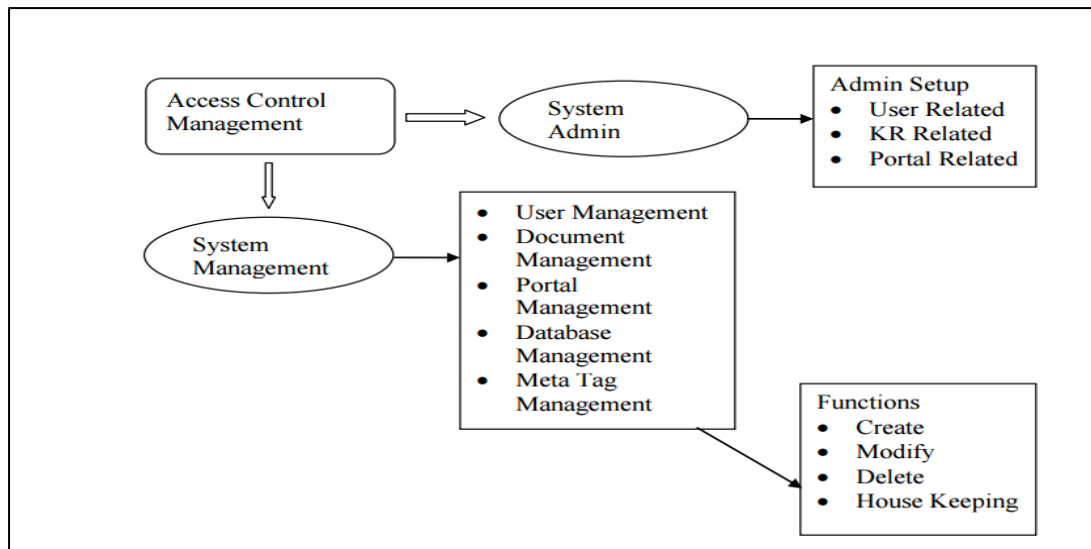
Fig 3.3.5: Access control management Framework

SYSTEM ADMIN MODULE

Business Functions Definition
- Feature for the Super User is built in
- Super User can create Admin Users & assign privileges
- Admin Users can create end-users and assign privileges
- Definition of Roles like Upload, Download, Review, Authorize etc
- User configurable definition of Groups like Employee, Resource Person, Domain Expert/ Author, Reviewer etc
- Build relationship between Group and Roles
- Feature to define exceptional roles, in addition to Group Roles

Admin Setup User Related:
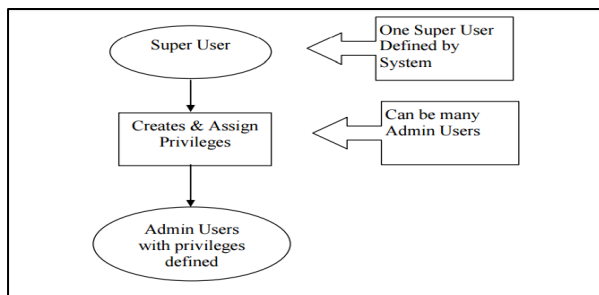
Fig 3.3.6 : Role of the system

Super User

- This is a built-in function pre-created
- Feature to change the user id & password
- Only one Super User for the system

Admin User
- Super User creates Admin Users
- There may be many Admin Users
- One to many relationship
- Super User assigns privileges to Admin Users

Users

- They are the end users of the system
- They are created by Admin Users
- Admin Users configure user-privileges to them

Group & Role Creation:
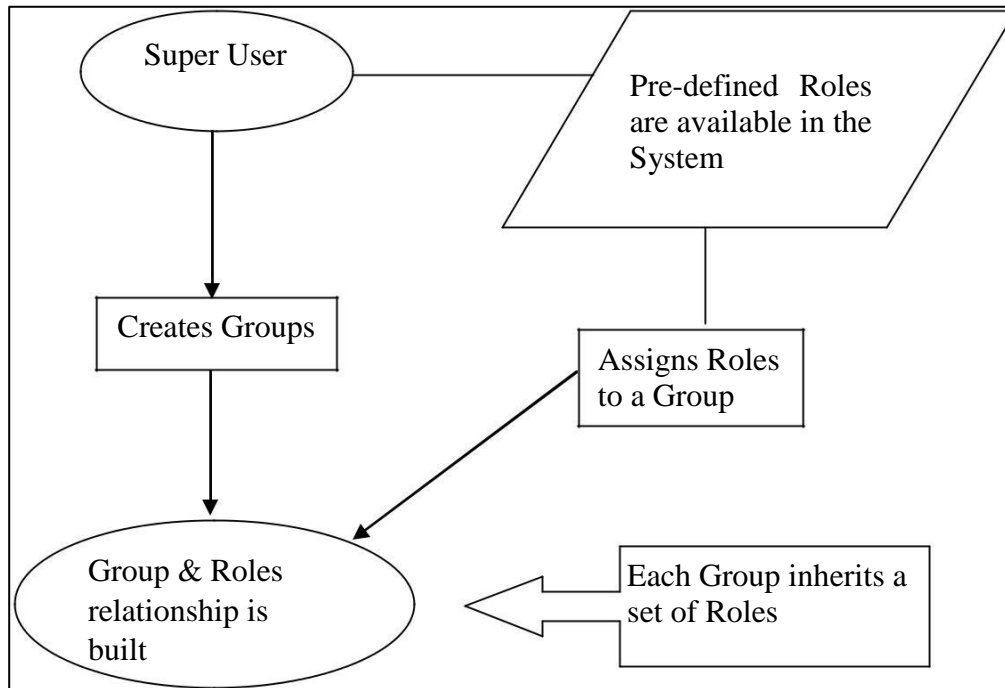
Figure 3.3.7: Group and Role Creation

Roles
- Roles are basically functions performed by users
- They are like Upload, Download, Review, Author etc
- They are to be defined by the Operations Support Group
- Software Functions will be developed around these Roles
- Hence, Roles are a set of pre-defined functions and cannot be added
- These functions are assigned to Groups
- Hence, the Group can perform these set of functions
- New Role addition is system enhancement and additional effort

Groups
- Groups are user Groups like Employee, Resource Person, Author, Stakeholder, Reviewer, Guest etc
- Super User shall create the Groups
- Then he shall assign a set of Roles to each Group
- User can modify the Roles of a Group
- User can delete a Group

User Creation:
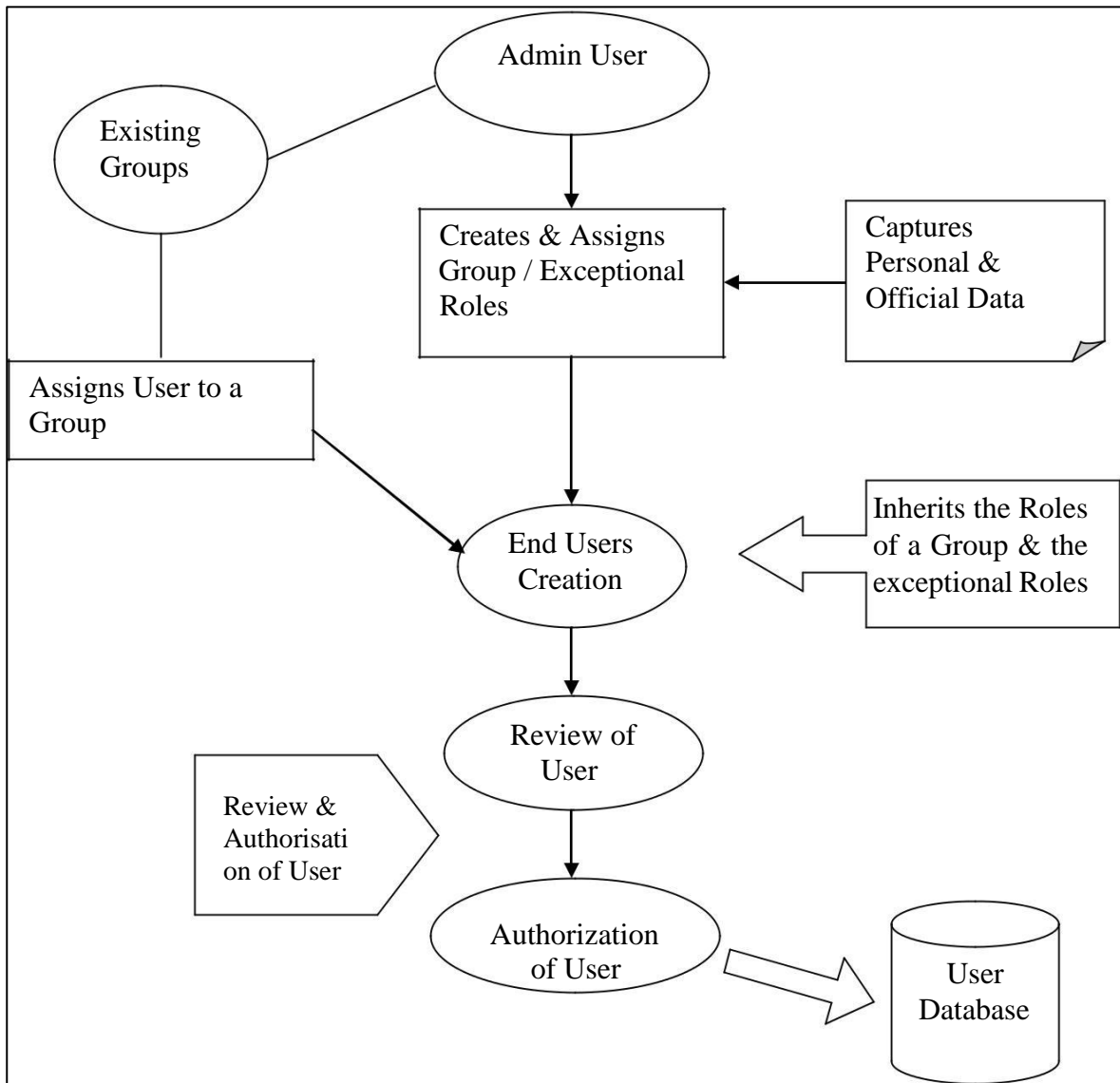
Figure 3.3.8: Group and Role Creation Framework

User Functions
- Users are the end-users of the system
- User data is captured here - both personal and organisational related data
- Each User is assigned to a Group and inherits the Roles of the Group
- Admin User can assign some exceptional Roles to a User
- This can be additional Role or downsizing of the inherited Role
- Is User becomes authorized user by a date defined by the Admin
- Users created are first Reviewed then Authorized by an Admin User
- Thus two levels of authentication is provided. Is it reqd
- Admin User can modify the User info and can set a User to delete

Division-Resource Association Creation

The activities or responsibilities of the division
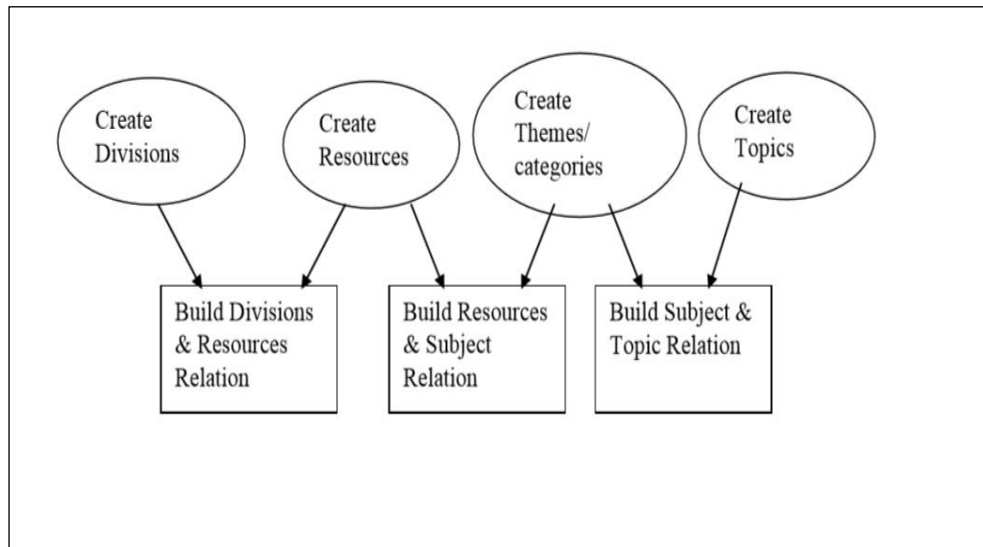
Fig 3.3.9 : Resource Association Creation

Admin Set Up Document Related

- Admin User create Divisions
- Domain Experts Creates Resources
- The relationship between the Divisions and the Resources is built
- Similarly the Resources & Subjects are associated/ related
- For a Subject, Topics are created and related
- Thus the hierarchy of Resources and its association to Categories/ Topics and Divisions are created

KR Definition
- KR Definition is basically captured with three levels of qualifiers
- They are like, Resource, Subject and Category
- Thus the above defines the knowledge base to which the KR belongs

KR Classification
- Classification is defined to identity different KRs
- Classification is like – Study Material, Case Study, Research Paper etc.
- Admin User can define these Classifications
- New Classification can be created when the need arises

KR Type

- KR Type is the technical identification
- They are like – Word, Excel, PPT, Audio, Video etc

When a KR is created the above created Definition,
Classification and Type are assigned to the KR

This helps in recognizing and understanding the nature of the KR

System Management

Template Creation
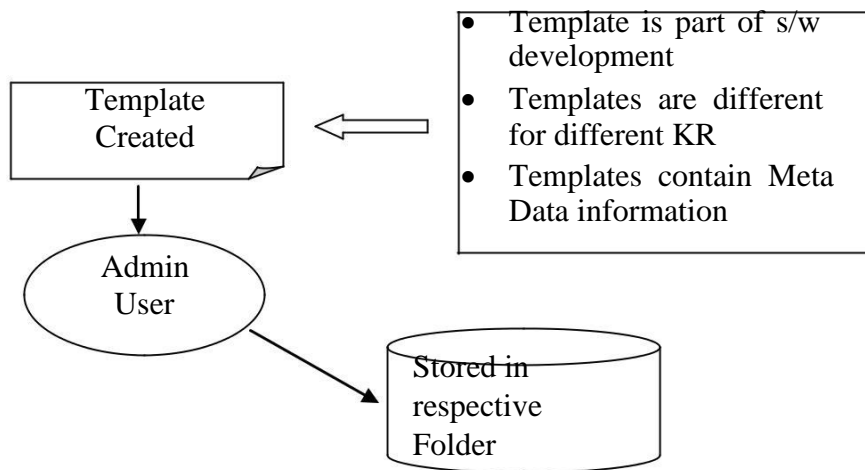
Fig 3.3.10 : Template Creation

- Define Template for each type of KR
- Templates are created during software development accordingly
- Templates shall have feature to define three levels of meta tag related to the KR Definition (Resouce, Subject & Topic)
- They shall contain tag for Classification of KR (like, Research Paper, Case Study, Study Material etc.)
- Template shall also have meta tag for Type of KR (like, Word, Excel, PPT etc)
- Thus the Templates capture the metadata information related to a KR
- Hence, it is very important to develop Templates with appropriate fields that become the elements of meta data
- Templates are first filled and then the KR is uploaded
- They are placed in the appropriate folder in the repository
- However, creation of new template requires software development efforts

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Template Usage   The workflow of the templates creation
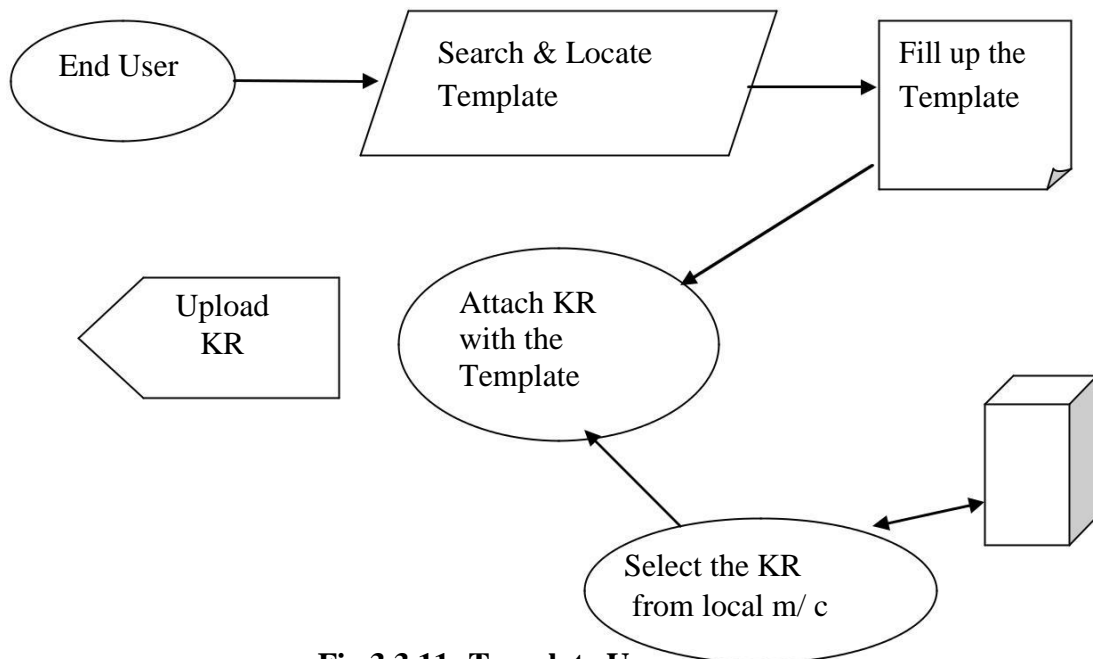
Fig 3.3.11: Template Usage

- End user visit the portal
- Search and Locate for a template is provided – criteria based
- Flexible method of searching and locating a template shall be developed – i.e. search by resource/division/subject/classification/ topic of a KR.
- On selecting the correct Template, the user fills up the Template
- Filling up involves keying the correct meta tags for KR definition, KR
- User select the target KR from his local machine
- User attaches the KR with the filled up Template
- Uploads the KR to the site
- Thus the KR with its meta data information is captured

Once the user uploads the KR with Template, the KR is placed in to a Hold Area within the Repository.

KR Management:

The workflow of the management of the Knowledge Resources
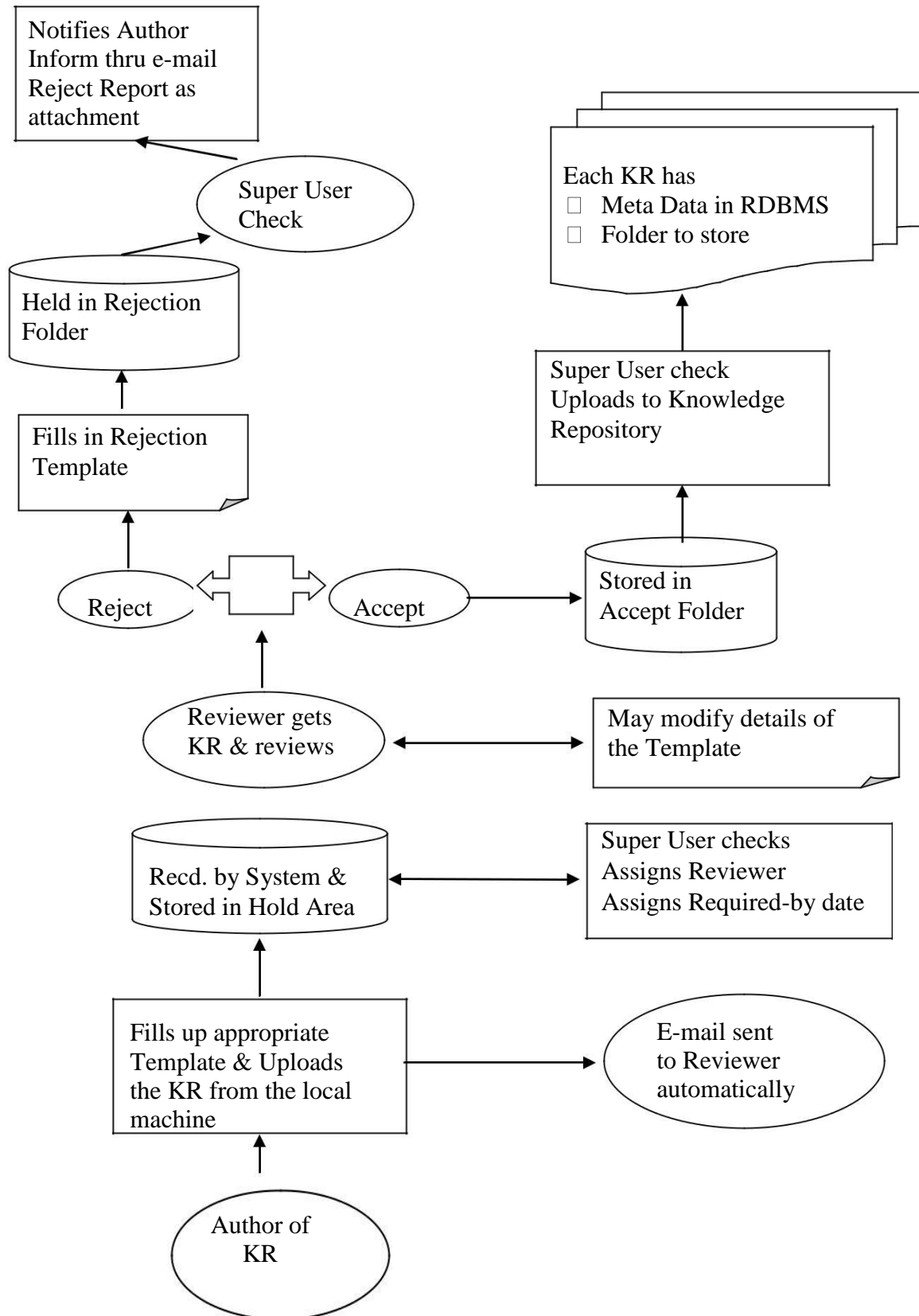
Fig 3.3.12: Knowledge Management

Author
- Browses the subject and gets the appropriate Template to fill in
- On filling the Template, the Author uploads the right KR from his local machine
- "Upload" feature shall be provided in the Template
- Thus he puts the KR in to the "Hold Area"

Super User
- Super User shall always have a list of KRs in the Hold Area, waiting to be assigned to the Reviewer
- Super User shall get the list of Reviewer for the subject of a KR
- He can choose one Reviewer from the list of Reviewers and "assign" the KR for review
- On assigning, the Super User shall also have a report containing all Reviewers and the no. of KRs assigned but review not completed
- The Accepted KRs shall be contained in "Accept Folder" and Super User shall always have this list of such KRs
- Accepted KRs shall be uploaded in to the final destination – Knowledge Repository
- Super User shall also have the list of Rejected KRs, waiting to be notified to the authors
- He notifies the author about the rejection of the KR
- An automated e-mail shall be sent to the author and the Rejection Report shall be sent as an attachment to the mail

Reviewer
- Reviewer is one class of users defined in the Admin Set up
- Subject wise Reviewers are related.
- One Reviewer may be related to multiple subjects
- Reviewer shall know his list of KRs waiting for review
- He shall download the selected KR from the Hold Area and shall complete the review process
- During the review, he/she may change some of the details of the Template which forms the meta data
- However, he/she should not modify the content of the KR
- Reviewer shall decide to Accept or Reject
- Once he assigns Accept decision to a KR, it move to the "Accept Folder"
- If he decides to Reject, then he shall fill in the Rejection Report, as part of the feedback to the author
- The rejected KR moves to the "Reject Folder"

Accepted KR
- Each KR is a knowledge entity
- It contains the details of the Template as Meta data
- Meta Data is stored in RDBMS and is used for further actions like Search, Find etc.
- Hence, filling up the right template for the right KR is very important in this system
- The accepted KR is stored in the right folder in the server
- The destination folder is transparent to the users except the Super User

Resources Management

- Creation of Calendar of Events – here, one template can be created for events with the feature to define Division or a workshop for which resources could be associated. Depending on the selection, the event shall appear in the respective Calendar.
-
- Creation of Time Table for a course – same methodology as above shall be used
- Announcements can be published at Organisation or at Division level
- Feature to flash as "New" shall be given.
-
- Admin user to define dates for flashing new and for removing the Announcements from the site
- Feature to publish Notifications
- Management of the above in terms of Create, Modify and Remove shall be developed

Metadata Management

The meta tagging would happen on the following
- Knowledge Resource
- Resource Document

The reviewer does the meta tagging. This can happen either during Resource Document preparation or when the Resource Documents are uploaded to the system.

When a Knowledge Resource is being viewed by the user, related metadata is referenced to discover self-describing information, Subject / Topic classification, related knowledge resources and so on

There are different types of metadata as given below:
- Knowledge Resource based Custom metadata
- Resource Document based Custom metadata
- Knowledge Resource based Name-Value pair metadata
- Knowledge Resource based Glossary of terms (Name-Value pair based)
- Knowledge Resource based IMS Metadata standard Mandatory elements

The above metadata shall be used during Knowledge Resource search.

Keywords Management Module

This module is used to add/modify/delete keywords. The keywords are setup for a particular Subject. These keywords are used to tag to Knowledge Resource and Resource Documents.

Admin

- Setup Metadata keywords / lists for the Subject / Topic (This may be by using Vocabulary files)

Knowledge Resource based Custom metadata

The following section specifies the metadata elements of custom metadata. The reviewer specifies custom metadata. These Meta data elements are common across the board to all knowledge resources

3.4 Metadata elements

Element Name	Description
Title	*Title of Knowledge Resource*
Executive summary (Short Description / Abstract)	*Explanation of Knowledge Resource*
Project Duration	**Duration of the project**
Author	*Author Name & Organization (linked to User details)*
TOC	Table of contents (as in Resource Documents)
Date of Publishing	*Date published*
Date of Submission	*Date submitted*
Period of research / work	*From Date & To Date*
Life Expectancy	*Date of expiry*
Keywords	*Keywords related to current Knowledge Resource. The keywords are shown from the set defined in "Keywords Management Module". Keywords relating to policy area of the Knowledge Resource will be shown.*
External Links	*List of URLs related to Knowledge Resource*
Contains Multimedia Data	*Yes/No*
Subject Classification	Two types of association would be captured at this. 1. "Is also belongs to" association □ This is associating a Knowledge Resource with a subject or Topic. Here a Digital artifact is not allowed to be associated with other subjects / topics. 2. "Is related to" association □ This is mapping a Knowledge Resource with some other Knowledge Resource/s. This is further related with Digital artifact. A such relation is also represented in the "Content

	repurpose" module. *The above two will be captured at "Classification" tab of "IMS Metadata"*
Type of Knowledge Resource	This will be chosen from a list.
International	*Yes/No* *If yes, Country (List)* *Else State (If Domestic - List)*

Table 3.4.1: Meta Data Elements

In the diagram, Digital artifacts are Resource Document or Artifacts or Multimedia file
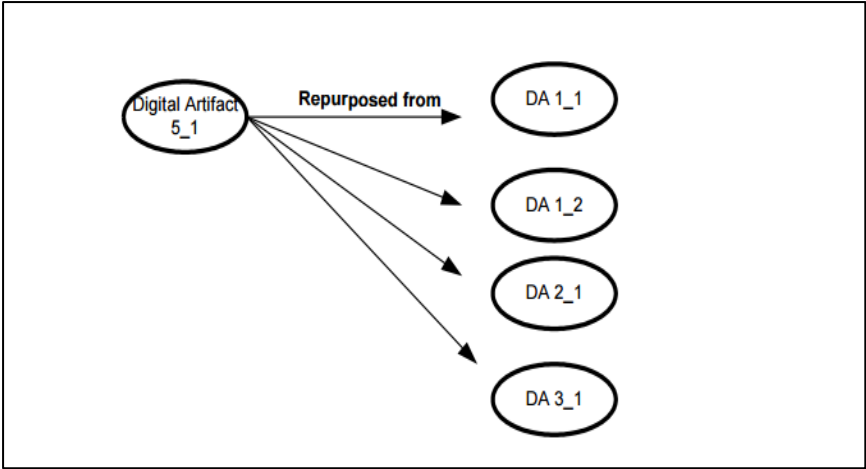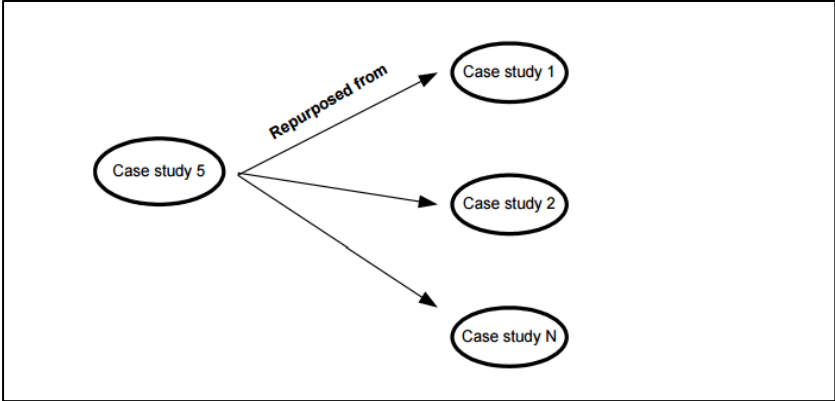
Fig : 3.4.1 : Content repurpose association scenario

Privileged User/ Reviewer doesn't have rights to add his own keywords into keyword master. This is to *avoid wrong metadata from getting metatagged-* for example someone shouldn't be able to upload "Engineering" metadata into "Science" section, which could prove disastrous during search.

3.5 Resource Document based Custom metadata

This module facilitates to map keywords to Resource Documents.

Metadata elements

Element Name	Description
Keywords	*Keywords related to current Knowledge Resource. The keywords are shown from the set defined in "Keywords Management Module". Keywords relating to policy area of the Knowledge Resource will be shown.*

Roles

Reviewer
- ☐ Does Metatagging.

Knowledge Resource based Name-Value pair metadata:

In addition to the custom metadata elements specified, if the reviewer wants to add other metadata elements then it should be in a name value pair.
Here both Name and value will be defined as part of metadata definition for the Knowledge Resource

Roles

Reviewer
- ☐ Does Metatagging.

Knowledge Resource based Glossary of terms (Name-Value pair based)

In addition to the general Name-value paired metadata, Glossary of terms metadata is also metatagged at the Knowledge Resource level. The Glossary of terms is also based on the name-value paired metadata structure.

Roles

Reviewer
- Does Metatagging.

Knowledge Resource based IMS Metadata standard Mandatory elements

The metadata elements specified here are from IMS standard mandatory elements. These metadata includes crucial elements like Digital Rights Management etc.

Metadata elements

There are several metadata sections like General Section, Technical Section; Digital Rights Management section etc. There would be some pre-populated data from vocabulary.

General
Title
CatalogEntry
    Classification
    Entry
Language (List)
Description

Life Cycle
Contribute – Author
    Name:
    Email:
    Date: (YYYY-MM-DD)
    Description of Date
Contribute – Publisher
    Name:
    Email:
    Date: (YYYY-MM-DD)
    Description of Date

Meta-metadata
CatalogEntry
    Classification
    Entry
Contribute – Creator
    Name:
    Email:
    Date: (YYYY-MM-DD)
    Description of Date
Contribute – Validator
    Name:
    Email:

Date: (YYYY-MM-DD)
Description of Date

Technical

Location

Educational

Learning Resource Type (List)

Rights

Cost (Y/N)
Copyright and Other Restrictions (Y/N)
Description

Classification

Show up the Subject / Topic for the Author/Reviewer to map the current
Knowledge Resource with related knowledge resources.

Roles

Reviewer
☐ Does Metatagging.

3.6 List of Processes

S. No.	Process Name	Role	Process Flow
1	Administrative Tasks	Training Administrator	Manage Grade schema
			User Management
			Role Management
			Certificate Management
			Template Management
2	Online Learning Management	Training Administrator	Create and Edit Self Learning courses
			Manage FAQ
			Tag Experts to the Course
			Enroll Employees to the Course
			Search and perform bulk enrolment
			Manage self-registration Course requests
			Moderate collaboration activities
			View Course progression reports
			View Course Test reports
			View and perform Escalation settings at Course level
		Learner	Browse/Play the Courses enrolled
			View/Download Supplementary resources
			View and use Course SCO level bookmarks
			Take tests associated with the Course and view reports
			Provide/View Feedback
			View Certificate
			View FAQ
			Collaboration
			Ask an Expert
			View Course progression reports
			View Course wise Test reports
		Expert	View and moderate Courses assigned
			View/Answer the questions asked by Employees (end users)
			Preview/Browse the Course content
3	Online Test Management	Training Administrator	Create and Edit Questions
			Create and Edit Test
			Word based Test authoring
			Create and Manage Test Schedule
			Test reports
		Learner	View Test Schedule

			Take Test
			View Test reports
4	Knowledge Resource Management	Training Administrator	Manage SCORM Courses and its contents
			Manage QTI Questions and Tests
			Manage Supplementary resources
			Manage Knowledge Resource documents under various categories
			Manage Knowledge Resource documents under various information dimensions
			Adding Supplementary resources and KR to Course and Training Program Activity
			Evaluate and Publish Knowledge Resource document
		Learner	View/Use Course and its Supplementary resources
			Search KR Document
			View/Download KR Document
			View Trainer uploaded materials
			View and Upload Assignments
			Contribute a Knowledge Resource document
			Review Contributed Documents
5	Classroom Training	Learner	Create and manage Training Location
			Create and Manage Trainer
			Create and Manage Training Program
			Create Training Program Proposal
			Publish Training Program Event
			Manage self-registration Training requests
			Enroll employees to Training program
			Reports (Drilldown)
			View Training calendar
			Request for a registration to Training Event
			View enrolled Training events
			View Training Program details
			View Activity details
			Browse Activity
		Trainer	View Training Events and Programs
			View Training activities which are scheduled to him
			Upload Training materials

			Upload Assignments
			View/Play Course
			View Tests
			View Knowledge resources
			Collaboration
			Record Attendance
			Record Offline Test results
			Provide/View Feedback
6	Communication	Training Administrator	Announcement
			Training Proposal
			Cmail
			Registration Workflow
7	Collaboration	Training Administrator	Blog
			Wiki
			Podcast
8	Training Proposal Workflow	Approves Training Proposal forwarded by Training Administrator	HRM Head

Table 3.6.1: List of processes

3.7   Hardware and Software Requirements

H/W Requirements

This refers to the least basic components that a system should possess for the smooth operation. Following are the hardware requirements for the portal

Disk Space /Virtual Private Server	500 GB
Processor required	3.3 Ghz, Dual core Processor
RAM	8GB

Software Requirements

This refers to the basic software requirements that are primarily needed for the working of the system. Following are the s/w requirements for this system:

Operating System	Windows 2008
Database	MSSQL 2008
e-mail	SMTP server
Application server	Internet Information Services (IIS)
Front End	.NET Framework 4.0

3.8   Use Case Diagrams

Use case diagrams are designed to define the interaction of various types of users with the system

Schematic Framework for Enterprise Learning
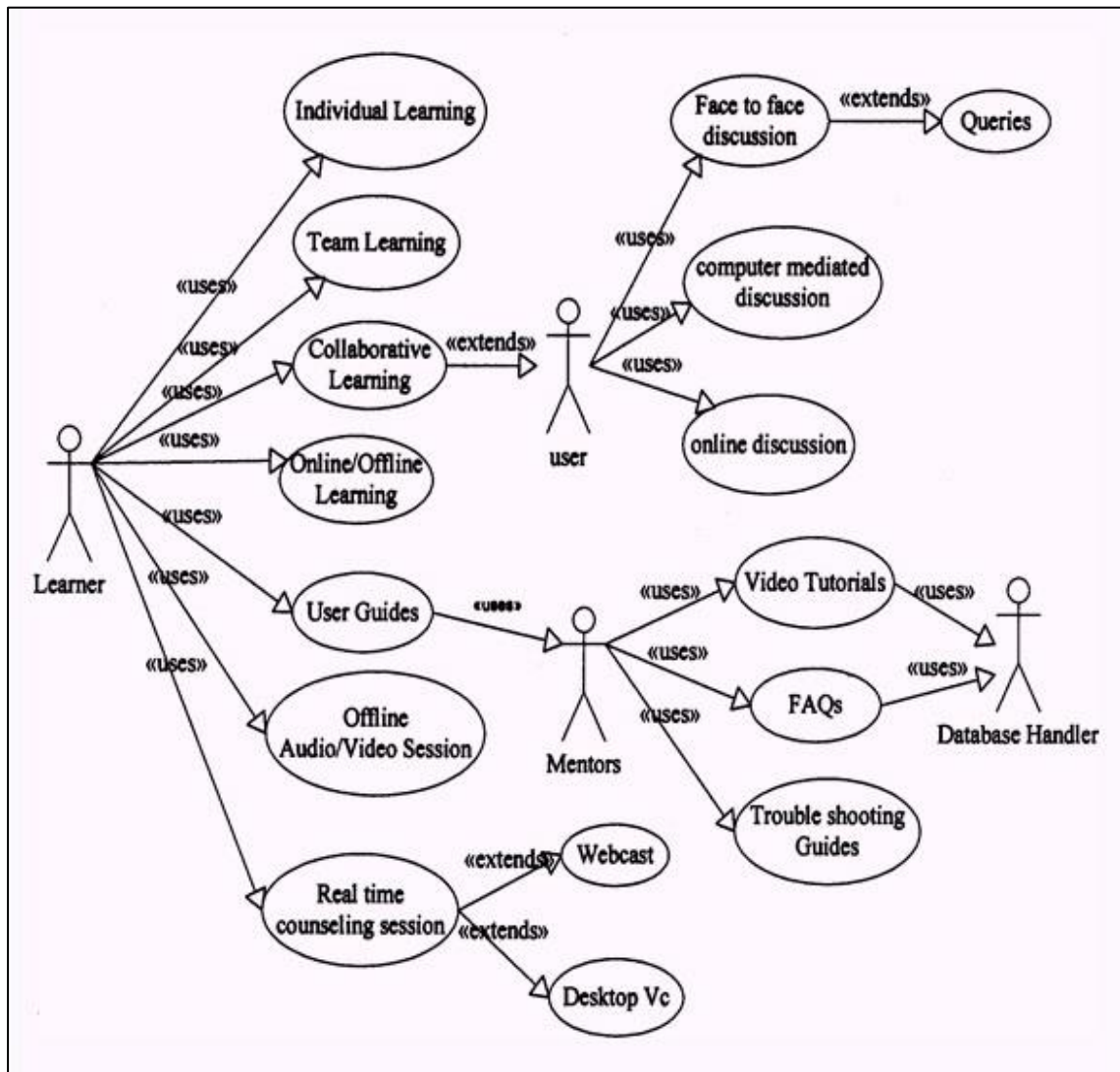
Fig 3.8.1 Use case diagram for Enterprise Learning

Learner and Administrator
The interaction of the system with two types of users: Learner and Administrator
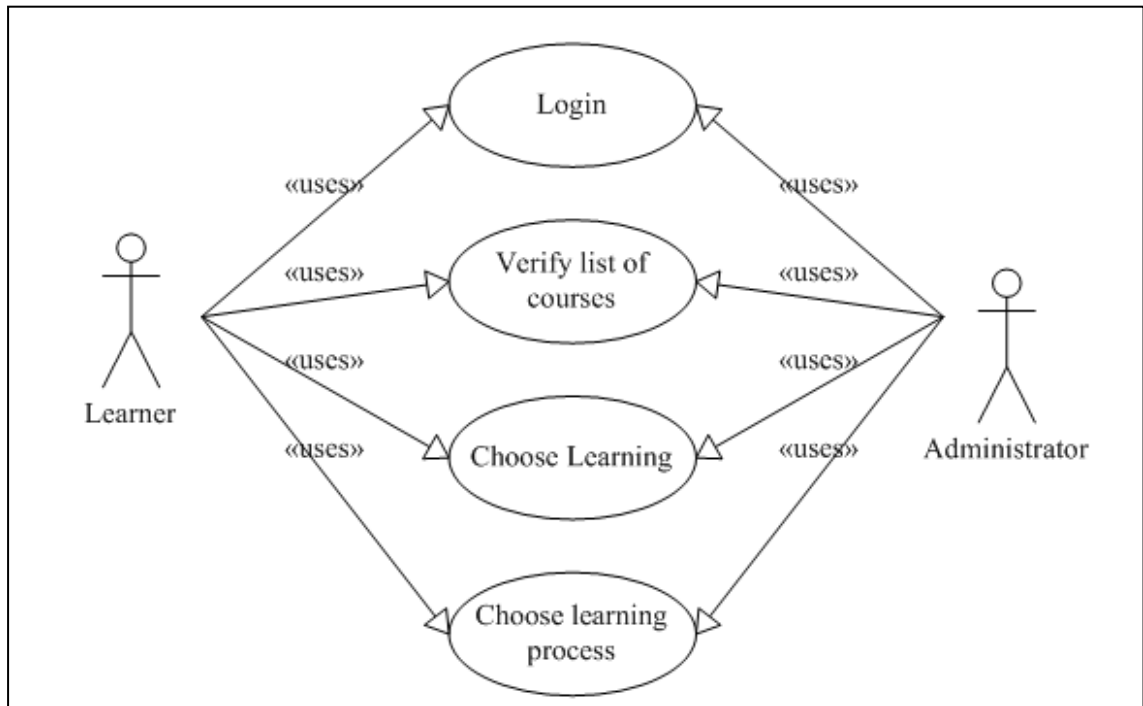
Fig 3.8.2 Use case diagram for Learner and Administrator

Course Manger and Content Creator
The interaction of the system with Course Manager and Content Creator
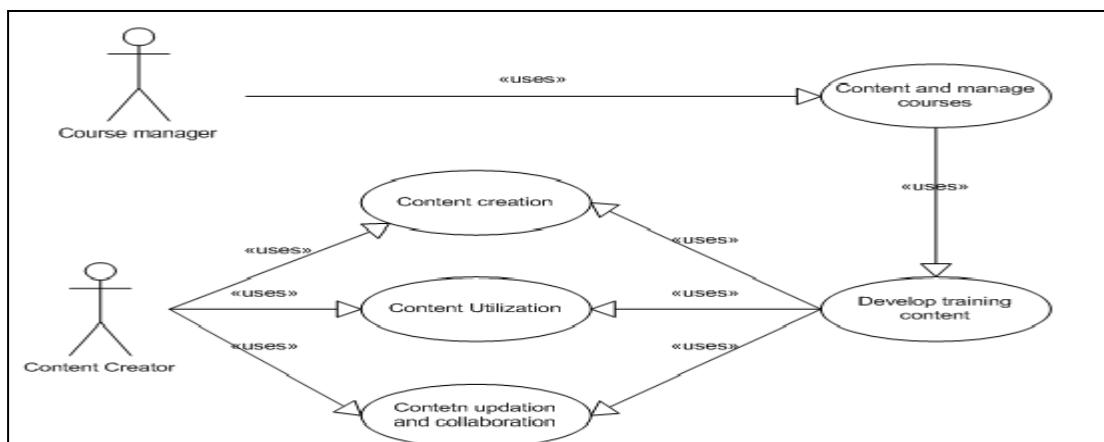
Fig 3.8.3 Use case diagram for Course Manger and Content Creator

Learner and Administrator
The   diagram describes interaction of the system with Learner and Administrator
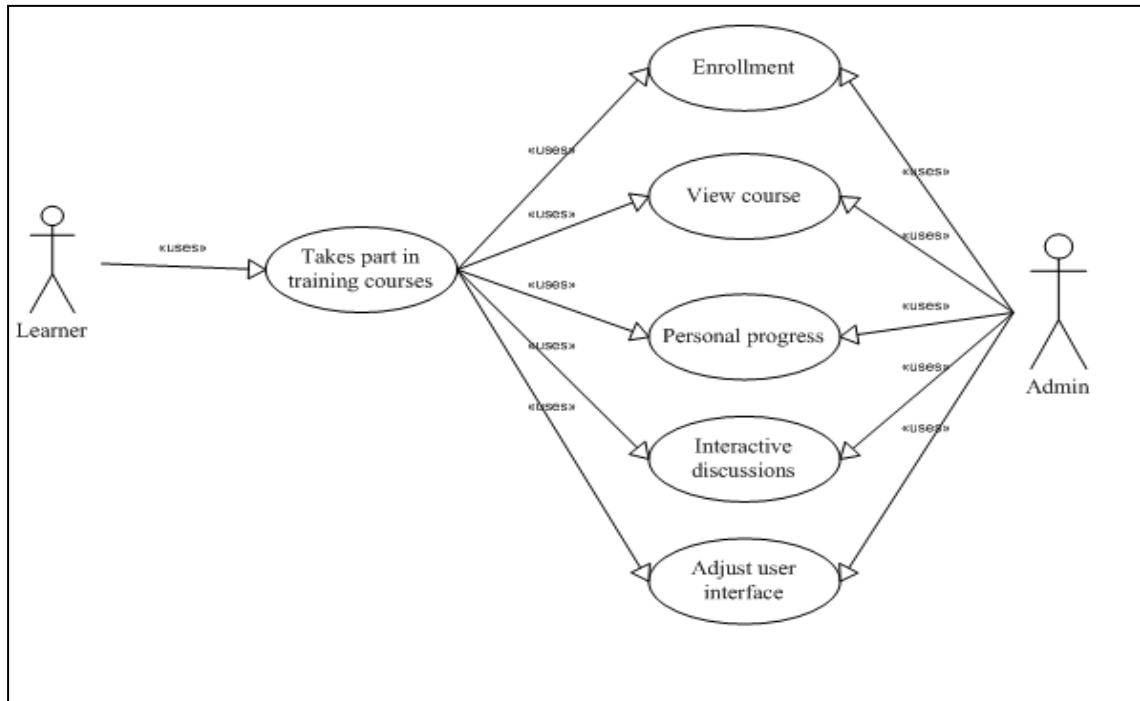
Fig 3.8.4 Use case diagram for Learner and Administrator

Learning Process Selection
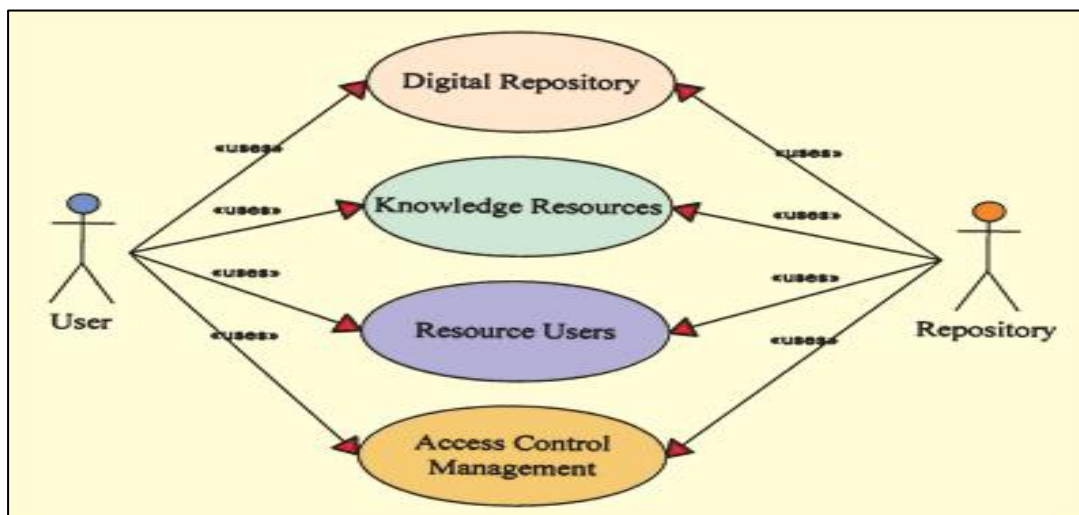
Fig 3.8.5 Use case diagram for Selection of learning Process

Counselling: The use case diagram depicts the counselling process
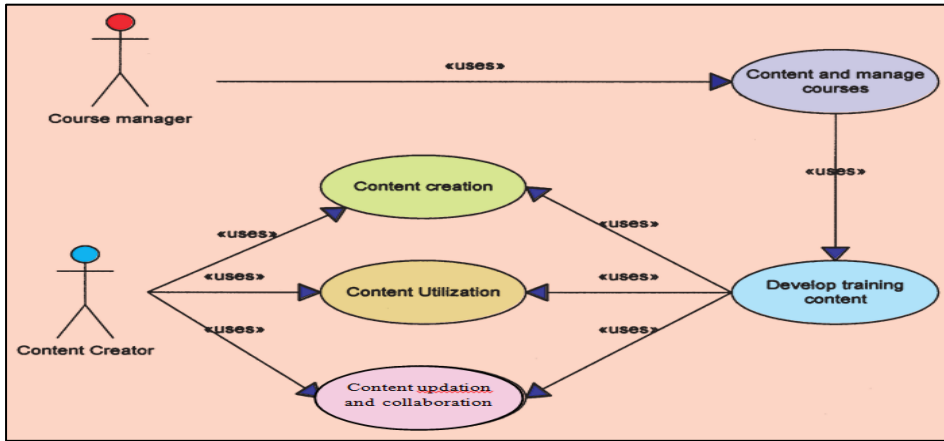
Fig 3.8.6 Use case diagram for Counselling

Learner Engagement and Mentoring: The use case diagram depicts role of learners
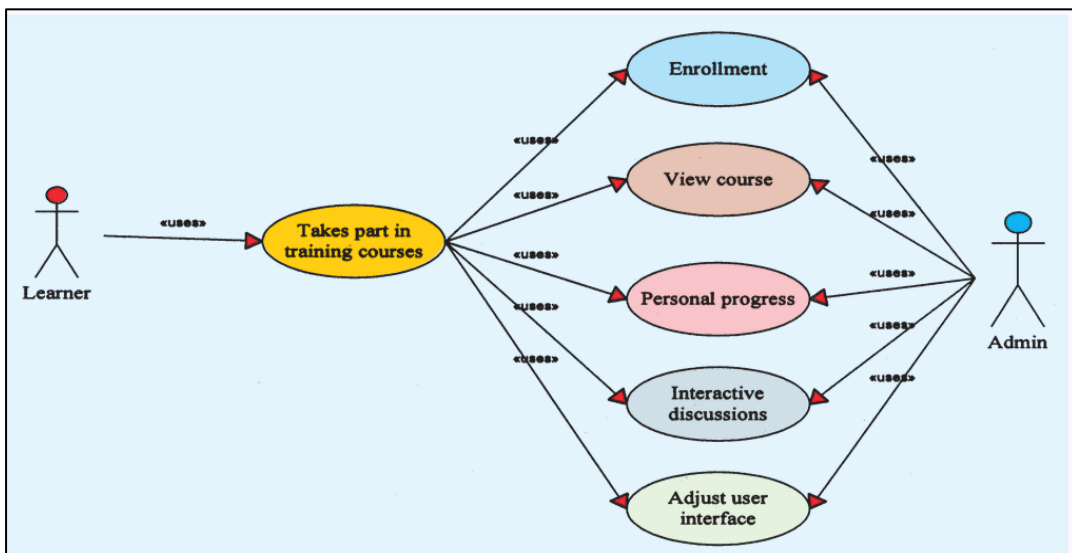
Fig 3.8.7 Use case diagram for Learner Engagement and Mentoring

Evaluation: The Use case diagram depicts the process of Evaluation
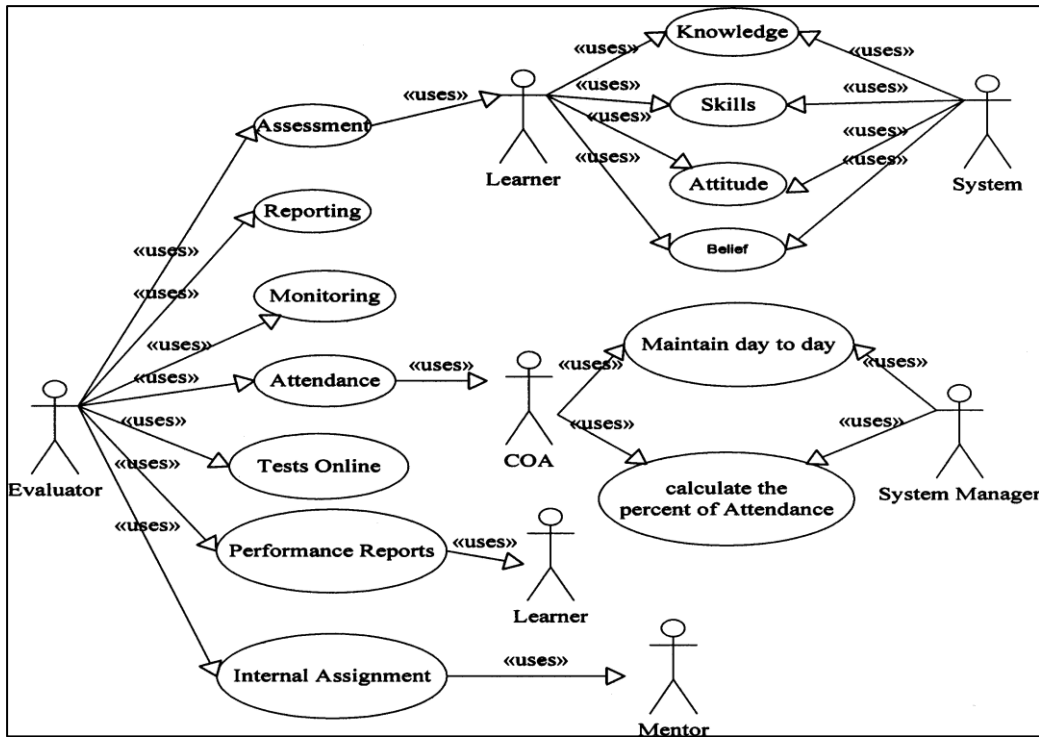
Fig 3.8.8 Use case diagram for Evaluation

Reporting : The Use case diagram depicts the process of reporting
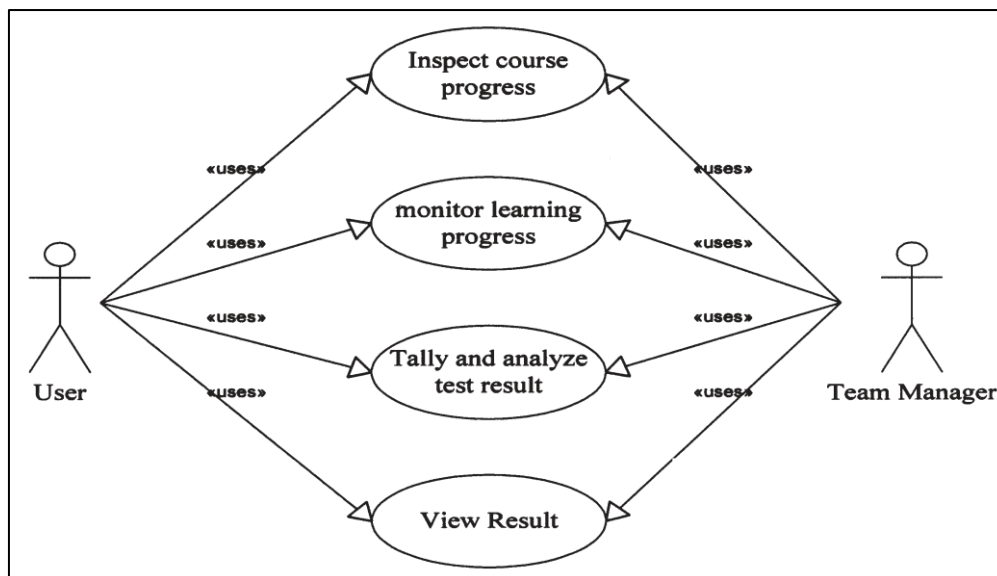
Fig 3.8.9 Use case diagram for Reporting

Competency Development: The use case diagram for the process of competency development of employees in the organisation
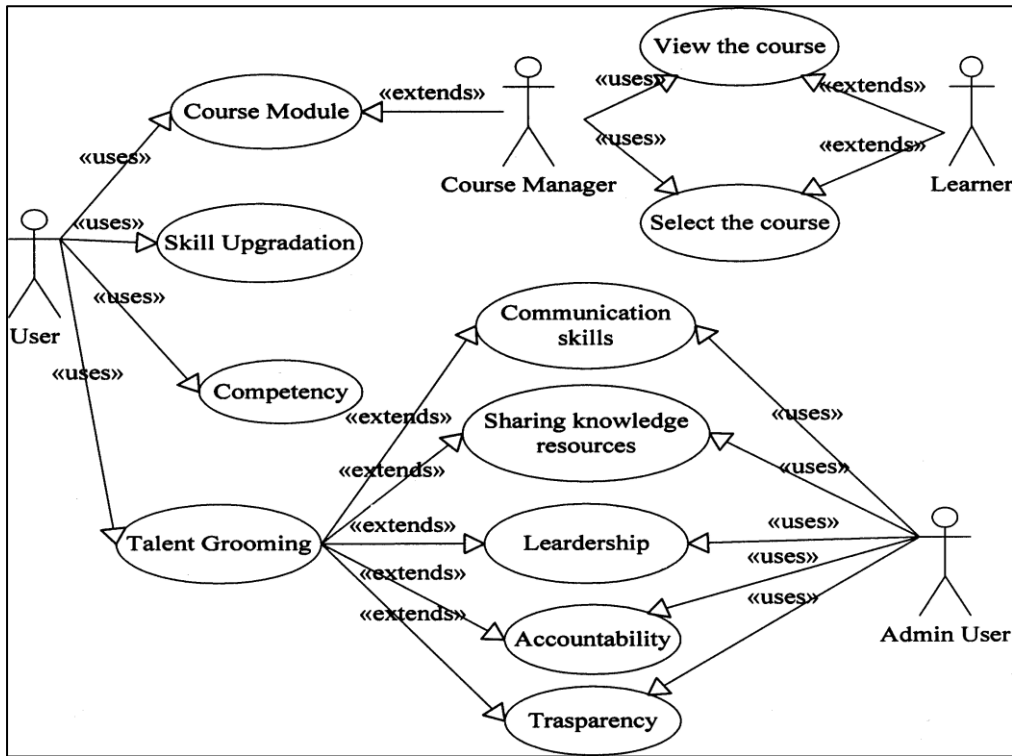
Fig 3.8.9 Use case diagram for Competency development

Resource Management: The use case diagram for the process of resource management in the organisation
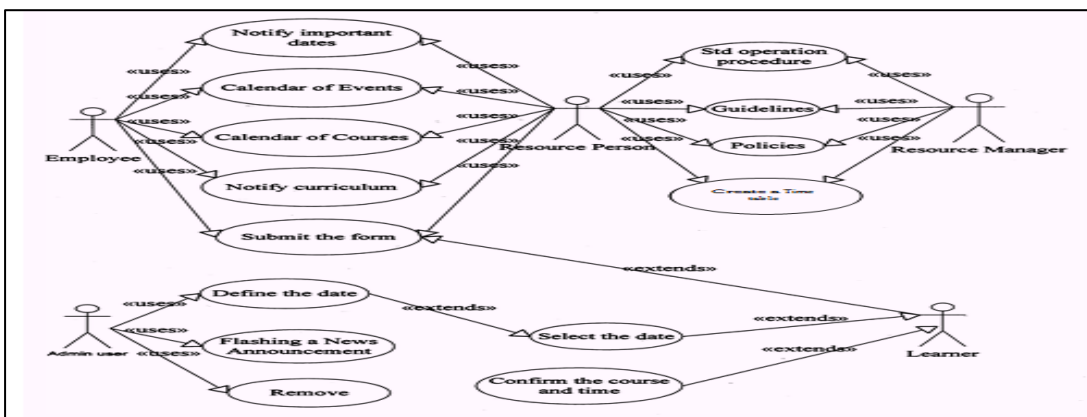
Fig 3.8.10 Use case diagram for Resource Management

Knowledge Repository: The knowledge repository for the various documents being generated externally as well as internally that are required by the employees
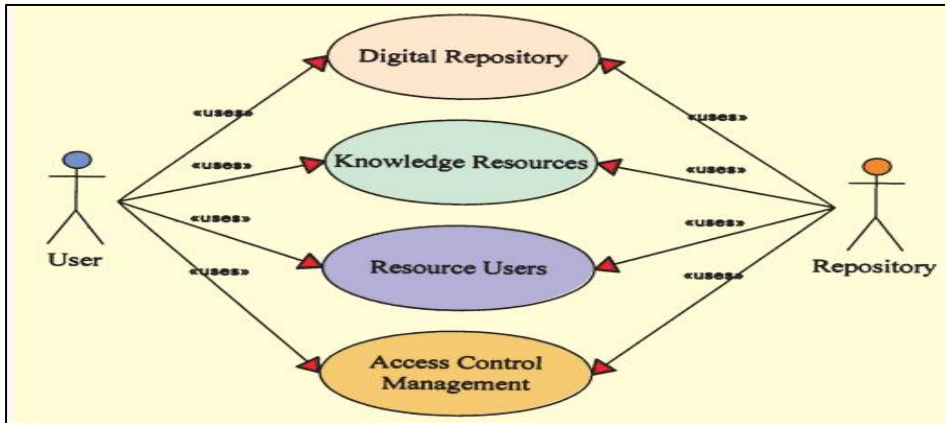
Fig 3.8.10 Use case diagram for Knowledge Repository

Chapter 4

Features of the Portal

4. Features of the Portal

The application is a Robust Validated Online Solution Framework which provides for the Management of the following processes, activities:

- The learner can view online course anytime, anywhere
- The learner can give Online tests after completing the courses
- Classroom Training can be scheduled by Training Calendar
- Collaborative Learning refers to the grouping and pairing of learners for the purpose of achieving a learning goal . The ELearning portal facilitate use of a wide range of Collaboration Tools such as Blogs, RSS, Podcast, interface to Sites such as Wiki pedia , Discussion Forums, Text Chat, Audio / Video conferencing and Whiteboard
- The E Learning platform also supports other collaboration tools for fostering and augmenting the learning process
- Elearning portal Supports managing Knowledge resources across the Organistaion . It supports classification and categorization of documents which improves search capability. It also supports a document review workflow which helps in moderating the documents uploaded by authors and publish the same for the users
- Mechanisms that enable Analyze learners' performance are available in the portal . The Portfolio depicts the courses successfully completed by the Employee
- Aligning the Organisational priorities with the aspirations of the employees and employing practices that enable the development of empowered, responsive and competent human capital.
- The online learning functionality allows one to create courses, which has features such as tagging packages and defining pre requisite courses
- Developing training calendars and generating training timetables
- Web conferencing helps to connect trainers and trainees remotely over the internet

4.1 Benefits envisaged:

- Both learning as individuals and in teams are envisaged through this portal
- The Enterprise portal facilitates use of a wide range of Collaboration Tools such as Blogs, RSS, Podcast, interface to Sites such as Wiki pedia, Discussion Forums, Text Chat, Audio / Video conferencing and Whiteboard
- Tools for Authoring of Assessment Routines/ Evaluations etc. with a wide range of flexibility in testing competencies are implemented to facilitate mentors/ assessors in examining users for their attainment of competency standards.
- Mentors and Domain experts must be able to engage the learners online in a variety of ways.
- The application to have the capability to Import/ Export learning content prepared by other agencies in standard forms conforming to IMS/ SCORM

- Advanced Search mechanisms for locating content based on various criteria to be provided
- Learning resources must be capable of being classified, indexed, meta-tagged in a variety of ways
- To enhance user experience – a wide variety of configurable GUI templates must be available to the users to choose from for customized experience.
- Application is scalable, reliable and capable of being seamlessly integrated with other enterprise applications
- Mechanisms that enable Analyze and improve learners' performance are to be available within the solution framework
- Must Support Remote/ distance learning
- It must be possible to integrate the results of online evaluations in a variety of ways required for counseling, performance augmentation support and other forms of operations management requirements
- Extensive support is to be available in the form of User Guides, help Files to comprehend various modules of the application as also other forms of support such as Video Tutorials, Frequently Asked Questions (FAQs), and Trouble Shooting Guides.
- Solution Architecture must be mature providing for scalability and be based on standards.
- Components to be Reusable and based on Service- Oriented Architecture (SOA) framework
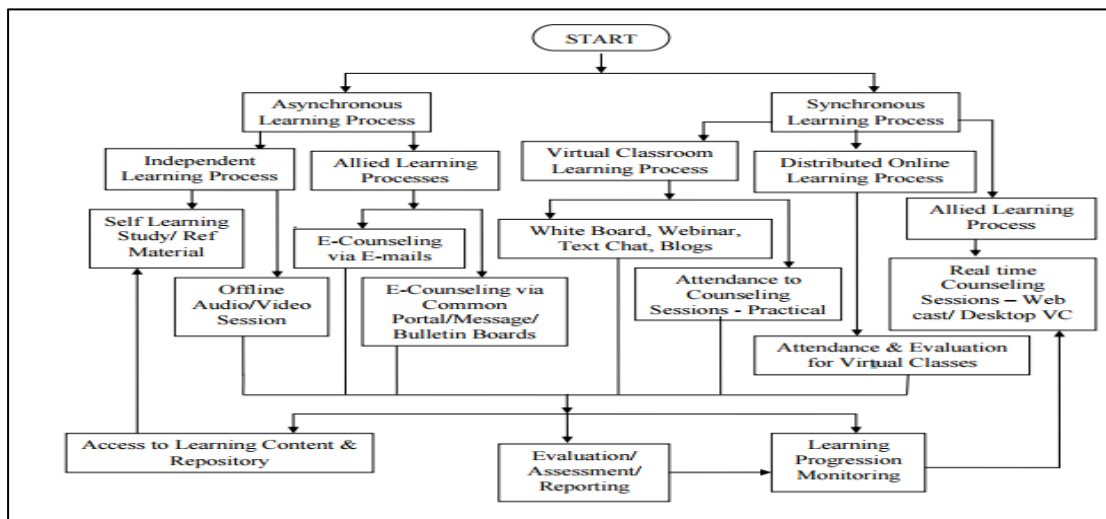
Figure 4.1.1 Enterprise Application to enable Learning Support Services

4.2 Modules of the Portal

The portal includes the following key functional modules.:
- Online Course Management
- Classroom Training Management
- Test & Assessment Management

- Knowledge Resources
- Collaboration tools

Online Course Management

This module enables employees to go through courses online. The courses are created and enrolled by the Training Manager. The employees can track their course progress, provide training feedback, assess their learning by taking tests and be awarded certificate based on the successful course completion. The system has unique feature called Learning Continuum, which enables the training manager to define employee's training requirements by Role, Designation and Grade etc. The employees get their courses automatically based on their Learning Continuum such as all mandatory and induction programs courses etc. Training Manager can search and enroll individuals or groups for a course and employee can also self-register for a course from course catalog. Online Course Management enables the following benefits to organisation:
- Anytime anywhere self-paced learning for employees
- Reduces the training cost drastically ,since the courses are reusable across the organization
- Ability to automate employees mandatory and induction training programs
- Track employee training progress and re-enroll or award certificate based on their course completion.
- Managers can view their team's course progress
- Bulk enrollment-Search employees based on their role or grade
- Quick and cost effective course delivery.

Classroom Training Management

Classroom Training Management system enables the training managers to create a training program master for the enterprise, each training program is collection of training activities and it can be Instructor Led Training {ILT) or Online courses or both. The Training Managers can create and publish Training Calendars or Training Events. Either the Training Manager enrolls employees or the employee enrolls themselves for a Training events. Each training activities can be tagged with Trainer, Online Courses, assessments, supplementary resources and Virtual Class room tools such as Chat, A/V conferencing, whiteboard etc. During training, the trainer can mark attendance and record offline assessment scores.

Trainers or Experts can respond to employee's queries using collaboration tools such as Ask an Export,Discussion Forum, and conduct Virtual Class Room sessions.

Classroom Training Management enables the following benefits to CSIR Training division and employees:

- Helps to schedule a Training Calendar quickly and communicate to concerned resources through notification messages and SMS messages.
- The training management system ensures the availability of trainer, trainees, venue and required infrastructure for an I LT program.
- Online & Classroom activities can be performed and recorded as part of each training program.

- Training Manager can monitor ongoing training program progress such as attendance, classroom assessment scores and training feedback.
- Enables Training MIS reports & graphs such as training completion status, training cost, trainer efficiency, list of upcoming trainings etc.
- Employees get their related training calendar and can accept or reject the same.
- Training Manager can remind the employees or escalate to their managers to attend or complete the training programs.
- Training Manager or Employees can plan for their one year training programs

Assessment Management

The assessment management system enables to conduct assessments for competency/skills evaluation, on line course, pre and post tests and employee's promotional assessments. Portal has an integrated assessment management system which Supports 5 question types. Portal enables easy to create questions either through MS word templates or Web based wizard. The Training Manager creates test either picking questions from topics randomly or select one by one from the question bank. The tests are scheduled for a particular group, department, grade, designation through search. Employees can take tests online and get the results instantly. Portal test delivery environment has the capability to manage the critical test responses data even when the internet connection is broken during the test.

Assessment Management enables the following benefits:

- Ability to manage secured question bank and conduct tests & assessments in a secured environment.
- Author questions through Web Interface, MS Word and MS Excel templates.
- Drastically reduces the cost and efforts of conducting skills/promotional assessments
- Conduct promotional or course/program tests confidently and publish results instantly.
- Significantly reduces the efforts of Training Manager and Trainer for conducting tests.
- The employees can take the tests based on their convenience during the schedule and get the results instantly.
- Helps to assess employees learning & skills.
- Saves cost, time and efforts.

Knowledge Resource Management

It is fact that when employee leaves an Organization, he/she carries all the gained knowledge with them. The e-Learning portal provides a technology platform for exchange of knowledge resources and storing the knowledge in the digital formats. The employees, trainers, experts across the organization can store or access any Knowledge Resource in the resources of the Organization such as HR polices, training policies, best practices, guidelines etc., can be shared across the organization.

The followings are the benefits of the Knowledge Resource Management System:

- Enables to manage online Knowledge Resources for an Organization.
- Knowledge Resources can be accessed anywhere, anytime.

- Training program/course related digital resources can be accessed.
- Safeguard Organization knowledge

4.3 Features and capabilities to which Knowledge Repository and Support Tools are used

1. Determination of dimensions and focused areas for Learning Support/ interventions
2. Architecting organizational solutions adapted to problems space and profiles of individual, teams and organizations.
3. Sourcing of articles, briefs, case studies and other resource material to support learning and training.
4. Prescribing standard operation procedures, guidelines and policies facilitating the effectiveness of administrative operations.
5. Developing templates, flash objects with customized contains- video, animation, graphics text elements etc. adapted to context.
6. Packaging knowledge resources and case studies for multiple uses as articles, news letters, case studies, illustrations, guidelines and examples during training sessions.
7. Developing self learning tool kits that make a short presentation or presentation of a graphic or multimedia element followed by questions they responds to which would determine the course of further presentation. The tool kits would also have case in point associations and how to use various templates for a given offering and context.
8. Aligning varying technologies encompassing LMS, SCORM and XML learning objects.

4.4 Management of Knowledge Resources

An Enterprise **Digital Repository for Publications, Knowledge Resources and Practices has been developed:**

- Enterprise Platform to provide opportunities for Case studies , references, best practices,

- Modules providing automation of submission of technical papers/ briefs/ contributions to be considered for publications in News Letters or for presentations in annual Nautical conferences,

- Indexed, Categorized Repository with advanced search mechanisms for dissemination of practices for continuous improvement,

- Benchmarking of exemplar teams, and practices,

- Knowledge sharing, collaborative exercises across Laboratories,

- Evolving norms/ standards through collaborative discussions and sharing of practices to minimize inefficiencies, wastage, inappropriate resource usages, enhancing quality of outcomes, evaluation of impact etc.

- Interfacing Knowledge Capture mechanisms to enable compile and develop learning resources, references, knowledge compendiums, exercises, tutorials etc.

Advantages

- Staying in touch- Engaging all key players and persons performing functional roles and clients through news letter, post cards, individual letters, emails etc. and ensuring that job profiles and portfolio of tasks performed embraces such engagement strategies.

- Making great service a priority- This strategy would require continuous mentoring and training, for instilling / reinforcing appropriate attitudes and behaviors in order to satisfy clients. This can start with little things such as a standard way of politely greeting people on phone or those who visit the Learning Centres.

- Storing collective wisdom- Management intervention in this area can include the using the system developed for adequately addressing and responding to employees and stakeholders concerns, developing a knowledge base i.e. a store of information tools, techniques, methodologies, intervention and responsive approaches to commonly encountered issues and problems. Progressively such information and documented practices would need to be disseminated within the system as best practices for compliance.

- Empowering Staff- The solution to achieving and accomplishing more results is better delegation and empowerment of staff. This strategy would encompass grooming talent, issuing guidelines for exercising responsibilities, decision making and improving upon such repository of guidelines and practices. Best behaviors and best practices may also need to be incentivized and rewarded.

- Managing Stakeholder Relationships and Risk Mitigation/ Management-This strategy may encompass profiling the stakeholders, taking the history of their expectations, engagements, interactions and discerning the patterns of such content vis a vis their impact and influence on the pursuit and accomplishment of envisaged outcomes.

- Employing analytics, and reasoning to deduce the strategies, approaches and engagements that can be pursued to give the stakeholders - quality experiences and satisfaction.

4.5 Collaboration Tools

To enhance employee's learning experience and to support informal way of learning, portal is seamlessly integrated with couple of collaboration tools such as Ask an Expert, Discussion Forum, Web 2.0 tools such as Blog and Wiki, and Virtual Collaboration tools.   The employees can post their Queries in Ask an Exert and Discussion Forum, Trainers/Experts can respond to their queries. The employees and experts can also create content in using Wiki and post their experiences in Blogs. To increase the effectiveness of Online learning, the Trainer/Expert can conduct Virtual collaboration session for a topic using tools such as Whiteboard, Text chat, A/V streaming and file sharing.

The following are the benefits of the Collaboration tools

- Establishes anywhere /anytime interaction with Trainer/Expert.
- Encourages informal way of learning using Blogs and Wikis.

- Virtual classroom session increases the interaction and reduces the travelling and other costs.
- Content generated through collaboration tools is used as Course/Training Program supplementary resources.

Blog

Blog refers to a simple webpage consisting of brief paragraphs of opinion, information, personal diary entries, or links, called posts, arranged chronologically with the most recent first, in the style of an online journal.

Wiki

A Wiki is a webpage or set of web pages that can be easily edited by anyone with allowed access. The concept of the Wiki is to have a collaborative tool that facilitates the production of a group work. Wiki generally has history functions to allow the previous version to be examined and rollback function to restore previous versions.

Forum

Forum is an online discussion site where people can hold conversations in the form of posted messages. They differ from chat rooms in that messages are at least temporarily archived. Also, depending on the access level of a user or the forum set-up, a posted message might need to be approved by a moderator before it becomes visible.
Through the Blogs, wiki and forum participants may engage in the exchange of ideas or information without the dependency of other participants involvement at the same time.

Electronic mail (Email)
Email is also asynchronous in that mail can be sent or received without having both the participants' involvement at the same time. Asynchronous learning also gives learners the ability to work at their own pace.
 They help in developing a better grounding in fundamental and use their online discussions to refine ideas It helps in establishing networks among themselves.

4.6 On line Learning Process Support

The application platform provide services related to the training/ mentoring and counseling of the employees in the organisation as well as to monitor their progression as relates to upgradation of knowledge, skills and competencies

The application to provide for functionalities to enable

- Delivery of online/ offline lectures in various scheduled and on demand sessions
- Conduction of online counseling sessions
- Online Assessments
- Submission of Internal Assignments
- Keeping a record of the performance and progress of the employees individually

- Keeping a track of the counseling sessions
- Tracking the response and participation in the counseling sessions and follow up action/ performance
- Notifications of Important Dates
- Calender of Events/ Courses
- Notification of Curriculum/
- Coverage/ Scope of Each Course, Expectations, Purpose, Outcome etc
- Submission of Options and Online Application Forms

4.7 Uploading and management of Resources/ Artifacts

The Enterprise application provides automated mechanisms for upload and management of Resources/ Artifacts such as;

- Operation procedures, Patterns & Guidelines for assessment of competencies and skill development

- Templates – to document 'best-of breed' designs

- Protocols, Policies for compliance relating to various operations

- Tools, Workbook, worksheets for learning exercises, project based learning initiatives

- Scenarios, case studies for discussions in workshops, group interaction sessions

- Simulations for capacity planning, resource utilization, impact assessments

- Methods and Tools for Envisioning and Monitoring outcomes

- Provision for real time online correction on the basis of responses

4.8 Possible Metrics of Outcomes for Measuring Program Success following the deployment of the Learning Portal & Knowledge Repository

Categories	Potential data
Employee related Outcomes/ Indicators	- Performance on the Job assessed on the basis of responses to illustrative problem situations - Interest & Commitment demonstrated in continuous involvement in learning and upgradation of knowledge and competencies - Enhanced Professional Development, as evidenced by the successful completion of soft skill and management modules - Course/Program Evaluation Assessment
Resource Persons/ Mentor related Outcomes	- Quality of Resource persons Participation - Technical Competence/ assessments/ Improvements of Resource Persons / Mentors on the basis of feedback from learners - Expansion/Growth of Mentors/ Domain Experts to guide and enable succession planning

	• Resource Persons Recognition/ certification for levels of proficiency
Organization related Outcomes	• Employee Enrolment and Performances • Development of Proficiencies • Improved work related performances • Talent Grooming / Work culture Evaluations

Table 4.8.1: Possible Metrics of Outcome

Chapter 5

Conclusion

Conclusion

The portal has been successfully developed and is live. The organisation is using it to conduct the trainings in various branches of the organisation. User can access the elearning content for anywhere and anytime.

Chapter 6

Future Recommendations

Future Recommendations

- Marketing Initiatives can be taken to market the portal to other Govt. Departments
- The artificial intelligence can be used in the future
- The portal can be integrated with the website
- The portal is designed in such a way that it may be integrated with ERP solution in future

Chapter 7

References

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  - http://www.c-sharpcorner.com/ebooks/
  - https://www.tutorialspoint.com/ms_sql_server/
  - http://www-03.ibm.com/software/products/en/enterprise
  - http://www.excelindia.com/products/saras
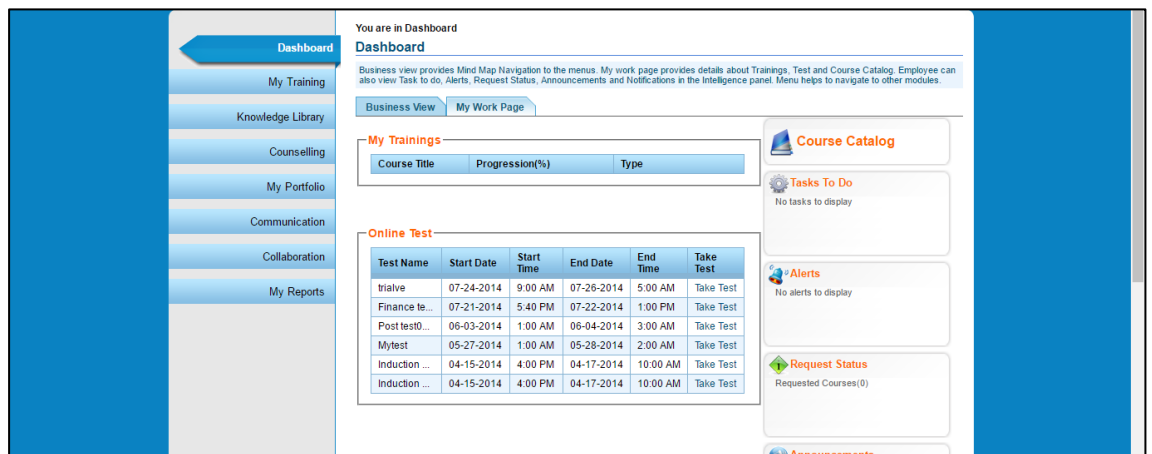
Annexure

Screen shots

There are three types of user

- Learner: Employees of the organisation
- Training Administrator : Schedule Training and Manage the portal
- Trainer **:**Imparts Training

Learner

Image A1: Dashboard of Learner

Online courses: The Courses in Progress and completed course are displayed

Image A2: Status of the courses

Course: It is used to view the course
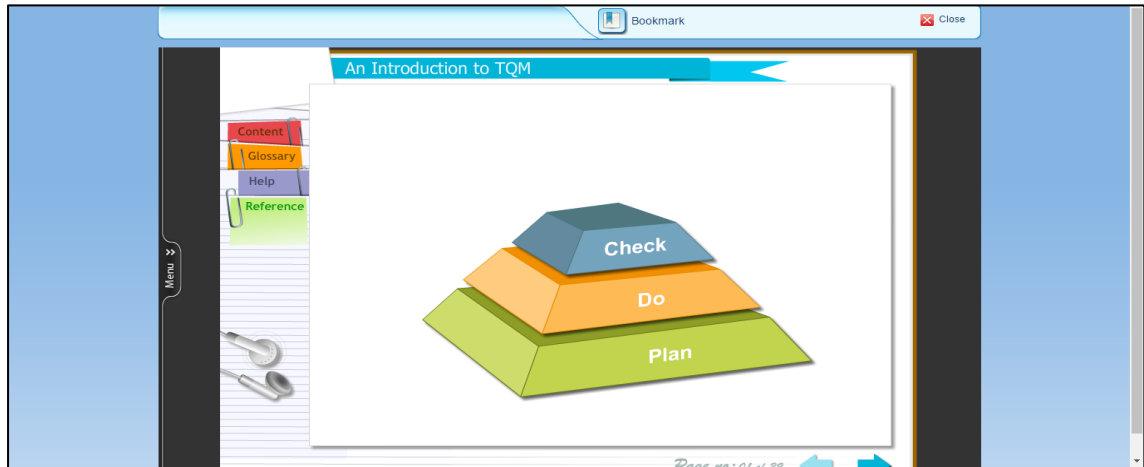
Image A3: Course

Online Test

Online Test allows viewing scheduled tests. Test Details such as Schedule name, Test name, Date and Duration can be viewed. The user can also Take test.
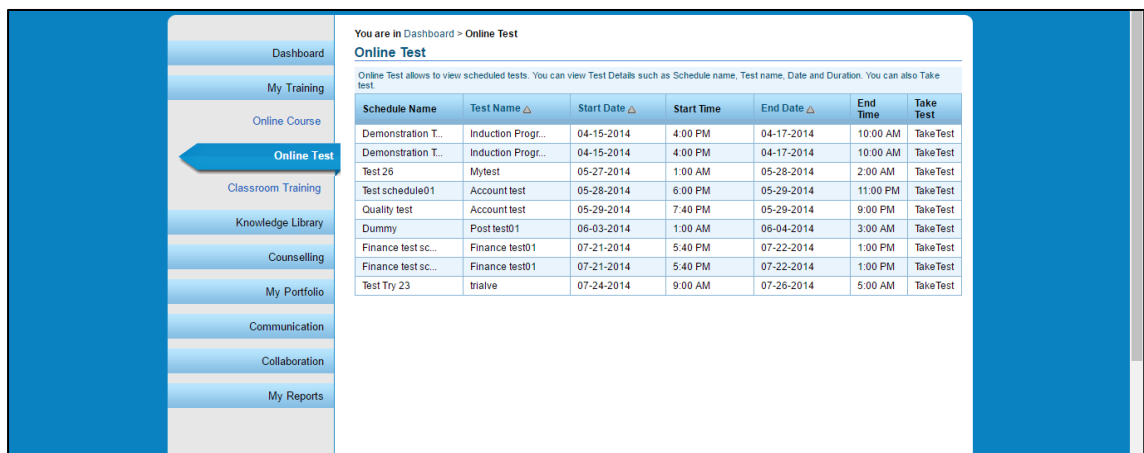
Image A4 : Online Test

Class Room Trainings

The user can view Programme Calendar/ Completed Programs/ Current Programs/ Upcoming Programs. User can get registered to Program, click on the Program Title to view the Program details.
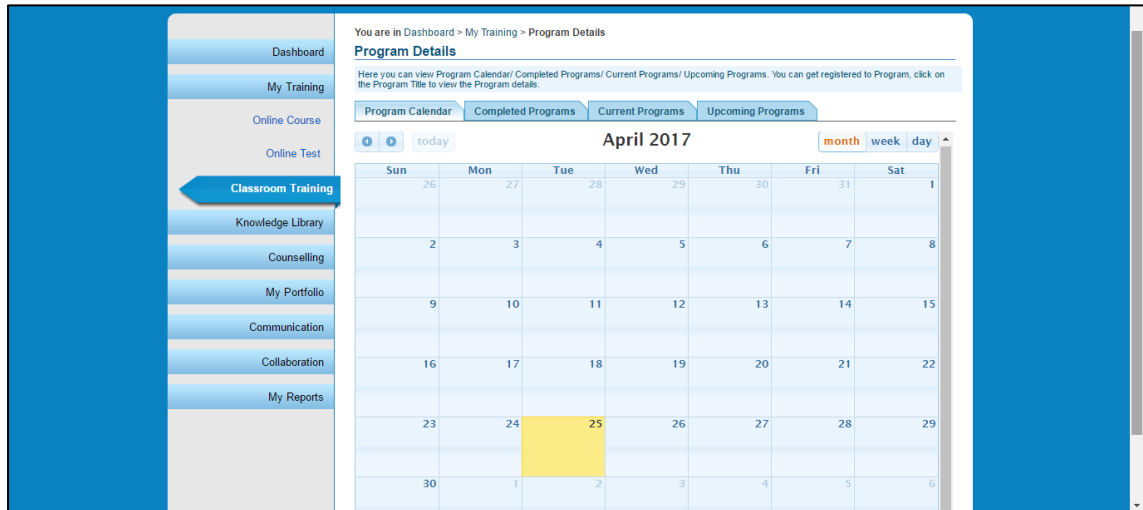
Image A5: Progamme Calender

Knowledge Resource Management

Knowledge Library

Knowledge Home

What's New section of Knowledge Library lists out the latest KRs that have been most recently gone live in the repository.
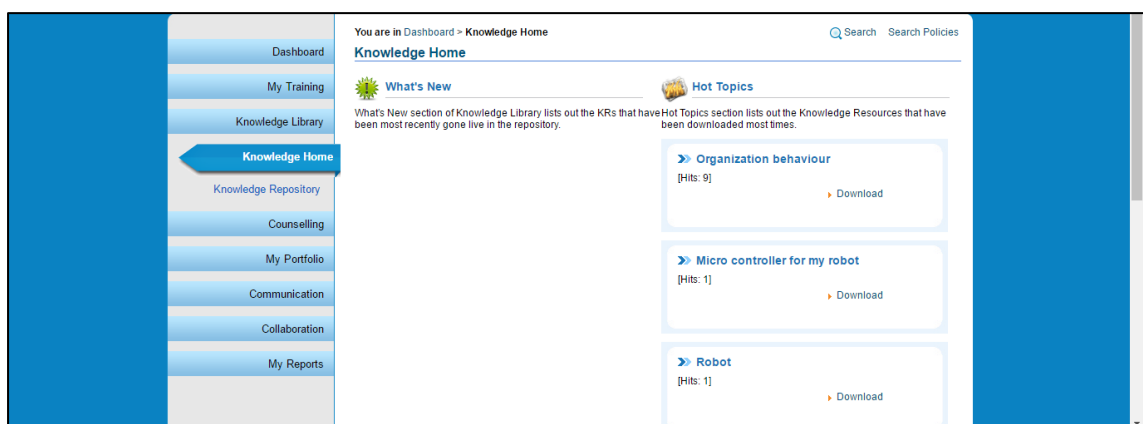
Image A6: Knowledge Home

Knowledge Repository

Here user can view Quick links, Sectors, Information Dimensions, E-Learning, Other Relevant Links and Popular Knowledge Resource Documents. User can click on the link to navigate to respective page.
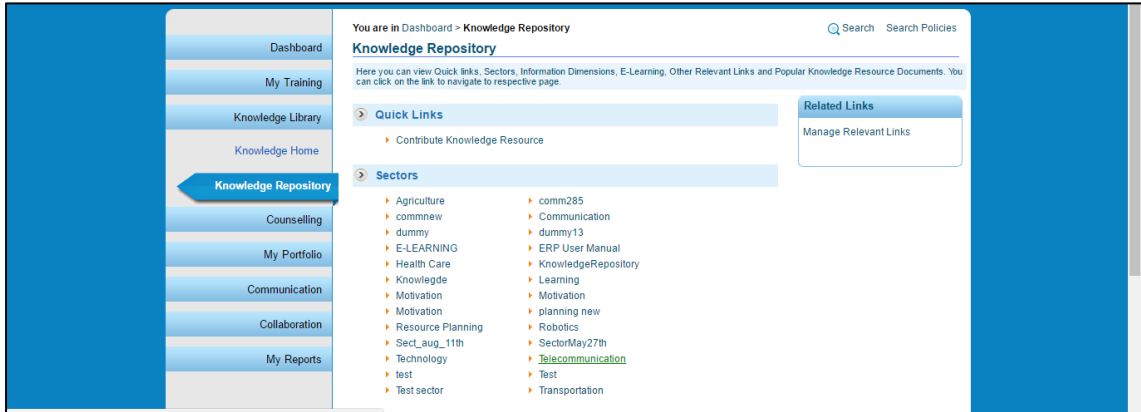
Image A7 : Knowledge Repository

Resource Person Directory

Resource Persons Directory allows to search employees by Name/ Designation and Text. User can click on the Search results to view Resource Details such as Designation, Address, Telephone number and Email Id. User can click on the Alphabetical letters to Filter Resource persons by Name.

Web Meeting
Web Meeting can be scheduled to users by Specifying Title, Date and Duration. User can click on the Alphabetical letters to Filter Web Meetings by Title.
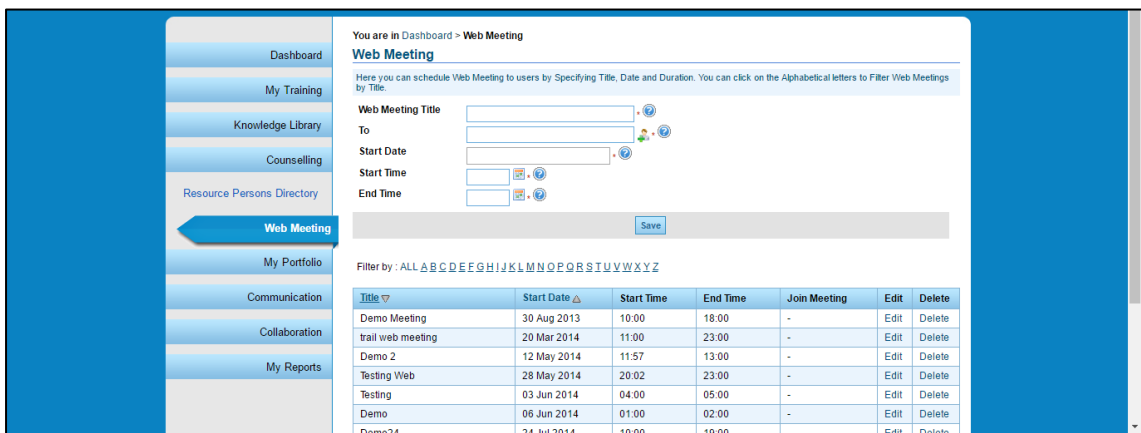
Image A8 : Web Meeting

My Portfolio

User can schedule Web Meeting to users by Specifying Title, Date and Duration. User can click on the Alphabetical letters to Filter Web Meetings by Title.

Image A9: Portfolio

CMail

User can Create Messages. In addition to that user can view Messages in Inbox/ Sent Items. User can also Forward / Reply C-Mails and Delete All Messages. User can click on the Alphabetical letters to Filter Messages by Name

Image A10 : Cmail

Training Proposal

Learner can view request that has been forwarded for approval and Program proposal forwarded for the approval. Remarks sent by other users can also be viewed in My Requests. Approval allows to Approve, Reject, Forward and Suggest Program Proposals.
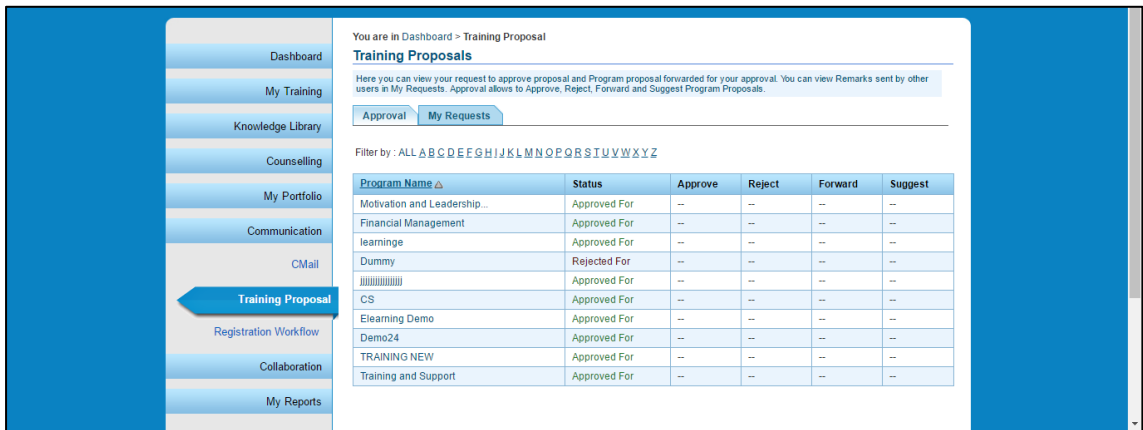
Image A11: Training Proposal

Registration Workflow

The entire workflow for the approval can be viewed
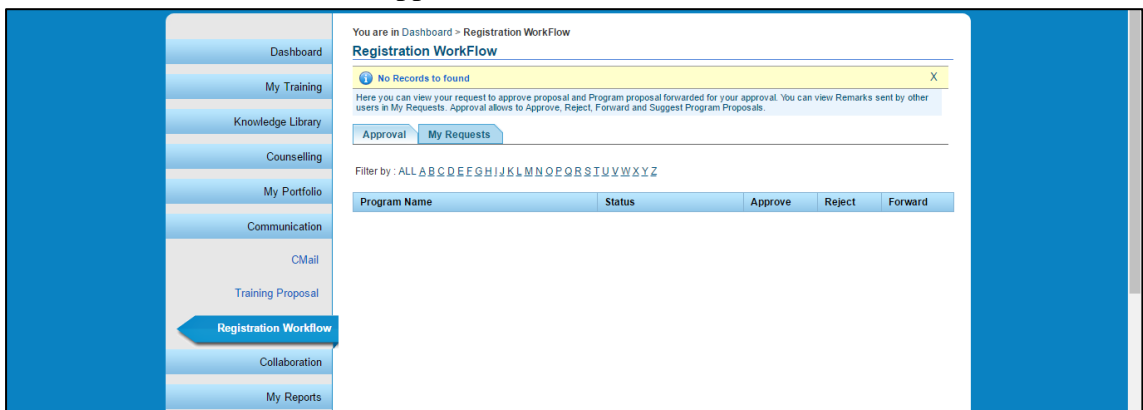
Image A12: Registration Workflow

Collaboration

Blog

All Blogs can be viewed, My Blogs, Favorite and Recent Blogs can also be viewed. The   New Blog can be created , Edit Blog, Add Blog as Favorite and user can Create New Post
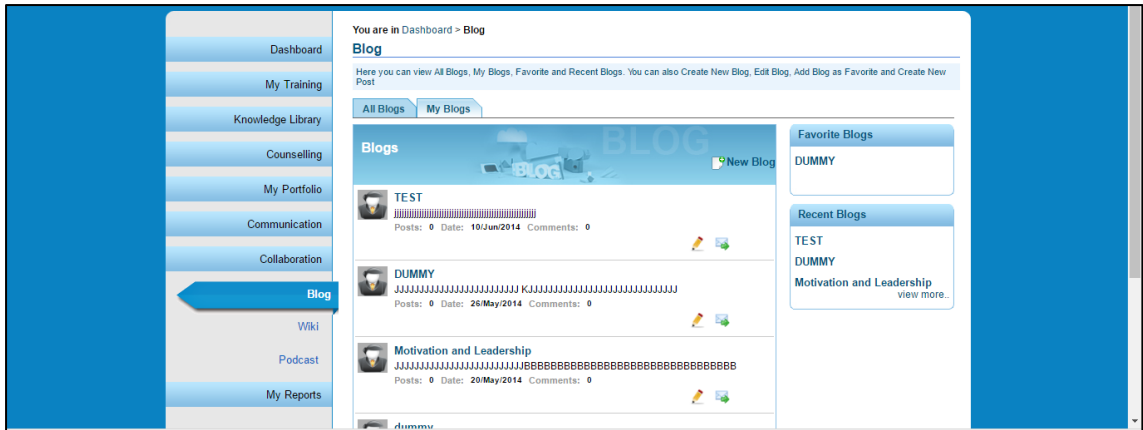
Image A13 : Blog

Wiki

Here user can view All Wiki. User can also Create New Wiki, View Recent Activity,
User Activity and Contributions.
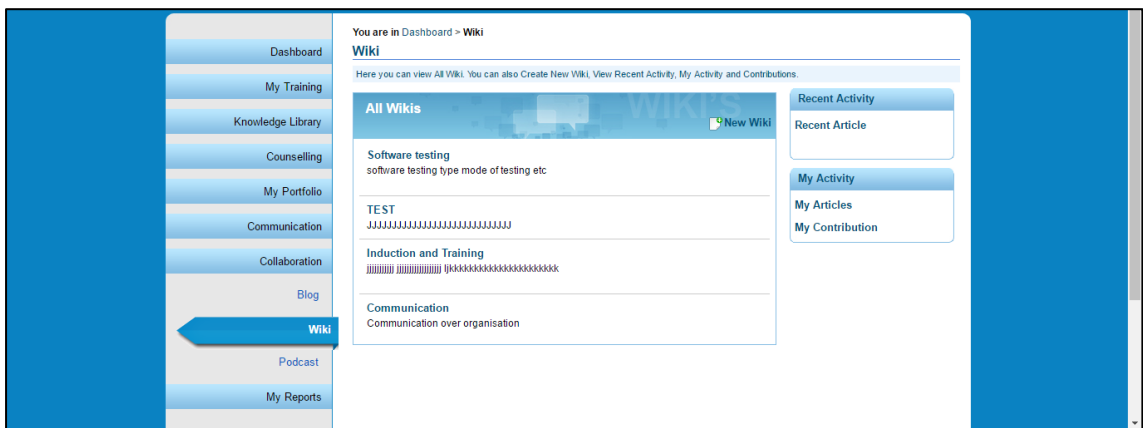
Image A14 : Wiki

Video Conferencing :Lecture through Video Conference
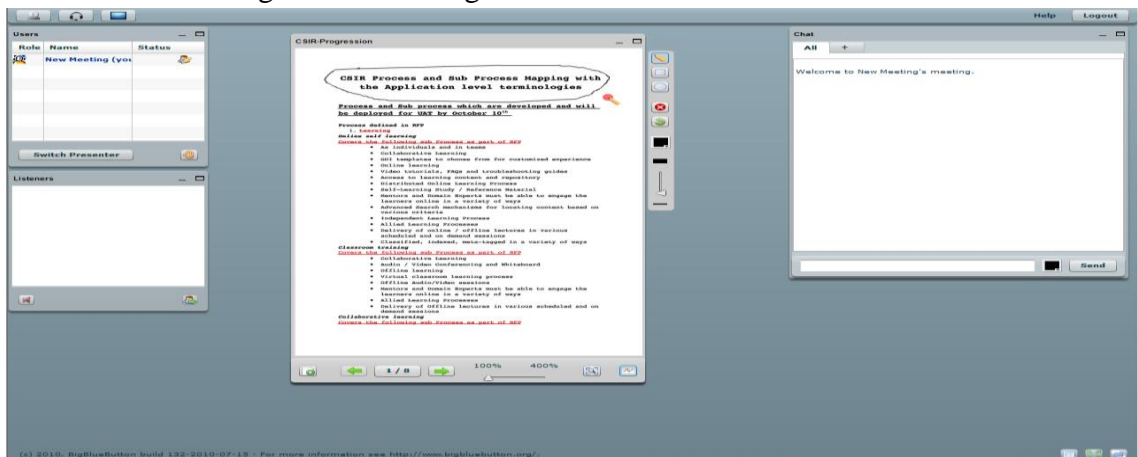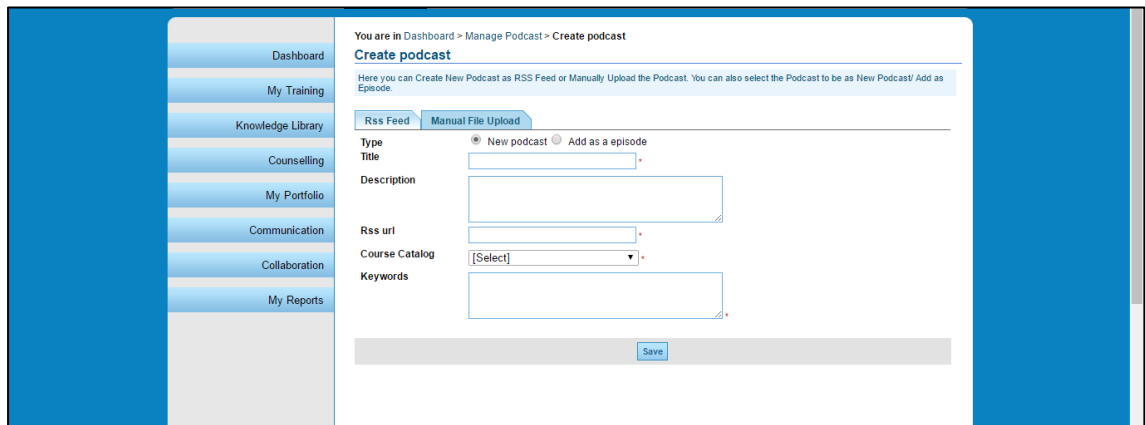
Image A15 :Videoconferencing

Podcast

Image A16 : Podcast

Online Test

User can select a Course to view Post Test/ Pre Test/ SCORM Tests reports.

Image A17 : Online Test

Online Course Progression

User can select Course to view Chapter, Status and Time spent in each chapter. User can also view Graphical representation of Course Progress.
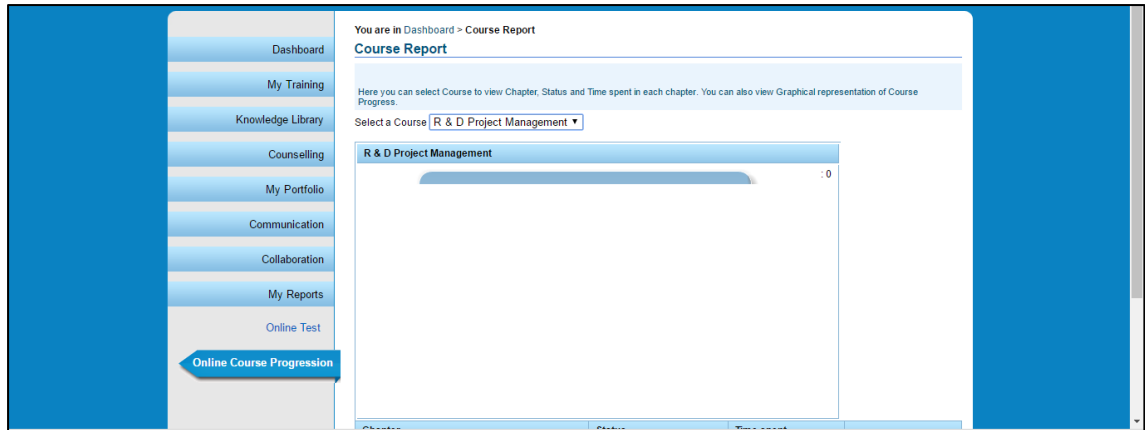
Image A18 : Course Progression

Training Administrator

Course Catalogue

Creating Course Catalouess will be helpful for creating a course. During Course creation, there is a need to Categorize the course. User can create, edit and delete Course Catalogue. User can click on the Alphabetical letters to Filter Course Catalogs by Course Catalogue Name.
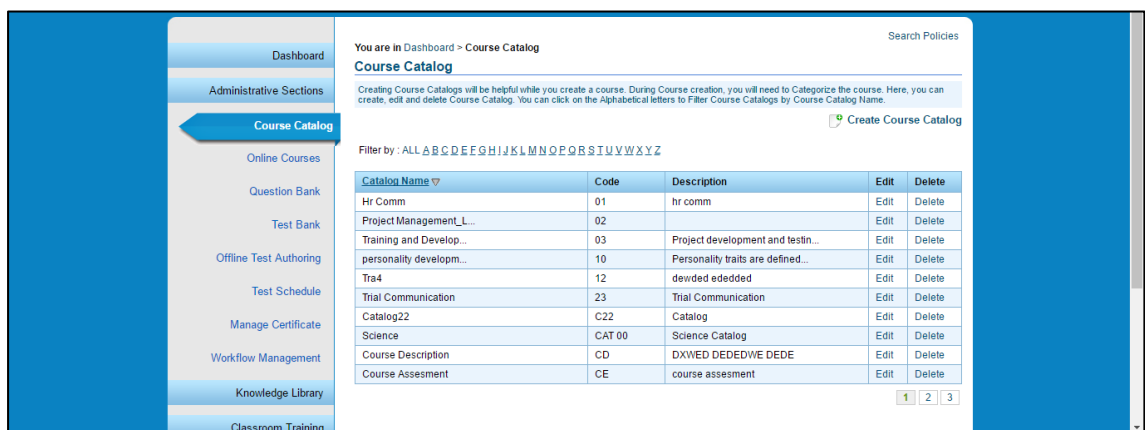
Image A19 : Course Catalogue

Create Course

Course Management allows to Create Online self-learning course providing Course Details, Tagging SCORM Package, Supplementary Resources and KRs, Adding Course Prerequisites and Preferences.
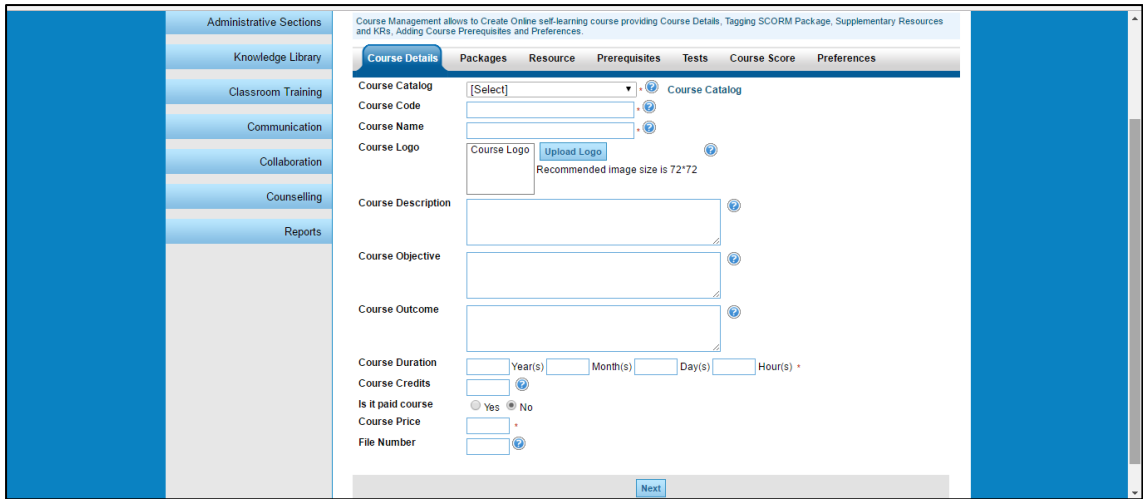
Image A20 : Create Course

Package

The Sharable Content Object Reference Model package can be attached to the course

Image A21 : Package

Resources

The other resources related to the courses can be uploaded

Image A22 : Resources

Prerequisite for the Course: The prerequisite courses requires to be completed before viewing the course

Image A23 : Prerequisite   Course

Test

Image A24 : Test of the Course

Course Score: Defines the score of the particular course

Image A25 : Score

Certificate: The certificate to be issued for the course can be uploaded

Image A26: Create Certificate

Question Bank

Question Bank allows to Add, Export, Import, Edit and Delete Questions.
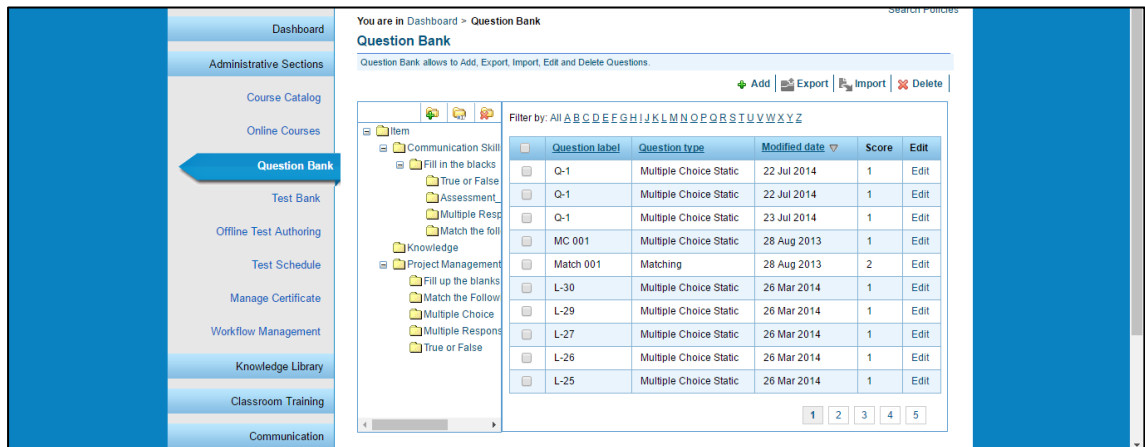
Image A27: Question Bank

Edit questions: The questions can be edited
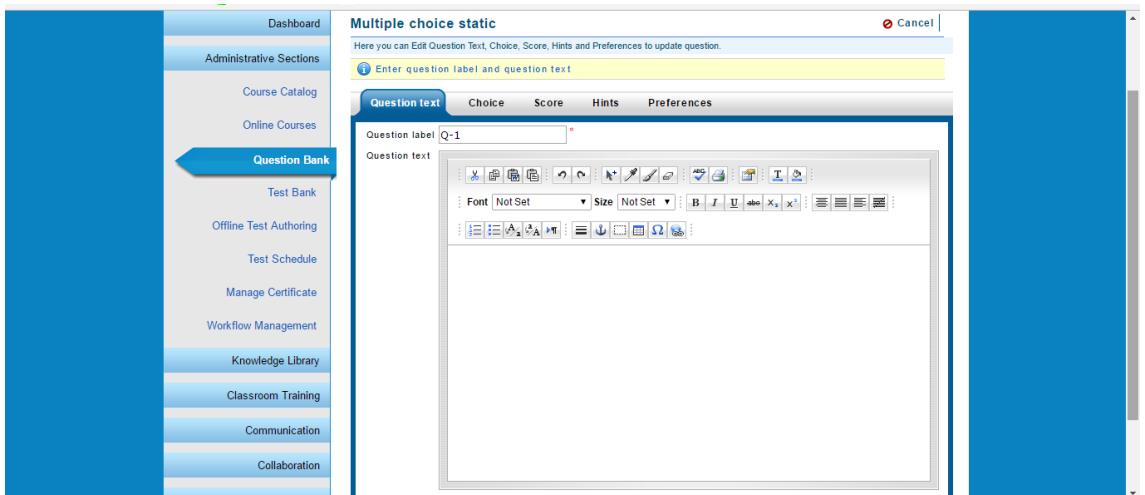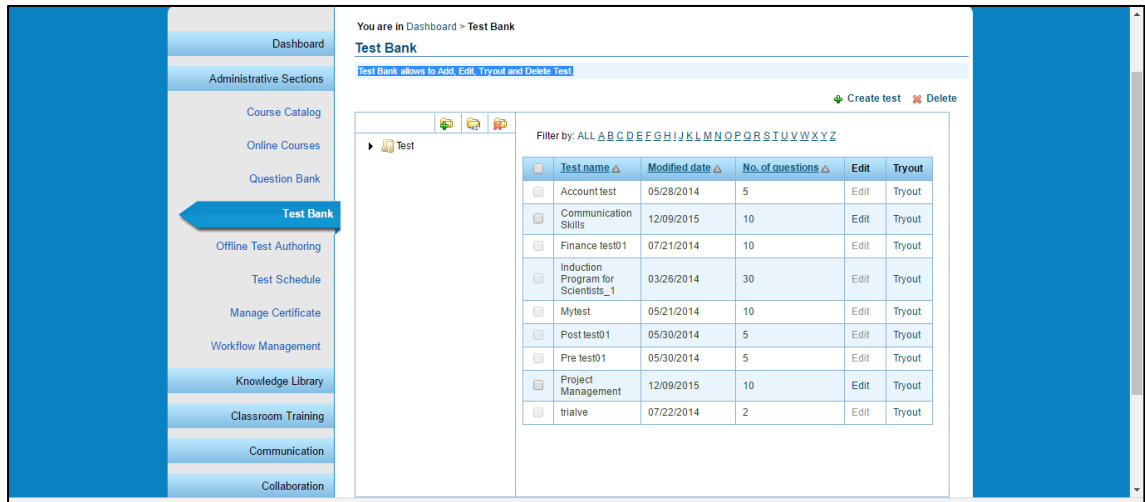
Image A28:   Edit Question

Test Bank

Test Bank allows to Add, Edit, Try out and Delete Test.

Image A29:   Test Bank

Offline Test Authority

Image A30:   Offline Test Authority

Upload Test Package

The question package can be uploaded
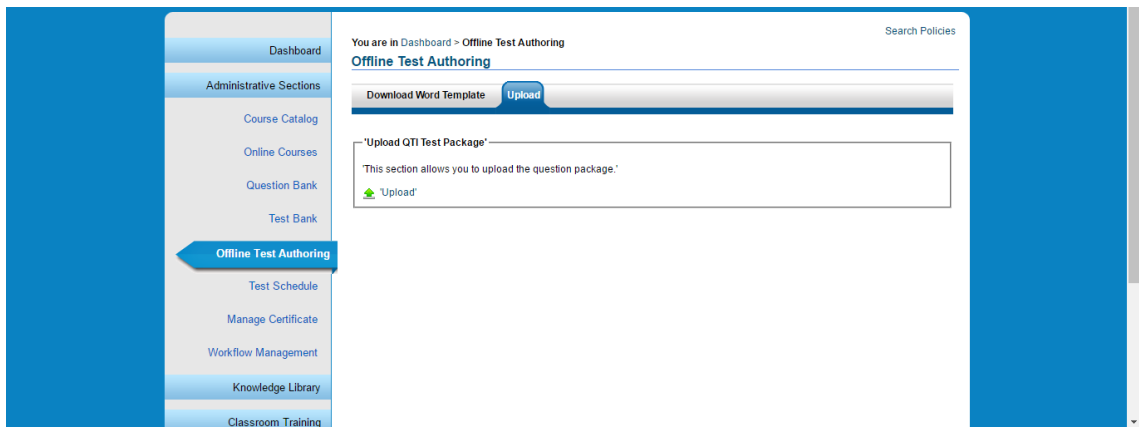
Image A31   Upload Test Package

Test Schedule
Test Schedule allows to Create, Edit and Delete Schedules.

Create Schedule
Select Test and Schedule to Employees by providing Schedule Name, Date and Duration.
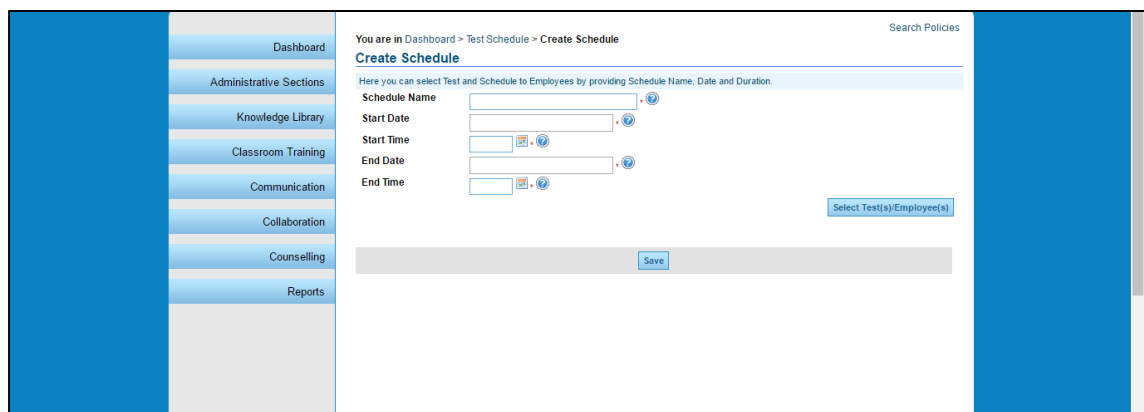
Image A32:   Create Schedule

Certificate
Manage Certificate

Manage Certificate allows to Create, Edit and Delete Certificate.
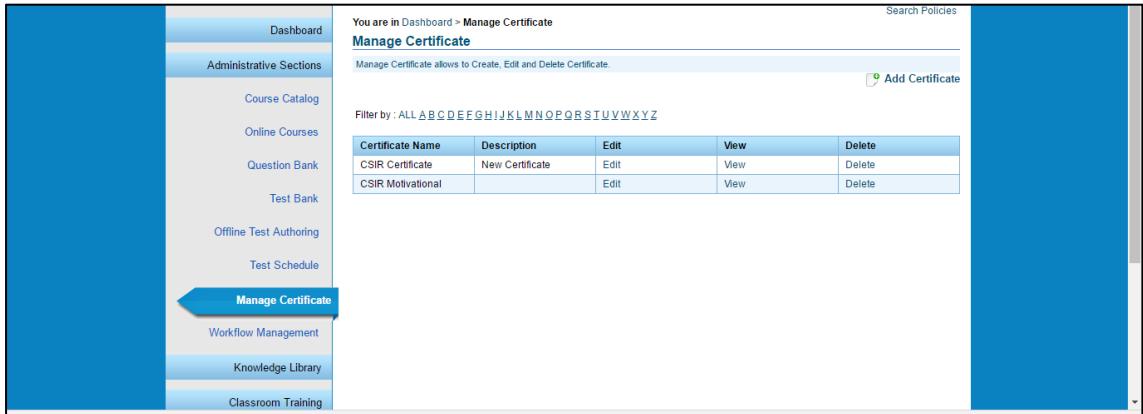
**Image A33:   Manage Certificate**

Add certificate
The Certificate can be added
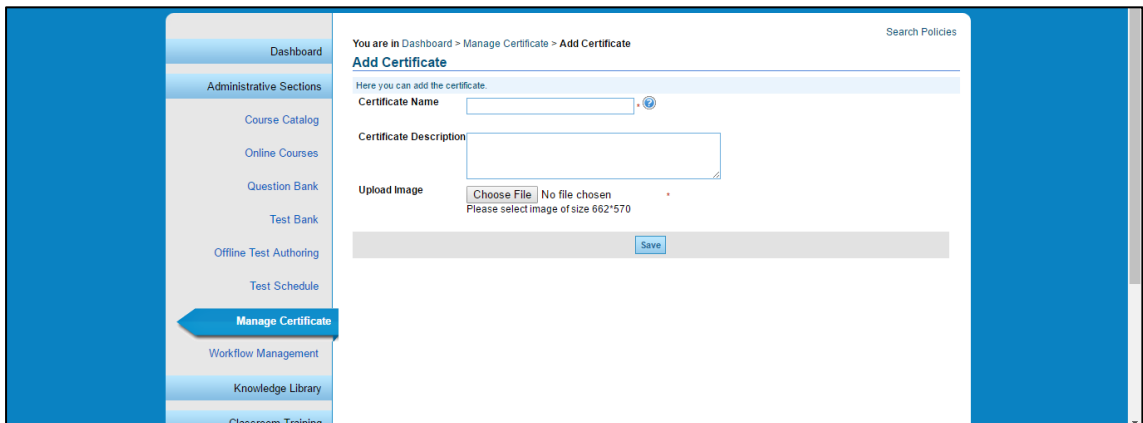
Image A34:   Create Certificate

Create Workflow

Image A35:   Create Workflow

Training : The training to be conducted can be created


Image A36:   Create Training

Sessions

Image A37:   Create Training

Create Announcement: The training can be announced

**Image A38:   Create Announcement**

Training Location: The training location can be updated

Image A39:   Training location