CHAPTER 3
OBJECTIVE
3.0 OBJECTIVE

3.1 PRIMARY OBJECTIVES
The main objective of this research work is to undertake a comprehensive study and analysis of various factors associated with e-Learning systems and their interactions for making the e-Learning framework more effective and successful.

3.2 SECONDARY OBJECTIVES
The following is a summary of the Specific Objectives:

1) To develop an effective e-Learning framework to address the lack of face-to-face interaction and to provide a channel for faculty-student interaction.
2) To inculcate a self-regulating learning behavior among students.
3) To empower faculties to host courses in the e-Learning portals.
4) To facilitate faculties to monitor the learning patterns of the students.
5) To incorporate Social Media tools in the e-Learning portals.
6) To perform experimental validation of the proposed Multi-Faculty E-Learning Framework and other conceptual frameworks.

In order to achieve the above objectives, an effective e-Learning Framework has to be evolved and critical factors have to be identified which have a positive influence on improving Student Empowerment, Faculty Empowerment, and which supports Self-Regulated Learning.

Objective #1: To establish a channel for faculty-student interaction. Fulfilling this objective will address the problem of the absence of direct interaction with faculties that invariably happens in e-Learning settings. The two-way communication will help the learners to achieve their learning objectives.
Objective #2: To inculcate a self-regulating behavior among students. Since the responsibility of learning now rests with the students, they need to follow self-regulating learning strategies like goal setting and planning, self-monitoring, self-assessment, help-seeking, and self-improvement. Following these strategies improves the self-efficacy of students and students get empowered in his process. The instruction design and online learning tasks should be implemented by embedding self-regulation features.

Objective #3: To empower faculties to host online courses. The online courses make the instructors redundant and play a passive role. However, the faculties need to adapt to this new role by constantly updating their skills in the Internet and web technologies for effectively monitoring and motivating online students towards enhancing their learning outcomes.

Objective #4: To monitor the web usage pattern of online learners. This helps faculties understand the learning behavior of students as well as identifying the learning needs of online students. This promotes scope for improvements in content as well as incorporating changes in order to enhance student engagement and learning outcomes.

Objective #5: To incorporate Social Networking tools in e-Learning portals. Adding collaborative tools to facilitate online students to get connected to peers, faculties, and experts. This improves student learning outcomes by way of knowledge sharing and clearing doubts by seeking help. Social Networking helps prevent the effects of isolation in online learning by way of building virtual communities.
**Objective #6:** To perform experimental validation of the proposed Multi-Faculty E-Learning Model to differentiate between the Single Faculty Model and Multi-Faculty Model.

### 3.3 SELF-REGULATING E-LEARNING FRAMEWORK

The self-regulating e-Learning framework is one of the primary contributions of this research work as it implements the continuous improvement in an e-Learning set up as represented in Fig. 3.1. The proposed e-Learning framework is based on three major categories:

a) The first is the continuous improvement model introduced by Deming.

b) The second is the Sentiment Analysis of Student feedback which forms the basis for faculties to make decisions on improving the content at the next opportunity.

c) The third activity is the automatic collection of web usage data, their analysis and visual presentation which brings forth patterns in various forms depicting user behavior in a temporal dimension.

This mainly forms the basis for the faculties to understand the learners’ needs, expectations and their engagement activity in the website pages and content. By continually watching these reports faculties can periodically identify interesting patterns like student disengagement from the learning process for which the faculties can decide corrective actions like giving feedback to students and motivating them as well as take measures to improve and change the content at the next opportunity. Faculties can use announcements on the website as well as email and chat facilities to have interaction with students.

The most important aspect of an e-learning framework design is to improve and sustain student engagement in the learning process so that this may ultimately result in the improvement of the learning outcome of students and help them to
achieve their goals. Also, self-regulation in the learning process is promoted by satisfying the needs and expectations of the students in achieving their learning goals.

### 3.3.1 CONTINUOUS IMPROVEMENT MODEL

Fig. 3.1 is an e-Learning Framework showing the tasks performed by the actors: students, instructors, Web Admin and the stakeholders. The related activities are included in swim-lanes which are also known as partitions. The Deming’s PDCA cycle (Plan-Do-Check-Act Cycle) is embedded in this diagram. The improvements do not happen overnight. They happen in stages over time following a plan. The continuous improvement cycle is as follows:

1. **Plan** – Set goals and targets after assessing the current situation
2. **Do** – Design Instruction, Create and host content on the website
3. **Check or Study** – Check whether student engagement is achieved or not by using tools like sentiment analysis of student feedback and analyzing and studying web usage data by using tools like web analytics. Look for opportunities for improving the web content.
4. **Act** – Redesign and improve content in the next cycle.

The feedback in the diagram offers faculties and stakeholders opportunities for continuous improvement in the learning and teaching process.

The proposed e-Learning framework supports the following features:

1) The continuous improvement principle introduced by Edward Deming
2) The Sentiment Analysis of Student feedback for improving the contents
3) Automatic collection of web usage data
The e-Learning Framework as shown in Fig. 3.1 can be made more effective by embedding Deming’s PDCA cycle in the model. After analyzing the current status of the situation of the e-Learning portal as existing, a requirement analysis has to be made along with fixing targets for the level of learning outcome to be achieved, content quality, identification of student needs, and performance monitoring and Interventions needed. The following section details the next activity “DO”, which involves sub-activities like Instruction Design, Development, and Implementation phases. The implementation phase requires uploading the pedagogical content in the course website. These activities need the services of Instruction Designers (ID) or Subject matter experts (SME). In academic environments, both of the above are carried out by Faculties. Fig. 3.3 shows the key actors and their roles in the Instructional Design process. The following section briefly explains the tasks Design and Development. The
guidelines for Instruction Design are based on the popular ADDIE model (Stevan J. McGriff, 2000, Bearice Ghirardhini, 2011). The ADDIE Model is an iterative course design process, where a feedback of the evaluation of each phase may help the course developer to incorporate changes and improvements in the previous phase. An artifact is produced at each phase and it is fed to the next phase as shown in Fig. 3.2.

3.3.2 DESIGN

The important component of a course is Instructional Design which is incorporated as per the following steps:

- Define important learning objectives that should meet the overall course objective.
- Determining the learning sequence that helps to achieve the objectives and
- Choosing the content form and determining the way in which it is presented.

Donmez, M. et al. (2016) emphasizes Instructional Design strategies are needed to provide effective design of course materials in order to achieve successful learning outcomes. Adapting existing models offers a faster and pragmatic choice for content developers rather than acting without any plan. The end result of the design phase produces a plan of action that constitutes the blueprint. It provides clear steps for developing the course content by the instructors. The blueprint guides instructors, to arrive at a curriculum structure which specifies courses in terms of, units, lessons, and topics, the learning objectives of each unit, methods that trigger the initiation of learning activities and course formats.
Next, the content has to be actually produced as per the design document. There may be a wide variety of ways the content can be structured in different formats, according to the needs and requirements of a course.

Figure 3.2: ADDIE process and revision

The e-learning content may constitute simple text matter or rich multimedia resources like animations or video or audio clips. Developing multimedia content constitutes three main steps:

A. **Content Creation**: Text passage or collection of the required knowledge represented in different forms.

B. **Storyboard Development**: Integration of instructional procedures with the pedagogical elements that support the teaching and learning process and the media clips. A storyboard can be used that contains all the elements of the final product. It narrates the main theme of chapters using pictures, videos, and audio clips.

C. **Courseware Creation**: The main activities are designing interfaces and media elements for the online course and integrating the content elements into a website.
Finally, the course is presented to the learners by deploying the content in the website. It needs to be checked whether the instructional process has resulted in improvement in the learning outcome of students at the end of the course. In order to evaluate a course, the course administrator may collect the learners’ responses, as well as other details on the achievement of learning objectives, and the acquisition of knowledge and expertise. The last measure is an overall satisfaction with the course as well as its beneficial effects in terms of cost, effort and time savings to the institution.

3.3.3 MULTI-FACULTY E-LEARNING MODEL

A Multi-Faculty Model is an improvement over a single faculty model, as multiple faculties will be collaborating in an e-learning portal. Fig. 3.4 shows the e-Learning framework depicting two e-Learning models showing their merits,
This chapter presented the main objectives and specific objectives of this research work in addressing problems faced in e-Learning settings today. The main objective is to develop an effective self-regulating e-Learning Framework. The specific objectives are the incorporation of faculty-student Interaction, Self-Regulated Learning, Faculty Empowerment, Social Networking tools, and Multi-Faculty collaboration.