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Case Study Based Learning for System Development

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Abstract— The presented case study based activity supports collaboration between students. Case study based activity consists of a story of an organization and how the problem is solved by using planning strategy, coordination and using any advance system for example management information system is a subject which can be taught using the case study based activity .Outcome to analyse the problem, develop problem solving capabilities and to take appropriate decision that leads to success.

The student's role is to read and explore case study. Participate in online discussions, lead a discussion, engage in classroom discussion and present their reflections. Finally the discussion leads to idea or solution to the problem.

The teacher's role is to select the appropriate case study or story or provide case material, set up questions and explain requirements or expectations. The teacher should keep the discussion on track and make sure that all the questions are answered. Finally teacher should read or summarize the points of discussion .The teacher should prepare rubric for final grading.

The paper deals with how this activity was implemented to teach management information system (MIS) subject of final year engineering study.

Keywords—Case study; Management Information System; Students role; Spiral Model ; Teachers role

I. INTRODUCTION

Case study based teaching method is an active method of pedagogy. The main aim is to understand the various levels, stages, aspects by doing so the students put themselves into the situation. Aims to completing full academic knowledge and real and true understanding of situation and to find appropriate solution and make use for decision making.

Under the umbrella of case studies different studies like specific event, program, place organization, thing can do. A case can be individual story, a role of person. Story of small group, history of organization and a community as well. Review of worldwide literature for Case-Based Learning and its application in Medical and health care fields (Susan F. McLean, 2016). This review paper is focused on health related case study based learning and its applications. Case study based learning is a very new modality for teaching health care applications.

II. EXAMPLES OF CASE STUDIES

The following are the examples of management Information System related Case study

Case study 1: Story of Global Hospital case study:

Hospital with 300 beds, 4 Operation Theater, OPD, Pathology, X ray scanner etc. Various wards like gynecology, orthopedics, pediatrics and dermatology etc. Hospital management system consist of various modules: Patient admission and administration, patient medical record. Doctors visit, hospital medicine procurement service, nursing charges etc.

The goal of Global Hospital (GH) to keep GH as affordable hospital for middle income group.

Problem statement: Due to rise in every item, hospital supplies, rise in salaries it is very difficult for the hospital to achieve the goal.

The case study was presented to the students.

Solution: Use MIS module to HMS the system will provide the following:

- OPD patient Data
- Hospital Material and medicine consumption data
- Data on various functional Data
- Hospital servicing data

If such information is available online through MIS. Then higher authority can take decision related investment and pricing decision, supplies of medicine, nursing staff. The goal of the hospital can be achieved (Jawadekar,2013).

Case study 2: Precision Watch Limited (PWL)

PWL has four factories at Bangalore, Jammu, Gurgaon, and Mumbai Due to networking of all work centers, sales points, dealers, distributors and use of enterprise business process application suite, PWL has management information daily on:

Product Inventory: Brand, Model, Price, and Location

Product Sale: Fast Moving and Slow Moving

Market: Segment, Areas, and Locations

Customer: Preferences, Profile, and Lost Customers PWL claims that all this is possible due to Problem statement: PWL wants the solution for "Where is what"

Solution: The implementation goal of SAP ERP was to
• Make information access available to all concerned.
• Provide information integrity for all users.
• Integration of complete supply chain.
• Reduce inventory of watches, and know at all sales point

Using IT-enabled applications Internet technologies integration of supply chain is a challenge. To boost these strategic initiatives PWL implemented B2B solutions to

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leverage Internet for order handling, configuring, tracking, and delivering (Jawadekar,2013).

Case Study 3: Flight Control System

Flight Control system (FCS): Ensures smoother and safer flight. It consist of various control and mechanism to control the aircraft's direction. This is a risky project with high level quality standard (N. Devadiga, 2018; Pratt, Roger W, 2000; Boehm, Barry, 1986).
System failure can cause loss of humane lives and aircraft.
FCS has many requirements:
Good air craft operating properties
In case of software and hardware failure backup plan.
Digital FCS to automate the process.
High safety.

Problem statement: To analyze and determine model to be used for software development lifecycle and process framework.

Solution: Spiral Model and Six Sigma model is best fit for the flight control system project.

III. IMPLEMENTATION OF CASE STUDY

Case study Implementation consist of 4 stages. Figure 1 shows the block schematic of case study implementation.
Stage1: Inquiry Process
Case material should be authentic, relevant and interesting. The case should incorporate information, story, tasks problem solving opportunity that reflects the real life situations and the knowledge will be used to provide future path (Hemphill et al., 2015; Morrow et al., 2003).

Stage 2 : Space and Time
In case study based learning the instructor should provide the questions and sets time for same. This way students identify the major problem and provide the plan of action or appropriate solution (Hemphill et al., 2015; Mostert, 2007).

Stage 3: Active Participation:
Opportunity should be given to each students. Students should express their ideas by writing or orally (Tippins, Koballa, and Payne ,2002) shown in figure 2.

Stage 4: Synthesizes of Idea and Practices:
Instructor should provide rubrics shown in table 1, shares and summarizes the point of discussion and finally grade the reflection.
Students should create the case analysis. Preset on the idea and discuss on how idea is evolved (Blackmon et al., 2007).
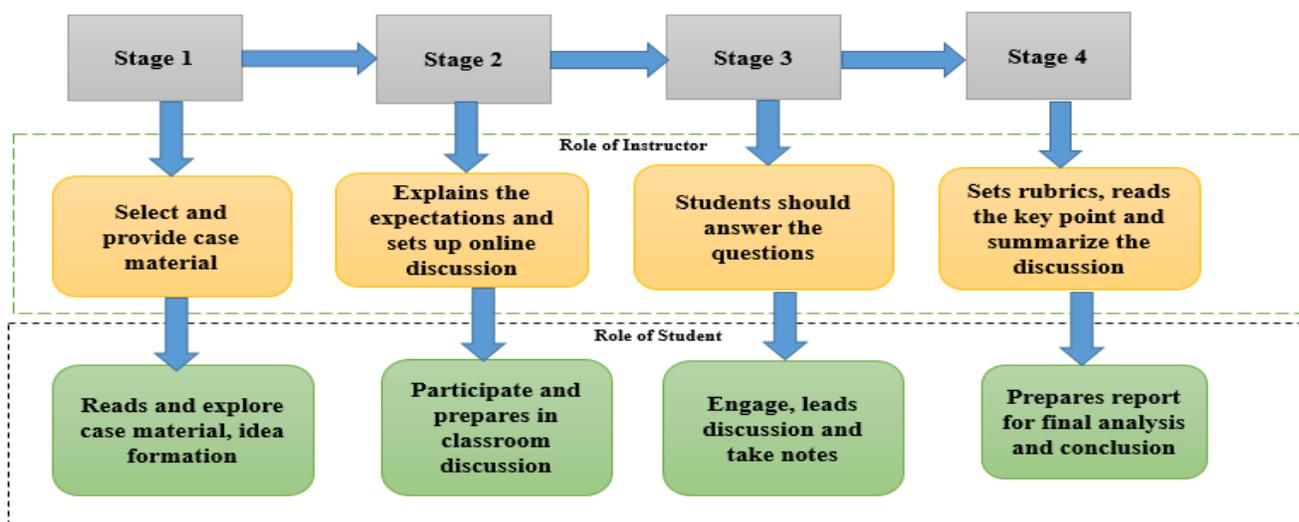

Figure 1: Block Schematic of Implementation

The student's role is to read and explore case study. Participate in online discussions, lead a discussion, engage in classroom discussion and present their reflections. Finally the discussion leads to idea or solution to the problem.
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Figure 2: Student's Implementation on Case Study

Table 1: Rubrics for Case Study Evaluation

Levels	3 (Excellent)	2 (Good)	1 (Moderate)	0 (Poor)
Case Presentation/ Uniqueness of Case				
Analysis/ Solution Options				
Recommendations/ Final Plan Implementation				
Conclusions/ Outcomes of Case				
Presentation Skills				

IV. RESULTS AND CONCLUSION

Case study based pedagogy has been used in business education and medical fields. Teachers are more benefited in case based teaching learning process. Students are motivated to read more and more case related cases.

Case studies enable students to learn step by step complex professional situation so as to put them in a position of evaluator, decision maker or an actor. Real situations those were decried in case engaged the students in decision making and its implementation.
With reference to the different situation and criteria case study displays a past action and a decision.

V. BENEFITS OF CASE STUDY

1. It provides in depth look at an organization or individual, internal working for system development.

2. Comprehensive understanding of the topic and reader can clear his or her concept and learning becomes easy.

3. Can apply principles of other case studies to improve the situation.

4. Learning through experience and decision making is possible.

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