Faculty Development Handbook: An effective performance enhancement tool for instructors

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Abstract:
Maintaining the quality every time in any field is a big challenge and engineering education is not an exception.
Due to various limitations and constraints, the quality of teaching and in result learning suffers. The delivery of lectures of every instructor varies due to these limitations. This paper proposes a handbook based approach so that the teachers follow a common agenda throughout the course without losing the essential freedom in teaching a course. Handbook is also useful in maintaining the record of the continuous improvement in teaching skills. The results have proved that alignment of teaching efforts through a well-designed handbook helps in making a better teaching-learning environment.

Keywords: CETL, handbook, taxonomy, cognitive domain, active learning

1. Introduction:

A very common and unanswered question among all the engineering teachers is "Why even in the course taught by a very experienced faculty member having good command over the subject; the student could not retain more than 10-15% of the whole lecture after a short period of 15-20 days?" [1]. Recent research on teaching-learning practices reveals that the problem is in the DNA of the teaching process i.e. the very basic and fundamental approach towards teaching. The conventional teaching methods are found as the main cause of these problems. Faculty development handbook is a step to align the faculty members in the direction motivated by contemporary research in teaching learning.

2. Why handbook/workbook:

The Workbook is a very helpful aid for faculty members especially new-comers who require an orientation towards classroom teaching. It basically sets an agenda for the instructor and useful record for the continuous improvement and enhancement in skills. It provides all the information to the faculty about the quality of teaching-learning process

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and what faculty is expected to do for the improvement in his class performance. The focus of the handbook is to empower the faculty members by making them acquainted with the latest advancements in pedagogy, educational psychology and cognitive research [2].
The handbook provides a structural and standardized approach to faculty members so that they can contribute effectively and efficiently towards creating a teaching-learning environment based on learner-centered approach [3].

3. Handbook Contents:

The handbook which we have proposed is divided into four parts:
(1) Introduction
(2) Primer for effective teaching
(3) Fundamentals of Learner-centric approach
(4) Lecture observations and continuous improvement
The first chapter of the workbook is dedicated to the introduction of CETL (Centre of Excellence in Teaching & Learning), vision & mission of the CETL, faculty vision and mission and four focus areas.
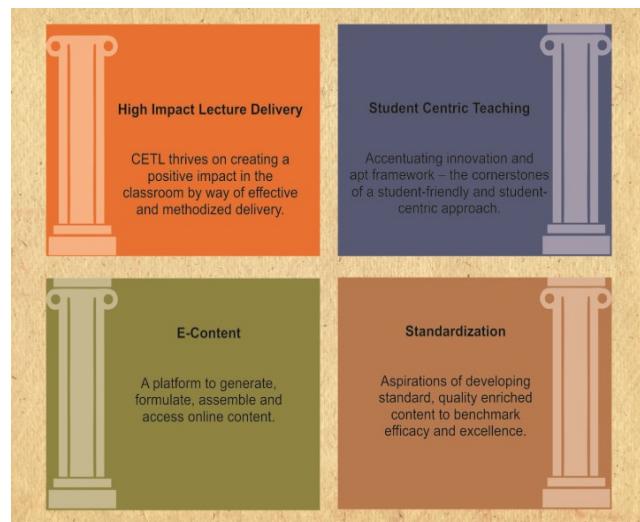

Fig. 1 Four focus areas

A. Four Focus Areas

1) High Impact Lecture Delivery

The classroom is the place where many-a-man are made and myriads of dreams and aspirations are framed. CETL thrives on empowering both teachers and students by providing enough opportunities for progression, enriched classroom performance, and longevity of impression.

2) Learner Centric Teaching

The changed and the evolved world of today necessitates that advanced set of skills and attitudes are ushered in, which is impossible without innovation. CETL provides a platform for innovation and creativity in teaching which in turn depicts how knowledge is assimilated, produced and used for novel initiations. It is also a platform which provides an apt framework using innovative pedagogy which allows skills and ideas to flourish [3, 4].

3) E-Content

In a world of speed and pace, e-learning and e-content have become inevitable parts of any education system for simple, swift and accessible contemporary/ latest information. CETL acts as a high ground or piazza for the contribution of valuable and conducive e-content by experts and in turn becoming a storehouse of multifarious information and study material. Easy availability of e-content will make learning faster, updated and potentially better for everyone[5].

4) Standardization

A standardized framework can be very much useful in classification of concepts, emphasizing connections between concepts, providing the context for the student and can act as an important tool for course design. And so, CETL aims to design and to help design a standard course material that ensures quality content and will act as a suitable benchmark for study referral.

B. Vision & Mission

CETL has been entrusted with four long - term missions
To ensure high impact classroom delivery
To promote learner - centric approach in teaching
To promote development of e-content
To create standard and structured subject content

Corresponding to each mission statements there is few medium to short term objectives. The following figure (Fig 2) summarizes the mission and objective statements of CETL.
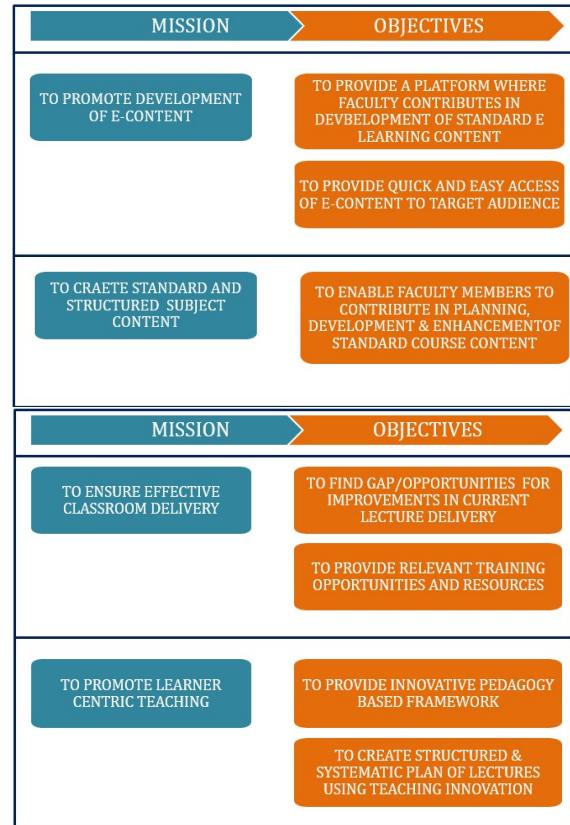
Fig. 2 Mission of CETL

C. Effective Teaching, a Primer

In this section of the handbook pre-preparation of teaching a course, how to develop a comprehensive course outline, the first lecture, delivering a high-impact lecture, basic presentation skills, putting the material in context, handling queries and use of ICT in teaching are discussed in detail.

D. Foundations of Learner-Centric Teaching

In this part of the workbook, contemporary researches on learner-centred teaching are discussed.
Learner-centric teaching builds its approach primarily from Gardner's "Multiple Intelligences Theory" and Blooms' Taxonomy. Let us understand the key concepts in brief.

1) Bloom's Taxonomy:

Benjamin Bloom identified three domains of educational activities and various levels of learning (Fig 3) [6];
Cognitive: Mental skills (Knowledge)
Affective: Growth in feelings or emotional areas (Attitude/Feelings)
**Psychomotor:** Manual, Physical, Neuro-Muscular Activities (Skills)
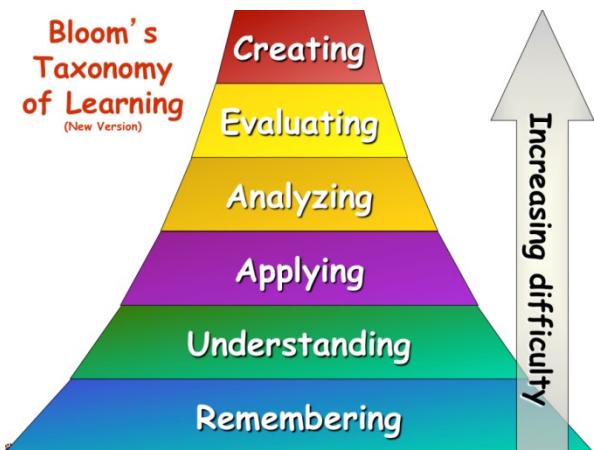
Fig. 3 Blooms Taxonomy of learning

2) *Gardner's Multiple Intelligence Theory:*

Howard Gardner viewed intelligence as the capacity to solve problems or to fashion products that are valued one or more cultural setting (Fig 4) [7].

The key points to be remembered here are:

- There is no hierarchy among intelligence;
- Each one of us possesses all the nine intelligence in varying degrees;
- Each intelligence can be honed with time, training and practice.

Fig. 4 Gardners' Multiple intelligence theory

The purpose of this section is to make the faculty members aware of these concepts so that while designing the structure and content they must know how learning happens and various levels of learning .

E. Lecture Observation mechanism for continuous improvement

This section is dedicated to observation, feedback and continuous improvement mechanism of handbook

The Procedure of Lecture observations and feedback: Lectures of faculty members are video recorded and observations are done by the experts. The format for the lecture observation is based on the components of an ideal lecture [8, 9]. The observations are filled in the form of color coding, which is similar to traffic light system .Green indicates the excellent delivery, yellow indicates the need of improvement and red shows matters of serious concern. After the observation is done, faculty meets personally with the experts and after the discussion on the video, the steps required to be taken for the improvement in the required fields are decided. The formats for Lecture/class observation (manually & video graphically) shown below (Table 1 & 2). (See appendix-1)

Table 1 Ideal Lecture delivery evaluation format

Effective Lecture Delivery - Evaluation Format				
Evaluation Date				
1 Effective start of a lecture				
Recap of previous lecture/ prerequisite				
Assignment solution from previous lecture (if required)				
Structure of the current lecture ("whole picture")				
2 Establishing the connect				
Astonishing fact and figures about the topic				
An interesting question relevent to the topic				
A relevent story				
Social/economical use of the topic				
Highlight Importance (5W, 1H)				
3 Effective Content Delivery				
Black board usage				
Confirm students understanding (quick quiz, questions etc.)				
Appreciate/Encourage active participation of students				
Balanced approach towards using Hindi/English language				
Attention span handling				
Modern techniques (Mind Map, Grapics, Animation, Video)				
Balanced approach towards notes/ script reading or referral				
Innovations (Active Learning Methodology)				
4 Audience control				
Eye contact /Eye scanning /Attention to all the students				
Effective Queries clarification / satisfactory closure				
Balanced approach towards the pace of the lecture				
5 Body language				
Displying a pleasing appearance,voice and body language.				
Calling students by name				
Level of self confidence				
Voice volume and modulation				
6 Effective closure of lecture				
Summarize lecture/ conclusion				
Homework / Assignment				
Next lecture overview				

Table 2 Video observation format

Video Lecture Observations		
Sl. No.	Observations:	Date:
	Action taken by Faculty for Opportunities for Improvement	

F. e-content development record

In this section of the handbook, the record of lectures/tutorials uploaded on our YouTube channel (cetl at abes engineering college) is maintained. The format is given below (Table 3):

Table 3 e-learning contribution format

Sr. No.	Video Title of the topic	Duration	Submission Date

G. Session Plan

Session plan addresses and enables both facilitators and learners to blend multiple pedagogical perspectives. Session plan builds awareness about various components of session planning, including the role of the facilitator, learner and the learning outcomes [10]. The objective of preparing a session plan is to:

- Critically evaluate the available lesson planning strategies.
- Build awareness about various components of session planning, including the role of the facilitator, learner's activity, and the learning outcomes.
- Blend multiple pedagogical perspectives in session planning.

- Help plan innovative methods/experiences of teaching and learning that can be effectively implemented in the sessions.

The session Plan specifies the detailed delivery plan for a session.
A well-structured session plan helps us accommodate better teaching aids/ methodologies in the specified time limit thus making our session more learner-friendly.

The recommended sequences to populate this table (Table 4) row-wise would be as follows:
1. **Content/ Topic:** Specifies the topic names in the session. This can be customized as per specific requirements e.g. Subject/Unit/Topic
2. **Methodology:** The various learning aids like Board, Chart and the learner methodologies like an activity can be specified here.
3. **Duration:** The third cell that can be populated at this stage could be Duration column. This cell should be completely based on the chart learning aid/methodology.
4. **Faculty Approach:** This can be filled with reference to the learner aid/methodology adopted to conduct a particular concept/topic.
5. **Learner's Activity:** This can be filled with reference to the learner aid/methodology adopted and the faculty approach.

Table 4 Session/Lecture plan format

Methodology	Faculty Approach	Learner's Activity
Case Study Discussion	Explains	Discusses
Chalk and Talk	Questions	Listens
Presentation	Facilitates	Comprehends
Drawing/ Interpreting Charts	Guides	Participate
Demonstrations	Debriefs	Answers
Role-play	Monitors	Analyses
Group Discussion	Conducts	Recalls
Brainstorming	Observes	Gives Ideas
Gaming	Organizes	Draws/Designs/Writes
Quizzing	Demonstrates	Evaluates
		Observes

Lecture No.	Content/ Topic	Learning Aid/ Methodology	Duration	Faculty Approach	Learner's Activity

H. Record of steps taken by the faculty members for continuous improvement:
In this section, the workshops, seminars, conferences faculty development programmes, short term courses and other steps taken by the faculty members for the improvement in teaching skills are recorded (Table 5).

Table 5 Records of Workshops attended

Records of Workshops attended			
Sr. No.	Name of the workshop	Date of the workshop	Verified by resource person

4. Sample Photographs of filled handbook used by faculty members (Fig 5 - 8):

Fig. 5 Video Lecture Observations

Fig. 6 Workshops Attended

Fig. 7 e-content development

Fig. 8 Effective Lecture Delivery

5. Experimental validation of handbook:

The handbook was initially given to 7 faculty members of ABES Engineering College Ghaziabad (India) and asked to teach by following the instructions given in the handbook. The selected faculty members were average teachers getting average or below average feedback in the previous semester. These teachers were teaching different courses to the students of different years and branches in the even semester (Test semester) of session 2015-16.

After the completion of the semester the feedback from the students was taken from the students using a questionnaire [10] (see appendix-2) and most of the results received were pretty motivating (Fig 9):
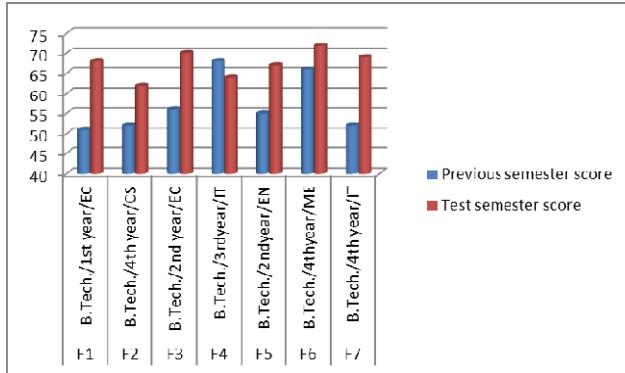
Fig. 9 Comparison of feedback scores of faculty members before and after using faculty development handbook

6. Conclusions

Due to various constraints of syllabus and time, the implementation of active learning methods in classrooms are sometimes avoided by the faculty and using the handbook based on workbook concept is a good solution as it aligns the activities of faculty towards an agenda and records the improvement in performance. The results of the experiments at ABES Engineering College Ghaziabad prove that following a well-designed handbook can improve the learning and overcome the hurdles of implementing Student Centric learning methods.

Acknowledgements

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Appendix-1

Effective Lecture Delivery - Evaluation Format						
Evaluation Date						
1	**Effective start of a lecture**					
	Recap of previous lecture/ prerequisite					
	Assignment solution from previous lecture (if required)					
	Structure of the current lecture ("whole picture")					
2	**Establishing the connect**					
	Astonishing fact and figures about the topic					
	An interesting question relevent to the topic					
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	Social/economical use of the topic					
	Highlight Importance (5W, 1H)					
3	**Effective Content Delivery**					
	Black board usage					
	Confirm students understanding (quick quiz, questions etc.)					
	Appreciate/Encourage active participation of students					
	Balanced approach towards using Hindi/English language					
	Attention span handling					
	Modern techniques (Mind Map, Grapics, Animation, Video)					
	Balanced approach towards notes/ script reading or referral					
	Innovations (Active Learning Methodology)					
4	**Audience control**					
	Eye contact /Eye scanning /Attention to all the students					
	Effective Queries clarification / satisfactory closure					
	Balanced approach towards the pace of the lecture					
5	**Body language**					
	Displaying a pleasing appearance,voice and body language.					
	Calling students by name					
	Level of self confidence					
	Voice volume and modulation					
6	**Effective closure of lecture**					
	Summarize lecture/ conclusion					
	Homework / Assignment					
	Next lecture overview					

Appendix-2

Assessment sheet for effective teaching skills

1-Very low; 2- Below average; 3- Average; 4- Above average; 5- Outstanding

Plan and structure the lectures by:

Using effective openings and closings	1	2	3	4	5
Applying effective structure to presentation	1	2	3	4	5
Establishing credibility through the use of evidences and visuals	1	2	3	4	5
Audience analysis and delivering according to their interests	1	2	3	4	5

Create and maintain positive impressions by:

Displaying a pleasing appearance, voice and body language	1	2	3	4	5
Building rapport with an audience	1	2	3	4	5
Satisfying a challenging audience	1	2	3	4	5

Remain natural and relaxed by:

Communicating with an increased level of self confidence	1	2	3	4	5
Showing flexibility and creativity as a presenter	1	2	3	4	5
Delivering a message without reading a script	1	2	3	4	5

Communicating ideas with clarity and force by:

Speaking more clearly and concisely	1	2	3	4	5
Effective use of black board	1	2	3	4	5
Speaking with conviction	1	2	3	4	5

Inspire others by:

Motivating students to take specific action	1	2	3	4	5
Capitalizing on challenging question and answer sessions	1	2	3	4	5
Using evidence to sell an idea	1	2	3	4	5