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Ornamental Student Learning Through Innovative, Effective and Technology Strategies on Teaching

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ABSTRACT: Teaching is an art and mastering the same is a skill in itself. Teaching is not a mechanical process that can be practiced by robots. This paper will help a student-teacher to design a course, practice teaching and assess the learning process of learners. The paper throws light on various aspects of higher education such as learner centric methodologies, effective teaching practice, comprehensive assessments and constructive feedback. The paper designed for budding teachers to gain insights on the essential phases of a complete teaching-learning process namely design of a learning program, delivery of lessons and assessment of learners progress. The paper provides scope for student-teachers to build confidence and hone their teaching skills through hands-on experience.

KEYWORDS: Teaching Methodology; Learning Outcomes; Effective Teaching; Students; Teachers; Classroom Assessment Techniques (CATs); Active Learning

I. INTRODUCTION

Effective Teaching is defined as teaching that leads to improved student achievement using outcomes that matter to their future success. The student's progress is the yardstick by which teacher's quality should be assessed.

Teaching is not a mechanical process that can be practiced by robots. Modern technology can certainly assist, but it is the teacher has to interact with her or his learners as human beings.

The teacher's role is to provide information, to instruct, to demonstrate and to supervise activities. The teacher is expected to be a facilitator of active learning by involving the students much more in doing and researching rather than in passive listening. The teacher has to respond sensitively to the dynamics of the classroom, to stick to his/her lesson plan, and to ensure the learning of individuals. [1].

A quality teacher is one who has a positive effect on student learning and development through a combination of content mastery, command of a broad set of pedagogic skills, and communications/interpersonal skills. Quality teachers are life-long learners in their subject areas, teach with commitment, and are reflective upon their teaching practice. They transfer knowledge of their subject matter and the learning process through good communication, diagnostic skills, understanding of different learning styles and cultural influences, knowledge about child development, and the ability to marshal a broad array of techniques to meet student needs. They set high expectations and support students in achieving them. They establish an environment conducive to learning, and leverage available resources outside as well as inside the classroom.

II. RELATED WORK

In [2] authors used Active learning is a process whereby students engage in activities, such as reading, writing, discussion, or problem solving that promote analysis, synthesis, and evaluation of class content. [3]. Authors Teachers are the main authority figure in this model. Students are viewed as "empty vessels" whose primary role is to passively receive information (via lectures and direct instruction) with an end goal of testing and assessment. It is the primary



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role of teachers to pass knowledge and information onto their students. In this model, teaching and assessment are viewed as two separate entities. Student learning is measured through objectively scored tests and assessments.

In [4] teachers and students play an equally active role in the learning process. The teacher's primary role is to coach and facilitate student learning and overall comprehension of material. Student learning is measured through both formal and informal forms of assessment, including group projects, student portfolios, and class participation. Teaching and assessment are connected; student learning is continuously measured during teacher instruction. In [5] authors Inquiry-based learning is a teaching method that focuses on student investigation and hands-on learning. In this method, the teacher's primary role is that of a facilitator, providing guidance and support for students through the learning process. Inquiry-based learning falls under the student-centred approach, in that students play an active and participatory role in their own learning process..

III. PROPOSED SYSTEM

A. COURSE DESIGN

A course design is the teacher's road map of what students need to learn and how a subject will be done effectively during the class time. Before designing a course, a teacher needs to identify the learning objectives.

Preparing a course design facilitates teachers to align five primary elements of a course:

- Learning Objectives
- Learning Outcomes
- Teaching Learning Activities
- Assessments
- Content

The use of course design facilitates the teachers to make the structure and rationale of a course clear to learners and aids transparency.

As the teacher designs the course, the throughout the term, he/she should address these questions:

- Who are my learners?
- What skills/knowledge they need to learn?
- How can they demonstrate skills/knowledge?
- Am I giving them the opportunity to learn skills/knowledge?
- Am I testing them on what I expect them to learn?

Once student needs are considered, the teacher can write the learning out comes that are appropriate for the learners in her/his class.

A learning programme plan is a tentative document of the teacher to deliver each session effectively with the students. This document outlines the broad learning strategies that are going to be used while delivering lectures on the subject.

The following components are to be considered while devising a learning programme plan:

- Aim
- Learning Objective
- Learning Outcomes
- Total topics
- Total allotted hours
- Student's Strength
- Student's IQ level
- Teaching methodology for each topic
- Learning materials and resources for each topic
- Suggested method of assessment for each topic
- Tentative date to execute the topic



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- Break down the task and focus on specific cognitive processes
- Use action verbs

Cognitive levels	Objective / Purpose	Action Words (Keywords)
Creating	Combine elements to develop new models / ideas	Assemble, build, create, construct, design, develop, formulate, generate, hypothesize, invent, modify
Evaluating	Assess effectiveness, coherence, rationale and make strategic judgments	Appraise, assess, choose, compare, conclude, critique, deconstruct, defend, explain, justify, review, recommend, support
Analyzing	Identify assumptions, key components, and internal relationships; infer main principles; structure information	Break down, catalogue, compare, contrast, correlate, deconstruct, differentiate, dissect, extrapolate, infer, investigate, outline, separate
Applying	Apply or relate information to new contexts	Change, construct, demonstrate, discover, execute, extrapolate, implement, manipulate, show, relate
Understanding	know meaning of, and interpret or translate, information	Critique, convert, describe, discuss, estimate, explain, interpret, infer, paraphrase, summarize, translate
Remembering	Recognize or recall facts, details, and information	Define, identify, label, list, match, recall, recite, recognize, state
Learning Outcome Formula		
Learning Outcome = stem + action verb + content/skill/value		
For example		
By the end of this class, learners will be able to -----		
By the end of this class, learners should be able to -----		
By the end of this class, successful learners should be able to -----		
“ A Teacher Takes a Hand, Opens a Mind, Touches a Heart “		

Table 1. Action words to be used in learning outcomes and its formula

Table 1 illustrates Learning Outcomes are statements that specify what learners will know or be able to do as a result of a learning activity. The statements are focused on student’s learning (What will students learn today?) rather than on teacher’s teaching (What am I going to teach today?). Outcomes are usually expressed as knowledge, skills, or attitudes. Learning Objective should begin with a verb and should include only one general learning outcome. Learning objectives should be

- Student-centered and outcome based.
- Break down the task and focus on specific cognitive processes.
- Use action verbs.

As learning becomes deeper, learners move through comprehension, application, analysis, synthesis, and evaluation.



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STUDENT'S EXPECTATIONS	
<ul style="list-style-type: none"> ▪ Want solid knowledge base and real-world applications ▪ Want clear and organized presentation of material ▪ Want to be stimulated, active and participatory ▪ Want to know why (how does this activity, reading connect to my future career?) ▪ Want faculty to be enthusiastic, helpful and engaged ▪ Expect "customer service" ▪ Want face-to-face contact but accept boundaries 	
FACULTY'S CHALLENGES	
<ul style="list-style-type: none"> ▪ Keeping up with their field ▪ Time ▪ Dealing with students with varied backgrounds and skill levels ▪ Research has shown that it is impossible for students to absorb all of the information in a lecture ▪ We need every student to learn – not just a few ▪ More effective approach – get students actively thinking and learning 	
HOW FACULTY SPEND IN-CLASS TIME	
<ul style="list-style-type: none"> ▪ Lecturing - 60% ▪ Student Group Work – 15% ▪ Student Independent Work – 10% ▪ Others – 15% 	
A 50-MINUTE SESSION BREAK-UP	
Time-Break Up	Resources and Assessment
5 Minutes	To lead into the lesson through <ul style="list-style-type: none"> • Questioning on the topic • Presenting a challenge • Sharing a current news • Showing a short video • Reviewing a concept from previous class and • Explaining how it relates to today's session
15 Minutes	To activate new knowledge through <ul style="list-style-type: none"> • Presenting a manageable amount of information in a logically organized manner • Clarifying links to the presenting concept and • Using questions to get student's attention and responses.
10 Minutes	To solidify with assessment through <ul style="list-style-type: none"> • Motivating students through engaging activities • Giving students chance to apply the knowledge they gain • Organising individual and group activities to evaluate their learning and • Assessing the understanding of students
10 Minutes	To augment the existing knowledge through <ul style="list-style-type: none"> • Presenting more inputs through lecture or PPT. Etc., • Imparting new concepts underlying the topic
5 Minutes	To assess the learning outcome of the session through <ul style="list-style-type: none"> • Random questioning • Conducting quiz • Solving a problem
5 Minutes	To summarize the key points of the lesson through <ul style="list-style-type: none"> • Engaging talk • Leaving a question for the next class
“ Good teachers know how to bring out the best in students “	

Table 2. Session Break-up

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Table 2 illustrates planning sessions in advance will improve teacher's confidence level. It allows the teacher to map out how each class fits into, and prepares learners to meet the overall course learning outcomes.

Effective lectures share these characteristics. They are:

- Well organized
- Focused on SMART (Specific, Measurable, Attainable, Relevant, Time based) Learning Outcomes
- Interactive
- Effective Time Management
- Systematic and consistent delivery of the content
- Encourage active learning
- The duration of each session
- The methods of instruction of each topic covered
- Well planned sessions will pave the way for effective teaching.

B. TEACHING IN ACTION (ACTIVE LEARNING):

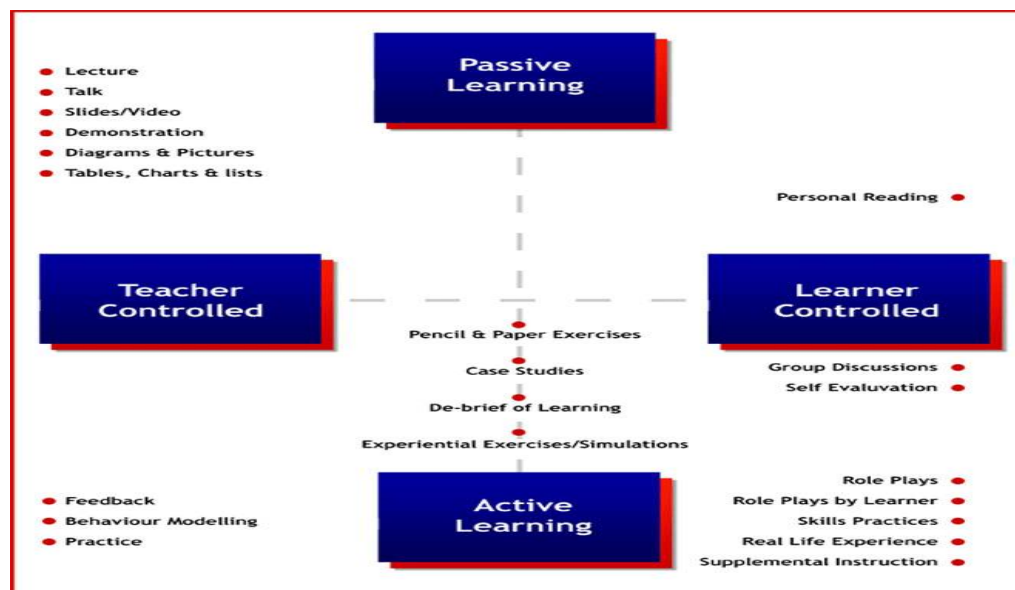


Fig 1. Teaching in Action

Fig 1. Refers Active learning (Teaching in Action) is a process whereby students engage in activities, such as reading, writing, discussion, or problem solving that promote analysis, synthesis, and evaluation of class content. Cooperative learning, problem-based learning, and the use of case-study methods and simulations are some approaches that promote active learning. It allows the teacher to map out how each class fits into, and prepares learners to meet the overall course learning outcomes.

Key practice skills recommended for a teacher are:

- Effective Communication
- Profound Subject Knowledge
- Clear and Concise Delivery
- Coherent Flow of Ideas.
- Effective Management of Learning Activities,
- Appropriate Use of Tools and Resources for Active Learning. Effective teaching provides:



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- Maximum opportunities for all students to learn.
- The necessary learning environment and experiences that able

By facilitating Active learning the following are the instructional strategies created and used to engage students in

- Thinking critically or creatively,
- Speaking with a partner in a small group or with the entire class,
- Expressing ideas through writing,
- Exploring personal attitudes and values,
- Giving and receiving feedback and
- Reflecting upon the learning process.

When a teacher employs active learning strategies, he or she will typically

- Spend greater proportion of time helping students develop their understanding and skills (promoting deep learning) and a lesser proportion of time transmitting information (supporting surface learning)
- Provide opportunities for students to apply and demonstrate what they are learning and to receive immediate feedback from peers and/or the teacher.

C. TEACHING METHODOLOGIES

A teaching method comprises the principles and methods used for instruction to be implemented by teachers to achieve the desired learning or memorization by students [5]. These strategies are determined partly on subject matter to be taught and partly by the nature of the learner. There are learner-centric methodologies that can be employed by teachers to engage all learners in the session. They are:

- Questioning
- Brainstorming
- Interactive Lectures
- Lectures from the Leaders
- Think-pair sharing
- Case Study
- Group Discussions
- Role Playing
- Quantitative Exercises
- Simulation Exercises
- Seminars
- Workshops
- Problem Solving Sessions
- Pro and con grid
- Ungraded quiz
- Attitude Builder Workshops
- Classroom Support
- Online Support
- Industrial Environment Exposure (Field Trips)
- International Business Environments Exposure
- Soft Skill Workshops
- Brain Twists
- Assignments
- Paper Presentations and Debates

The teacher needs to choose the appropriate learning tools and teaching resources relevant to the session [6]. To mention a few,

- The use of Overhead Projectors, Flipcharts and Whiteboards

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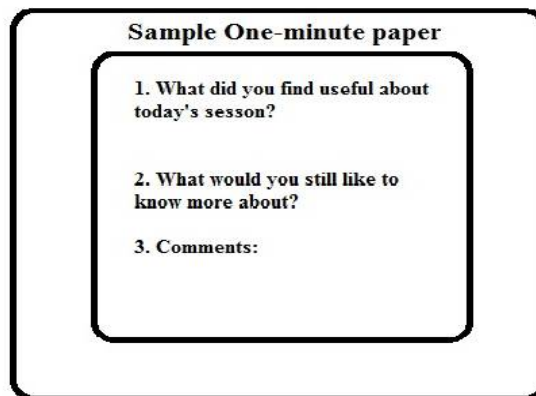
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- Using PowerPoint
- Using Video in Teaching and Learning.

D. CLASSROOM ASSESSMENT TECHNIQUES (CATS)

Assessment is an important component of any course design process. The main role of an assessment is to check whether or not a student has met the learning outcome. Today's teachers are rightly held accountable for the progress of their students. Education scholars have devised some effective means of assessing learning of individuals within the class environment [7]. Frequent use of CATs also assure that the teacher take a genuine, active interest in their learning process throughout the course, before the summative assessment is given at the end of the term. CATs are, typically, ungraded activities conducted in the classroom setting. Assessments of student progress within a course fall in to two categories:

- Summative Assessment Techniques
- Formative Assessment Techniques



The image shows a sample one-minute paper form. It consists of an outer rectangular box with rounded corners and a double-line border. Inside this box is a smaller, inner rectangular box with rounded corners and a single-line border. The text inside the inner box is as follows:

Sample One-minute paper

1. What did you find useful about today's session?

2. What would you still like to know more about?

3. Comments:

Fig 2. Assessment Techniques

Fig 2. Is referred to as assessment for learning and is ongoing during the course. Through ungraded tests or surveys, polling, discussions, projects, and other activities, the teacher gives students a chance to assess their own mastery of topics and concepts and teachers should know how to sing, how to act, how to recite poems, tell interesting stories, knows how to introduce games and the like. Learning will surely take place having this kind of teacher [8].

E. TEACHERS KEY POINTS TO NOTE

- When planning, specifying outcomes, teaching or assessing, lecturers need to consider all appropriate domains and be aware of the level of operations being asked for.
- The learning climate/environment in which learners learn (Motivation, interaction, and support) affects the outcomes.
- Teachers should consider reducing the amount of didactic teaching.
- Teachers should avoid content overload; too much material will encourage a surface approach.
- Think about possible threshold concepts in your discipline and how these can be taught for optimal learning, including how they can be re-learned when earlier understanding is inadequate [9].
- Basic principles and concepts provide the basis for further learning.
- Assessment has a powerful impact on student behaviour.



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IV. CONCLUSION AND FUTURE WORK

If a teacher has a strong personality and can motivate her class well, learning will take place. Generally, pupils don't like inactive, slow and weak teacher. Teaching- learning situation will be boring if teachers possess these traits. Today, pupils love to have teachers who will inspire them and someone who makes teaching enjoyable. Teachers can easily motivate pupils to learn if they can perform variety of roles inside the class... teachers should know how to sing, how to act, how to recite poems, tell interesting stories, knows how to introduce games and the like. Learning will surely take place having this kind of teacher.

A good teaching procedure will lead to effective learning, that's why it's very important for a teacher to understand and use applicable or new method of teaching. In our modern technological world where the use of computer is viral, teachers need to learn how to use / apply the new technology so that the teaching-learning procedure will be enjoyable. Classroom activities to be effective must be governed by different strategies. Pupil to pupil interaction must be observed every time a lesson will be introduced in the class. In doing this, pupils will be trained to communicate well with their peers. Variety of instructional materials should be visible in each classroom so that learning will be full of fun and interesting. Ideal teaching today encourages the application of new methods in teaching to develop initiative, creativity, confidence, self-reliance and independence among the pupils..

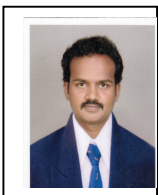
REFERENCES

- [1]. Diana Larsen-Freeman, 'Techniques and Principles in Language Teaching', Second Edition
- [2]. Harmer, J., 'The Practice of English Language Teaching', England-Person Education Limite, 2001.
- [3]. Kenneth H.H, 'The Professional Teacher's Handbook', Second Edition.
- [4]. Emmer, E.T, Clemets, B.S, Worsham, M.S, 'Classroom Management for Secondary Teachers', Third Edition.
- [5]. Kenneth H. Hoover, 'The Professional Teacher's handbook', 1976.
- [6]. Biggs, J, 'Teaching for Quality Learning at University. Buckingham' The Society for Research into Higher Education, 2003.
- [7]. Race, P., & Pickford, R, 'Making teaching work 'teaching smarter' in post-secondary education'. London: Sage, 2007.
- [8]. Donche, V, 'Differential use of Learning Strategies in First-Year Higher Education: The impact of Personality, Academic Motivation, and Teaching Strategies', The British journal of Educational Psychology, 2013.
- [9]. AL-Mawajda, Ragheed Mohammed, 'Components of a Program in the Historical Method: Documents and Texts', 2011

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