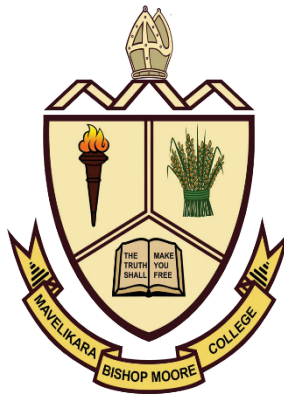# GUIDELINES ON IMPLEMENTATION OF LEARNING OUTCOMES BASED CURRICULAR FRAMEWORK (LOCF)

INTERNAL QUALITY ASSURANCE CELL

BISHOP MOORE COLLEGE MAVELIKARA

The document is prepared by the Internal Quality Assurance Cell of Bishop Moore College Mavelikara based on the following Programmes organised by IQAC.

☐ Webinar on "Effective Teaching" by Prof. Edamana Prasad, former Head of teaching Learning Centre, IIT, Madras on 10 July 2020 in association with Kerala State Higher Education Council, Thiruvananthapuram

☐ One Week online FDP on "Higher Education During COVID Times and After: Opportunities and Challenges" during 23-29 May 2020 in association with Kerala State Higher Education Council, Thiruvananthapuram

GUIDELINES ON IMPLEMENTATION OF LEARNING OUTCOMES BASED CURRICULAR FRAMEWORK (LOCF)

I.   Introduction

In 2015 UNESCO listed Quality Education as one of the top priorities on their list of Sustainable Development Goals (SDG's), as the higher education system plays an important role in a country's overall development. In its constant endeavour to ensure quality and excellence in higher education, UGC has been striving to take initiatives to continuously improve the quality in Higher Education Institutions (HEIs) in India. Moving ahead in this direction, UGC in 2018, set forth the Quality Mandate, as India is a signatory to the SDGs. The quality mandate adopted was an initiative, with the all-encompassing priority to improve teaching learning and innovative skills, critical thinking, inclusiveness, employability, learning outcomes curriculum framework, gender sensitization, social connect, sustainable development competitiveness, and skill development of students in the tertiary education system in India

The Higher Education Quality Improvement Mandate consists of documents covering the 10 verticals of the Quality Mandate:

1. Induction programme for students.
2. Learning Outcome-based Curriculum Framework (LOCF) — revision of curriculum in regular intervals.
3. Adoption of Information and Communication Technology (ICT)-based learning tools for an effective teaching-learning process.
4. Imparting Life Skills to students.
5. Social and industry connect for every HEI: Every HEI shall adopt at least five villages for the exchange of knowledge and for the overall social/ economic betterment of the village communities.
6. Evaluation reforms.
7. Tracking of students' progress after completion of the course.
8. Faculty development.
9. Quality research and the creation of new knowledge.
10. Mentoring of non-accredited institutions, so that every institution can get accreditation by 2022

The report has insisted on the implementation of a learning outcome-based curriculum framework and supports the usage of a tiered intervention approach. The Mandate requires the institutions to ensure that there's an alignment between the learning outcome of the course and the acquisition of employable skill-set. Other attributes of the students would also be evaluated, such as the student's competency in extracurricular activities. The mandate places emphasis on scientific, practice-based learning and shifts the focus from rote learning and evaluation reforms have been introduced to make the student assessment effective, meaningful and more connected to the learning outcomes.

2. Learning Outcome Based Curriculum Framework (LOCF)

In LOCF, desired outcomes are determined first as required by the various stakeholders of the education system and the programme curriculum, teaching and learning methodology and supporting facilities are designed to support the intended outcomes. Outcome based approach means knowing want you want to achieve and then taking the steps to do so and the simplest

aspect of it is that Inorder to achieve something, you have to have an idea of what is you want to achieve.

2.1.1 Traditional Education Vs Outcome Based Education based on LOCF

Traditional Education is to a great extent content oriented in which different programmes have their associated syllabi and the relevant contents are taught and examined. Here the professor lectures and assigns well-defined convergent single-discipline problems, and the students listen, take notes and solve problems individually. As a result, in traditional education:

1. Instructional objectives and Learning Outcomes are not comprehensively planned and informed to students
2. Student involvement is very low level
3. Too much technical content at the expense of a broader, liberal education
4. Stress on Lower Order Thinking Skills
5. Student assessment is not aligned to program outcomes
6. Students become exam oriented or CGPA driven. Graduates are not completely prepared for the workforce.
7. Lack of emphasis on soft skills needed in jobs: communication, interpersonal, analytical, working attitude, human relationship skills, computer skills etc.

While traditional learning change to Outcome based approach, the question of "What course you studied" changes to "What can you do obtaining the degree?". As far as an employer is considered exam result is not the most important consideration. Scientific studies show that employers rate the attributes in the following order with communication skills rated highest while CGPA rated fourth from the last among 20 attributes-Communication skills (verbal/written), honesty/integrity, teamwork skills, strong work ethics, motivation and initiative, flexibility/adaptability, analytical, computer, organizational skills, detail oriented, leadership skills, self-confidence, friendly/outgoing personality, well-mannered/polite, tactfulness, CGPA, creativity, sense of humor, entrepreneurship skills/risk taker.

Therefore, there is a need in a paradigm shift from traditional education to Outcome based Education. OBE shifts from measuring input and process to include, measuring the outcome.
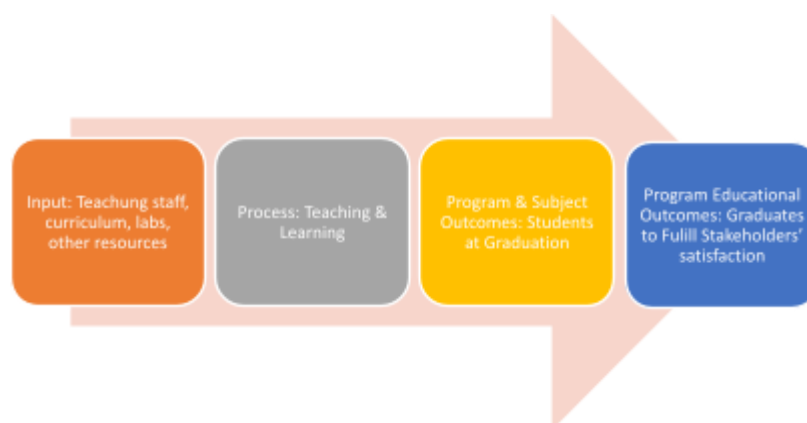

2.1.2 Expectations on Students under LOCF

1. Students are expected to be able to do more challenging tasks other than memorize and reproduce what was taught

2. Students should be able to write project proposals, complete projects, analyze case studies, give case presentations, show their abilities to think, question, research and make decisions based on the findings.
3. Be more creative, able to analyze and synthesize information
4. Able to plan and organize tasks, able to work in a team as a community to propose solutions to problems and market their solutions

2.2 The Outcomes Pyramid
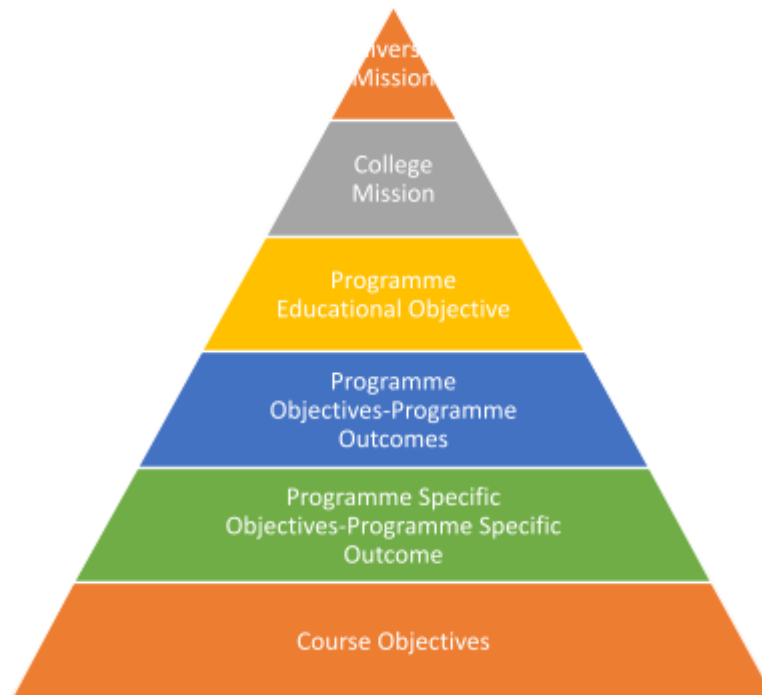
2.2.1 Programme Educational Objectives (PEO)

PEO are broad statements that describe the career and professional accomplishments that the programme is preparing graduates to achieve or what graduates should have after a few years of education. PEOs have to be prepared such that it address the university and college mission. They are responsive to the expressed interests of program stakeholders

PEOs should be
- Consistent with the mission of institution and Department
- Participation of all stake holders
- Manageable number of PEOs
- Based on need of the stakeholders
- Specific to the programme and not too broad
- Should not be too narrow and similar to the POs

Eg: *Our graduates will have successful professional careers in industry, government, academia and military as innovative engineers*

2.2.2 Programme Outcomes (PO)

POs describe what students are expected to know and would be able to do by the time of graduation. These relate to the skills, knowledge, and behaviours that students acquire as they progress through the programme like BA/BSc/BCom. They are statements about the knowledge, skills and attitudes (attributes) the graduates of a program should have.

POs deal with the general aspect of graduation for a particular program, and the competencies and expertise a graduate will possess after completion of the program. They are narrower statements that describe what students are expected to know and be able to do by the time of graduation. These relate to the skills, knowledge and behaviour that students acquire in their study.

Examples:
- *Problem analysis*
- *Design/development of solutions*
- *Conduct of investigations of complex problems*
- *Modern tool usage*
- *The engineer and the society*
- *Environment and sustainability*
- *Ethics*
- *Individual and team work*
- *Communication*

The phrases that define the outcomes begin with the action verbs, define, calculate, estimate and outline

2.3 Mapping of PEOs to POs

POs should be mapped to PEOs. Either it can be one to many, many to one, many to many mapping.

PEO	Programme Outcomes (PO)							
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
PEO1	√		√		√			
PEO2		√		√			√	
PEO3			√			√		√

2.3.1 Programme Specific Outcomes (PSO)

Programme Specific Outcomes are statements that describe what the graduates of a specific programme should be able to do.

2.3.2 Course Outcome (CO)

CO are the skills learnt by the students at the end of each course in the programme. Course Outcomes are the statements that help the learners to understand the reason for pursuing the course and helps him to identify what he will be able to do at the end of the course.

3. Implementation of LOCF

Effective teaching should focus on *LEARNING* not teaching. Only if intended learning happens effective teaching results

3.1 Three Pillars of Effectiveness of Teaching-Learning

Three Pillars of Effective Teaching-Learning

Intended Learning   Method of Teaching   Assessment
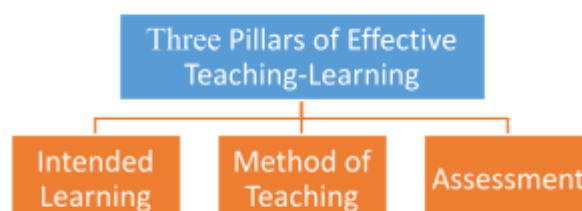
    i. **Intended Learning (Learning Outcome):** *It is the teacher's expectation on what students' learn*

  ii. **Method of Teaching**: *Method suitable for that intended learning has to be chosen, so that majority students can achieve the Learning Outcome*

  iii. **Assessment:** *It is the verification and confirmation that majority students has attained the learning outcome*

3.1.1 Intended Learning (Designing Learning Outcome)

Learning Outcome or Intended Learning should answer the following questions:

  i. What should students know and be able to do as a consequence of instruction (my teaching)?

  ii. How will students be able to think or "At what Learning Level will the students perform"?

A Learning Outcome for your instruction:

  i. Must contain a verb which describe an observable action

  ii. What is a student expected to be able to do?

  iii. When they do the expected action, which level of learning is involved?

  iv. Verbs: write, plan, design, calculate, plot, draw, list, correlate, identify

4. Levels of Thinking
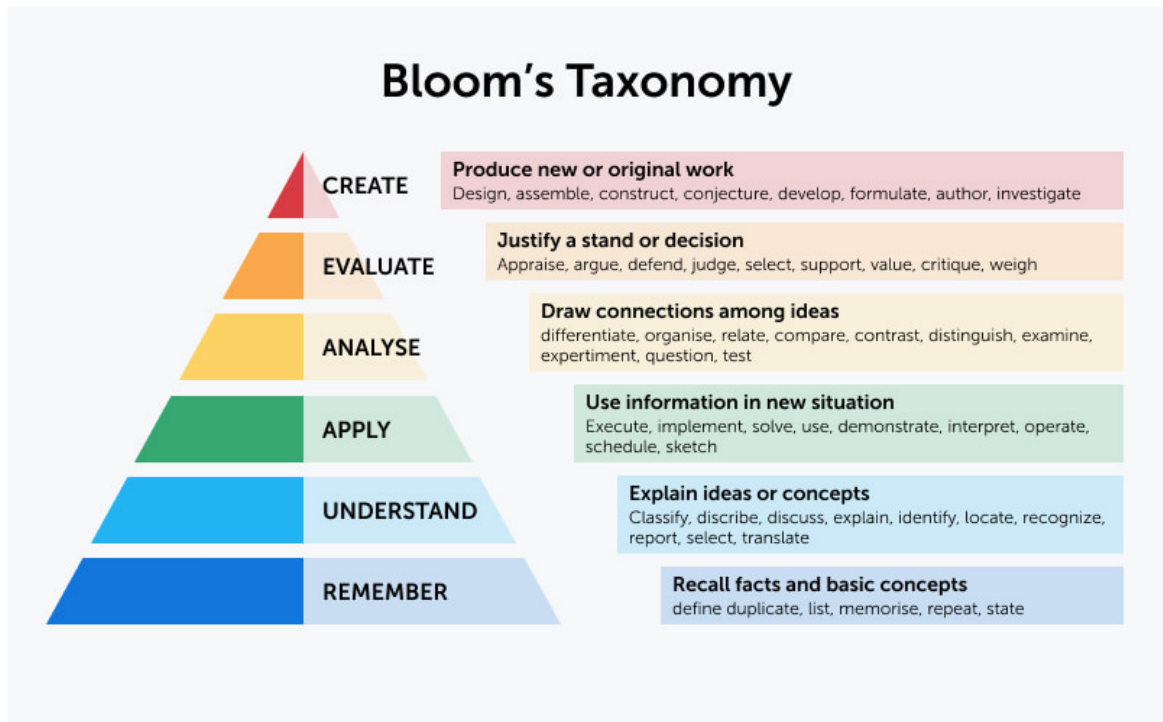
Examples of Learning Outcomes Verbs for instruction include:

- Remember   : Define, List, Recognize
- Understand   : Characterize, Describe, Explain, Identify, Locate, Sort
- Apply   : Choose, Demonstrate, Implement, Perform

- ☐ Analyze   : Analyze, Categorize, Compare, Differentiate
- ☐ Evaluate   : Assess, Critique, Evaluate, Rank, Rate
- ☐ Create   : Construct, Design, Formulate, Organise, Synthesize

Verbs to Avoid:
- ☐ Understand
- ☐ Appreciate
- ☐ Know about
- ☐ Become familiar with
- ☐ Learn About
- ☐ Become aware of

5. Method of Teaching

It is important that the method of teaching a teacher should use has to be in such a way that the majority of the students attain the intended level. The method of teaching affects the effectiveness of teaching. Scientific studies show that f*or man- students learning lecturing is not effective*

5.1 Research Based Instructional Strategies (RBIS):

Research says that the following methods are efficient.

Active learning, Co-operative learning, Informal Co-operative learning, formal co-operative learning, Collaborative learning, peer instruction, just-in time teaching, problem based learning, co-operative problem based learning, project based learning, inquiry based learning, challenge based learning, Process Oriented Guided Inquiry Learning,(POGIL), Team based learning, Studio Physics, Jigsaw, case based learning, service learning, project based service learning, think-pair-share, think-aloud paired problem solving, discovery learning, structured controversy, concept tests, question driven learning, peer led team learning (PLTL), Tutorials in introductory Physics, Small Group Learning, Workshop Physics, Formative Assessment

Such teaching strategies proved efficient based on scientific research are termed as Research Based Instructional Strategies. It is to be noted that Lecture Method is not included in the list of RBIS.

5.1.1 Why RBIS?

There was a meta study (study on study) on RBIAS and the results confirmed that that no need for further study to prove that RBIS effective. The effectiveness of RBIS is primarily based on the fact that,

LEARNING DOUBLES FOR INTERACTIVE CLASSES COMPARED TO TRADITIONAL CLASSES

Halpern et al. states that "The primary take away from research on RBIS is that student learning success depends much less on what instructors do than what they ask their students to do (Halpern & Hakel, 2003)"

In RBIS, teachers focus not on lecture but on students doing part.

5.1.2 Choosing a teaching Strategy

Teaching strategy should be chosen such that your teaching strategy involve learner centered activities matching with the level targeted.

5.1.3 Some teaching strategies:

a) Flipped Classroom Approach

Traditional Approach	Flipped Approach
Before first class: students do nothing	Before first class: Students are introduced (get an exposure) to the topic via video, readings,…
During first class on topic: Teacher introduces topic	During first class on topic: -Students work on exercises to practice learning outcomes -feedback is provided
After first class on topic: Students work on homework	After first class on topic: Students work on homework

In Flipped classroom, no lecture is given in the class, instead lecture is provided as video, which students have to listen before coming to class. It is important that the lecture duration should be less than 10 min taking into consideration of the normal retention time (10-15 min) in human beings.

In the classroom, the teacher has to assign task to all students not to a few, like write 5 questions based on the video.

b) Problem Based Learning Instructional Strategy (PBL)

   i.   Students are presented with a complex, ill-structured problem
  ii.   Students work to define the problem and to identify what they know that is relevant to the problem. They also identify what they need to know and how they will learn it.
 iii.   Students engage in learning, independently and then discuss among themselves (online) to share learning and to use their existing and new knowledge to formulate solutions. They assess the quality of their proposed solutions and decide what additional learning is needed to select and refine their solution.
  iv.   The cycle is repeated until the students arrive at an acceptable solution, which they then present online in written and oral forms.

The challenge here is that the teacher has to find an open ended problem and after all he/she has to suppress his innate urge to teach, instead guide only, so that whole learning comes from student.

5.1.4 Why PBL?

PBL can convert an Unengaged student to Expert Level through a quick process (process emphasis method), while Lecture converts an Unengaged student to high content, low process only (content emphasis method)

	Process	
Content	(High Content, Low Process)	(High Content, High Process) **Experts**
	(High Content, Low Process) **Unengaged**	(High Content, Low Process)

6. Evaluation of Learning Outcome

The teacher has to confirm that the learning outcome has been attained by the majority of students. Evaluation methods can be broadly classified intotwo:

a) Formative Assessment: This is done during the learning is formed. The student has to pay no penalty for wrong answers in formative assessment. Eg: Questions asked after a teaching method.
b) Summative Assessment: Here the student has to pay for wrong answers. Eg: End Semester Exams, Internal Exams, Viva-voce

It is important that in both cases the teacher should assess ONLY the outcomes designed.

6.1 Assessment Plan: Rubric

For effective assessment a teacher should have an assessment plan for the Learning Outcomes for the Course. The method through which you are planning to conduct the Assessment is termed Rubric. *Eg: Assessment of Viva-Voce, Assignment, Problem Solving etc through proper scoring*

6.1.1 Outcome Assessment Components

Steps which underline the assessment of students learning:
1. Develop learning objectives/outcomes
2. Check for alignment between the curriculum and the objectives/outcomes
3. Develop an assessment plan
4. Collect assessment data
5. Use results to improve the programme
6. Routinely examine the assessment process and correct, as needed

Students learning outcomes should derive from the objectives which flow from the goals and mission of the programme

7. Flow Chart for Implementation of LOCF

Step 1: Prepare PEOs that address programme mission. PEOs are responsivetothe expressed interests of programme stakeholders

Step 2: Formulate a set of POs (knowledge, skills and attributes graduates should have)

Step 3: Frame Curriculum, Courses and Cos that address the POs and in turn the PEOs

Step 4: The programme must evaluate student performance, advise, students regarding curricular and career matters, and monitor student progress to foster their success in achieving programme outcomes thereby enabling them as graduates to attain programme objectives

Step 5: Develop a system with built-in Continuous Improvement Mechanism (Institutionalization of continuous Improvement) and assessment processes at all levels.

8. Responsibilities of a Faculty Member in LOCF

i.   Formulate the learning outcomes and finally the course outcomes
ii.   Teach the course to enable the students attain the course outcomes
iii. Examine the students whether the course outcomes have been attained.
iv.   Improve continually the course outcomes so that they in turn foster the programme outcomes.

9. LOCF: Advantages for Instructors, Educational Developers, Administrators and Students

1. To enhance the equality of teaching and learning
2. To ensure the approval and accreditation of new and existing programmes
3. To ensure the accountability and quality assurance
4. To take responsibility for their own learning
5. To articulate the knowledge, skills and experience acquired during their programme
6. It is a framework for collaborative curriculum planning
7. It is a tool for evaluating and improving the curriculum.
8. To encourage continually between undergraduate, postgraduate and continuing education

Conclusion

A Paradigm shift to Learning Outcomes Based Curriculum Framework (LOCF) and Intended Learning is necessary to result in Empowerment-oriented approach to learning, through the formulation of unique Programme Outcomes (POs), Programme Specific Outcomes (PSOs), and Course Outcomes (COs) of contemporary relevance. Under LOCF students are expected to be able to do more challenging tasks other than memorize and reproduce what was taught.

Plan the learning outcome

Plan how I conduct class?

Plan how I assess

Analyse the result of assessment
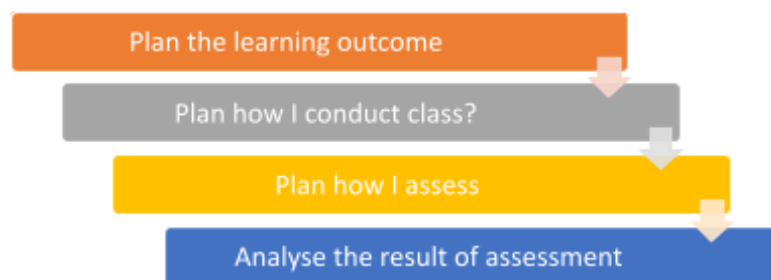
The Learning Process:

- o Guide the learner:
    - ▪ Be sure that students know the PEOs, POs, Curriculum and Assessment Process.
- o Develop a structured hierarchy of content:
    - ▪ Content needs to include concepts, applications and problem solving.
- o Use images and Visual learning
- o Ensure that the student is active
- o Requires Practice

Teachers should be able to:

(a) properly design learning outcomes that majority of students should attain through their instruction
(b) adopt suitable teaching methodology (apart from conventional lecture method) so that the desired learning outcome is attained by majority of students
(c) assess and evaluate the attainment of Learning outcomes

Appendix I: Format for Preparing Teaching Plan Based on LOCF

Academic Year:
Name of Teacher:
Department:
Programme:
Class:
Semester
Course:

Month & Year	No. of hours per week	Topic	Expected Learning Outcomes	Method of Teaching	Evaluation Plan
August 2020			Able to explain………	Power point Presentation, Explanation Youtube videos	Oral Test, Quiz, Assignment
Septembe r 2020			Able to solve problems on ………	Power point Presentation, Explanation Youtube videos	Oral Test, Quiz, Written Test
October 2020			Able to analyse ………….	Youtube Videos, Explanation, Powerpoint presentation	Oral Test
November 2020			Able to differentiate between ……………	Youtube Videos, Powerpoint presentation, Expalanation	Oral test, Quiz
December 2020			Able to apply ………….	Group Discussion, Powerpoint Presentaion, Youtube videos	Oral Test, Quiz, Written Test

Signature of Course Co-ordinator   Signature of HOD