IQAC Webinar Series

Webinar 7: **Outcome based Education-Best practices**
For faculty members of University departments

18TH March 2021
MS TEAMS – “IQAC WEBINAR”

**RESOURCE PERSON**

Prof. S. Baskar
Dean R&D
Thiagarajar College of Engineering, Madurai

Organized by

**INTERNAL QUALITY ASSURANCE CELL**
Ph: 22357027, email: iqac@annauniv.edu
URL: www.annauniv.edu/iqac

**ANNA UNIVERSITY**
CHENNAI – 600025.
<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Description</th>
<th>Page No.</th>
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Report on the webinar titled “Outcome based Education-Best practices” on 18.03.2021 from 3.30PM to 5.00PM, Organized by IQAC for all faculty members of Anna University.

The Internal Quality Assurance Cell organized Webinar titled “Outcome based Education-best practices” on 18th March 2021 from 3.30PM to 5.00PM for the benefit of the faculty members of Anna University – University Departments. The invited speaker, Prof.S.Baskar, Dean R&D, Thiagarajar College of Engineering, Madurai, presented the webinar through online mode using MS TEAMS virtual platform. Around 80 faculty members from the four campuses (CEG, MIT, ACT and SAP) of Anna University attended the webinar.

Prof.Kurian Joseph, Director-IQAC welcomed the gathering and outlined the need for Outcome based Education, from the perspective of quality improvement, ranking and accreditation. He thanked the speakers for readily accepting the invitation to present the webinar. Prof.K.V.Radha, IQAC ACT Campus Coordinator and the coordinator for the Webinar introduced the speakers to the audience.

The speaker Prof.S.Baskar, made his presentation highlighting the following points:

- Outcome Based Education (OBE)
- OBE- Teaching and Learning
- Traditional Education
- Benefits of OBE
- Outcome Based Accreditation (OBA)
- Programme Educational Objectives (PEOs)
- Graduate Attributes (GAs)
- Course Outcomes
- Traditional Curriculum Design
- Assessment method and Tools

Prof.K.V.Radha, IQAC ACT Campus Coordinator cum Webinar Coordinator thanked the speakers for the highly relevant and informative sessions. She also expressed thanks on behalf of the IQAC team to the audience for their attentive and active participation in the webinar.

A Q&A session was conducted from 4.45PM to 5.00PM and the participants clarified their queries from the speakers. The Webinar concluded at 5.00PM with the Director-IQAC thanking the speakers, IQAC team and the participants.
Internal Quality Assurance Cell  
Anna University, Chennai-600025.  
Ph: 044 2235 7027, E-mail: iqac@annauniv.edu

Dr. Kurian Joseph,  
Director – IQAC

Lr. No. AU/IQAC/2020-21/2021/Webinars/March-001  
Date: 22/02/2021

Esteemed Professor,

Sub: IQAC – Conduct of Webinar Series on Quality related topics in March 2021 – Approval requested – Reg.

*****

As part of the quality sustenance and enhancement activities, IQAC conducted the Webinars in February 2021. It is proposed to conduct a series of 4 webinars, each of duration 1.5 hours, during March 2021, on various quality related topics for the benefit of all faculty members as per the following details:

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Date</th>
<th>Title of the Webinar</th>
<th>Resource Person</th>
<th>Coordinator(s)</th>
</tr>
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</table>
| 01     | 04.03.2021      | Innovation and Entrepreneurship Ecosystem : The way forward | Prof. R.Saravanan,  
Director – CED, Anna University.  
&  
Dr. Sangeeta maini,  
Startup Analyst – CED,  
Anna University. | Dr. S. Meenakumari  
IQAC CEG Campus coordinator |
| 02     | 11.03.2021      | Human Values based mentoring of Students                  | Prof. Ranjani Parthasarathy,  
Professor - DIST,  
CEG Campus, Anna University. | Dr. M. Balamurugan,  
IQAC MIT Campus Coordinator |
| 03     | 18.03.2021      | Outcome Based Education – Best Practices                  | Prof. S. Baskar,  
Professor, Dean-R&D,  
Thiagarajar College of Engineering,  
Madurai- 625015. | Prof. K.V.Radha  
IQAC ACT Campus coordinator |
| 04     | 25.03.2021      | Documentation requirements for Quality Assurance          | Prof. T. Thyagarajan,  
Dean – MIT Campus,  
Former IQAC Director,  
Anna University. | Dr. Sabitha  
Ramakrishnan,  
Deputy Director - IQAC |
It is proposed to make the following arrangements for conducting the above webinars:

Duration of the webinar: 15:30 Hrs to 17:00 Hrs (1.5 hours)

Webinar platform: MS Teams - "IQAC Webinar"

Target audience: All faculty members of University Depts

It is requested that approval may please be granted to conduct the webinars as per the above schedule and pay an honorarium of Rs. 1500/- (Rupees One Thousand and Five Hundred only) per session for the Resource Person invited from other institution (Prof. S. Baskar, Professor, Dean-R&D, Thiagarajar College of Engineering, Madurai).

DIRECTOR - IQAC
REGISTRAR

VICE CHANCELLOR
ANNA UNIVERSITY
CHENNAI, 600025
Ph: 044-22352161/7004, E-mail: registrar@annauniv.edu, URL: www.annauniv.edu

Lr. No. AU-IQAC/11547/Webinar/Mar-2021-003  Date: 15.03.2021

CIRCULAR

To
Deans of Campuses
Directors of Academic Centres
HODs of Departments

Sub: Webinar series titled “Outcome based Education-best practices” on 18.03.2021 from 3.30PM-4.30PM for all faculty members of Anna University – Reg.

Ref: Lr.No.AU/IQAC/2020-21/Webinars/March-001 dated 22.02.2021 approved by Vice Chancellor

*****

As part of the quality sustenance and enhancement activities of IQAC, Webinar series - The following webinar is being organized by IQAC for the benefit of all the faculty members as per the following Details:

<table>
<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>3.15PM - 3.30PM</td>
<td>Registration</td>
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</tbody>
</table>
| 3.30PM - 3.32PM | Welcome Address  
Dr.Kurian Joseph  
IQAC Director, Anna University |
| 3.32PM - 3.34PM | Introduction of Speaker  
Prof.K.V.Radha  
IQAC ACT Campus Coordinator, Anna University |
| 3.34PM - 4.25PM | Session by Speaker  
Topic “Outcome based Education-best practices”  
Prof.S.Baskar, Professor, Dean R&D,  
Thiagarajar College of Engineering, Madurai |
| 4.25PM - 4.29PM | Question and Answer Session                                             |
| 4.29PM - 4.30PM | Vote of Thanks  
Prof.K.V.Radha  
IQAC ACT Campus Coordinator, Anna University |

All faculty members have been included in the MS Teams group “IQAC Webinar”. The faculty members are requested to join the webinar through this group, without fail and get benefitted from the lecture.

CC:
1. Prof.S.Baskar, Dean R&D, TCE-Madurai.
2. Director-IQAC, IQAC-Coordinators of the programme
3. PA to Registrar.
4. PS to VC.
Title of Webinar : Outcome based Education-best practices
Resource Person : Prof.S.Baskar, Dean R&D, Thiagarajar College of Engineering, Madurai
Date of Webinar : 18th March 2021

Programme Schedule

<table>
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<tr>
<td>3.15PM - 3.30PM</td>
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<tr>
<td>3.34PM - 4.25PM</td>
<td>Session by Speaker Topic “Outcome based Education-best practices&quot; Prof.S.Baskar Dean R&amp;D, Thiagarajar College of Engineering, Madurai</td>
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<tr>
<td>4.25PM - 4.29PM</td>
<td>Question and Answer Session</td>
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<tr>
<td>4.29PM - 4.30PM</td>
<td>Vote of Thanks Prof.K.V.Radha IQAC ACT Campus Coordinator, Anna University</td>
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</tbody>
</table>
Prof. S. Baskar received his Bachelor’s Degree in Electrical and Electronics Engineering with distinction from Madurai Kamaraj University, Madurai in the year 1991. He finished his Masters in control and instrumentation with distinction from college of engineering, Guindy, Anna University Chennai in the year 1993. He obtained his Ph.D. in the area of hybrid evolutionary algorithms from Madurai Kamaraj University, Madurai, India, in 2001. He has completed his post-doctoral research in the area of Evolutionary Computation and its applications at Nanyang Technological University (NTU), Singapore under BOYSCAST fellowship during 2003–2004, supported by Department of Science and Technology (DST), Govt. of India. He has been serving as faculty of Electrical & Electronics Engineering in Thiagarajar college of Engineering, Madurai, since 1994 where he is now working as professor & Dean (Research & Development).

His current research interests include the development of new evolutionary algorithms and its applications to complex, real-world optimization problems. He has published over 100+ papers in International / National Journals in the area of evolutionary optimization and applications. He is the Recipient of Gold medal for the best research paper in Journal of Institution of Engineers (India), Computer Engineering Division in the year 2001. His Google Scholar h-index, i10-index and citations are 6743, 32 and 63 respectively as on 22nd Feb. 2021. Fourteen research scholars completed Ph.D degree from his supervision and five scholars doing Ph.D research currently in the major areas of evolutionary optimization.

He has been Principal Investigator in the Project titled “Design and fabrication of Magnetostrictive position sensor for control rod drive mechanism (CRDM)” supported by Bhabha atomic research centre, Mumbai and also major research project titled "Evolutionary algorithm based Computationally expensive problem solving using surrogate models " supported by UGC, New Delhi. He is a senior member of IEEE, Fellow of Institution of Engineers (India) and Life Member of the Indian Society for Technical Education.
He is the reviewer for various international journals in the major area of soft computing. He has delivered more than 100 invited lectures in conferences/workshops. He has conducted several Conferences and Short-term training programmes in the area of "Evolutionary optimization and applications"

He has visited several engineering colleges as programme evaluators of NBA visiting team for the evaluation of the programmes. He served as an Expert member/Master Trainer of OBE/OBA training organized by NBA. He is one of the members of the documentation team, who prepared Washington Accord approved Tier- I document for NBA accreditation. He has acted a Resource person to various orientation programmes/workshops on “Outcome Based Education and Accreditation” organized by the NBA. He is also a former member of the Engineering Accreditation Evaluation Committee [EAEC] and Moderation committee of National Board of Accreditation (NBA), New Delhi.

He has attended CDIO- (Conceive, Design, Implement, and Operate) international conferences/meeting at Singapore polytechnic, Singapore, Chengdu Technical University, Chengdu-China, Kanazawa Technical University, Kanazawa-Japan, Duy Tan University-Vietnam, Alliance Neusoft University, Dalian-China, and Denmark Technical University, Aalborg University, Aarhus University Denmark. He has also attended University Power Engineering conference (UPEC) at Staffordshire University, UK.

He has attended MHRD sponsored 3-week academic leadership programme (LEAP) organized by NIT -Trichy, IIIT- Sri City and NTU-Singapore during Feb-March, 2019. He has completed IUCEE International Engineering Educators Certification Program (IIEECP) with distinction. He has completed popular teaching and learning MOOCs courses such as “Learning How to learn” and “Learning Sciences – What every teacher should know”. He has conducted more than 100 workshops in OBE, modern pedagogy and OBA since October 2012.

**TOPIC HANDLED IN WEBINAR**: Outcome based Education-best practices

**DATE AND TIME OF SESSION**: 18th March 2021, 03.30PM to 04.30PM
Anna University - IQAC - Invitation to be a Resource Person for the Webinar session on 11th or 18th March 2021

From: <iqac@annauniv.edu>
To: <sbeee@tce.edu>
Cc: Registrar <registrar@annauniv.edu>, IQAC 3 (Director) <kuttiani@gmail.com>, Muthan_s <muthan_s@annauniv.edu>, IQAC CEG 2 <smeenasankar@yahoo.com>, IQAC CEG 1 <smeenakumari@annauniv.edu>, IQAC 4 (DD 2) <sabitha.ramakrishnan@gmail.com>, IQAC 4 (DD) <rsabitha@annauniv.edu>

Date: 2021/02/19 12:22

Kind Attention:

Dr. S. Baskar,
Professor, Dean-R&D,
Department of Electrical and Electronics Engineering,
Thiagarajar College of Engineering,
Madurai-625015.

Dear Professor,

Greetings from Anna University!

The Internal Quality Assurance Cell (IQAC) of Anna University conducts various activities to enhance the quality of teaching and learning of faculty members in our campus. As a part of it, IQAC is proposed to conduct a webinar with focus on "Outcome Based Education".

In this context, may I cordially invite you to be a Resource Person for the Webinar session and deliver a talk on the title "Outcome Based Education" on 11th or 18th March 2021 through online mode (MS Teams platform) for a duration of 50 minutes (3:30pm to 4:20pm). The date shall be finalized depending on your confirmation. The participants will be Anna University faculty members.

The session will be organized Online in MS Teams Platform under the Team "IQAC Webinar", the link for the same will be shared after confirmation.

We are looking for a positive response and gracious presence.

Thanking you and with regards,

--

Thanks and Regards
Prof. Dr. Kurian Joseph
Director-IQAC
Anna University, Chennai,
Tamil Nadu-600025.
## Attendance on IQAC Webinar

**“Outcome based Education-Best practices”**

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<th>Designation</th>
<th>Timestamp</th>
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<td>Prof. Baskar (Guest)</td>
<td>Dean R&amp;D, TCE-Madurai</td>
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<td>2</td>
<td>Prof. KURIAN JOSEPH</td>
<td>Director-IQAC</td>
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<td>3</td>
<td>Dr. Sabitha Ramakrishnan</td>
<td>Deputy Director-IQAC</td>
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<td>Dr. K.V.RADHA</td>
<td>IQAC ACT Campus Coordinator</td>
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<td>5</td>
<td>Dr. G. Balamurugan</td>
<td>IQAC MIT Campus Coordinator</td>
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<td>Prof. R.SENTHIL</td>
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<td>Dr. L S Jayakumari</td>
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<td>13</td>
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<td>20</td>
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<td>Dr. S. Subramanian</td>
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<td>31</td>
<td>Dr. S.MANISHA VIDYAVATHY</td>
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**Total Number of Participants: 80**

**Date: 18.03.2021**
# Attendance on IQAC Webinar

## "Outcome based Education-Best practices"

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<td>Dr. S.VASUHI</td>
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## Attendance on IQAC Webinar

**“Outcome based Education-Best practices”**

**Total Number of Participants: 80**

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Session Outcomes

After the successful completion of webinar, participants will be able to:

- Appreciate the role of OBE in improving the quality of education
- Explain the key parameters of OBE
- Explain the various activities of OBE
- Explain the role of Blooms Taxonomy in OBE implementation
- Summarize the various best practices in OBE implementation
Outcome Based Education (OBE)

- Starting with a clear picture of what is important for students to be able to do...
- Then organizing the curriculum, delivery and assessment to make sure learning happens...

Keys of OBE System
(William G. Spady)

- Developing a clear set of learning outcomes around which all of the system's components can be focused
- Establishing the conditions and opportunities within the system that enable and encourage all students to achieve those essential outcomes
- Having learners do important things with what they know is a major step beyond knowing itself
OBE Teaching & Learning

- There is no single specified style of teaching or assessment in OBE; instead, classes, opportunities, and assessments should all help students achieve the specified outcomes.

- The role of the faculty adapts into instructor, trainer, facilitator, and/or mentor based on the outcomes targeted.

Course, Degree, Programme

- **Course**
  - Course is a **unit of teaching**, which encompasses various topics, that typically lasts one semester, is led by one or more faculty and has a fixed registered students.

- **Programme**
  - Cohesive arrangement of courses, co-curricular and extra-curricular activities to accomplish predetermined objectives leading to the awarding of a degree.

- **Degree**
  - Academic award conferred upon a student on successful completion of a program designed to achieve the defined attributes.
Outcome Based Education

- What students will be able to do by the time and after few years of graduation?
- ‘Learner Centric’, rather than the traditional ‘Teacher Centric’
- Continuous improvement in the educational (Teaching-Learning) process
- Preparing Graduates to fit themselves globally
- Effective and innovative Content delivery methods, assessment methods and procedures
- Enrichment of Faculty involvement in the Teaching-Learning Process

Traditional Education

Measureable Input

- financial resources
- lab equipment
- Infrastructure facilities
- faculties
- Number of students

Measureable Outputs

- Number of students graduating
- quantitative grades of students
- Number of students placed
Outcome Based Education

Measureable Inputs
- financial resources
- lab equipment
- Infrastructure facilities
- faculties
- Number of students

Course outcomes
Knowledge, skills and behaviour of students graduating
career and professional accomplishments of graduates

Measurable Outcomes

Input-Output-Outcomes

- Input - infra, students, financial resources, faculty ...
- Output- Average CGPA, Number of students graduated, number of students placed, ...
- Outcomes – accomplishment of output
  Course outcomes (COs), Programme outcomes (POs), Professional outcomes (or) PEOs

Some examples of outcomes
Benefits of OBE - Teacher

- Teaching will become a far more creative and innovative career.
- Lecturers will no longer feel the pressure of having to be the “source of all knowledge”
- *Producing thinking, caring students.*

OUTCOME BASED ACCREDITATION (OBA)

- Programmes to be accredited from March 2013 onwards will have to be based on OBE approach!
- **NO OBE = NO ACCREDITATION**
OBE - 5 D's

- Define Outcomes
- Design Curriculum
- Deliver Instruction
- Document Results
- Determine Advancement

OBE Assumptions

- all learners can learn and succeed;
- success breeds success; and
- “teaching institutions” control the conditions of success.
Key Components of OBE

- Vision and Mission of the Institute
- Vision and Mission of the Department
- Programme Educational Objectives (PEOs)
- Graduate Attributes (GAs)
- Programme Outcomes (POs)
- Course Outcomes (COs)
- Programme Specific Criteria

VISION AND MISSION OF THE INSTITUTION

Vision:
- Vision is a picture of the future you seek to create, described in the present tense, as if it were happening now. It shows where we want to go, and what we will be like when we get there.

Mission:
- Mission statement defines what an institution is, why the institution exists, its reason for being. It defines what are we here to do together
Department - VISION AND MISSION

- The vision and mission of the department should be correlated with the mission and vision of the institution.
- more focused on the theme area and based on the SWOT analysis.
- A mission statement might include a brief history and philosophy of the academic programme, the type of students to be served, the academic environment and primary focus of the curriculum, faculty roles, the contributions to and connections with the community, the role of research.

Programme Educational Objectives (PEOs)

- PEOs are broad statements that describe the career and professional accomplishments that the programme is preparing graduates to accomplish after 3 to 5 years of graduation.
- PEOs should be measurable, appropriate, realistic, and achievable.
- PEOs addresses needs of the stakeholders
Program Educational objectives (PEOs) – An Example

- **Successful Careers** (PEO#1): Graduates of the programme will have successful technical or professional careers.

- **Lifelong Learning** (PEO#2): Graduates of the programme will continue to learn and to adapt in a world of constantly evolving technology.

Graduate Attributes (GAs)

- A set of individually assessable outcomes that are the components indicative of the graduate’s potential to acquire competence to practice at the appropriate level.

- The GAs are exemplars of the attributes expected of a graduate from an accredited programme.

- International Engineering Alliance – IEA
  Washington Accord (UG-Engg), Sydney Accord (Diploma), Dublin Accord (ITI)

- Seoul Accord - Computer professionals
Summary of Graduate Attributes

- Engineering knowledge
- Problem analysis
- Design & Development of Solutions
- Investigation of Complex Problem
- Modern tool usage
- Engineer and society
- Environment & sustainability
- Ethics
- Individual & team work
- Communication
- Lifelong learning
- Project management & finance

IEA-Graduate Attributes Ver-3.0

- **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

- **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one’s own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

- **Life-long learning**: Recognise the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.
Course Outcomes

- The course outcomes must state the **major** skills, knowledge, attitude or ability that students will acquire.
- Course outcomes should be expressed in terms of measurable and/or observable behaviors.
- Course Outcomes should be agreed upon by the faculty in a program and should drive program outcomes.
- Course outcomes should begin with an action verb (e.g., write, install, solve, and apply).

OBE Design

![OBE Design Diagram]

- **Vision**
- **Mission**
- **Programme Educational Objectives (PEO)**
- **Programme Outcomes (PO)**
- **Graduate Attributes**

Course Outcomes 1
Course Outcomes 2
Course Outcomes 3
Mapping between PEOs, POs and COs

Bloom’s Quote

- Global Language for Education

“The purpose of education is to change the thoughts, feelings, and actions of students.”
Three Learning Domains --KSA

- **Cognitive Domain**: involves knowledge and the development of intellectual skills.
  (ex: recognition of specific facts)

- **Affective Domain**: includes the manner in which we deal with things emotionally
  (ex: feelings, appreciations, etc.)

- **Psychomotor Domain**: involves physical movement, coordination, and use of the motor skills (ex: perception & response)

Cognitive Learning - Taxonomy

Bloom (1956) proposed that knowing is composed of six successive levels arranged in a hierarchy:

1. Knowledge
2. Comprehension
3. Application
4. Analysis
5. Synthesis
6. Evaluation

In order to get to the highest level of the cognitive taxonomy, which is evaluation, the student would need to have the necessary knowledge in all the other levels below Evaluation.
Blooms Expectations

K1- Ability to recall or remember facts even without clear understanding

K2- Ability to interpret and able to write on their own

K3- Ability to apply the concept to solve problems in new situations

K4- Ability to breakdown the information into tiny components looking for interrelationship

K5- Ability to put parts together

K6- Ability to judge the value of information

Revised Blooms Taxonomy

Original Terms  New Terms

- Evaluation  • Creating
- Synthesis  • Evaluating
- Analysis  • Analysing
- Application  • Applying
- Comprehension  • Understanding
- Knowledge  • Remembering

(Based on Pohl, 2000, *Learning to Think, Thinking to Learn*, p. 8)

Blooms Knowledge Levels

We must **remember** a concept before we can **understand** it.
We must **understand** a concept before we can **apply** it.
We must be able to **apply** a concept before we can **analyze** it.
We must have **analyzed** a concept before we can **evaluate** it.
We must have **remembered, understood, applied, analyzed,** and **evaluated** a concept before we can **create.**
Traditional Curriculum design

- Based on previous curriculum
- Incremental changes – mostly addition/deletion of topics, change of books etc., removal of certain course, introduction of new courses
- Accumulation of courses /credits
- Text book centered
- Faculty centric
- Focus on Contents

Traditional Curriculum design – Problems

- Depth is not clearly defined
- Not a holistic approach
- No Comprehensive assessment
- Common Assessment pattern for all courses
- Subjectivity in selection of delivery methods
- No credits for Cocurricular and extra curricular activities
- Only Knowledge focused
- More Content
Content delivery

- Lecture
- Lecture with discussion
- Demonstrations
- Group discussion
- Debate
- Technical Quiz
- Seminar
- Mini-project
- Asynchronous discussions

Assessment methods and tools

- **Direct Assessment Method**: using measurable performance indicators of students
  - Exams
  - Assignments
  - Projects
  - Tutorials
  - Labs
  - Presentations

- **Indirect Assessment Method**: Ascertain opinion or self-reports
  - Alumni survey
  - Employer survey
  - Exit survey
  - Course-end survey, etc.,
Administrative System-OBE

- **Course Coordinator**
- **Module Coordinator**
- **Program Assessment Committee**
- **Program Coordinator**
- **Department Advisory Board (DAB)**
- **Internal Quality Assurance Cell (IQSC)**

References

- **William G. Spady, Francis Aldrine A.,** Outcome-based Education Critical Issues and Answers, American Association of School Administrators, 1994
Screenshot taken during the webinar

Registration on webinar

Welcome address by Dr. Kurian Joseph, Director-IQAC
Introduce the speaker by Prof. K.V. Radha IQAC Coordinator

Presentation by Prof. S. Baskar, Dean R&D, TCE-Madurai

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Summary of Graduate Attributes

- Engineering knowledge
- Problem analysis
- Design and development of solutions
- Investigation of complex problems
- Computer-aided design
- Environment sustainability
- Ethics
- Individual and team work
- Life-long learning
- Professional and ethical responsibility
Vote of thanks by Prof. K.V. Radha IQAC Campus Coordinator