Interpreting and Actualizing Learning Outcomes

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NBA INITIATIVES

- Launching Outcome Based Accreditation
- Exhaustive Background Information
- Detailed Information for Self Assessment and Programme Evaluation
- Large number of Nodal centres and training workshops
- Highly Transparent system with little scope for corruption
- International Visibility
- New Norms and Standards are applicable since July 2013.

Concept of Outcome Based Education

In a traditional education system,

- Students are given grades and rankings compared to each other.
- Content and performance expectations are based primarily on what was taught.

Outcome-based education (OBE) bases each part of an educational system around goals (outcomes).

- By the end of the educational experience each student should have achieved the goal.
- Classes, opportunities, and assessments should all help students achieve the specified outcome.
- Students will understand what is expected of them and teachers will know what they need to teach without specifying a specific method of instruction, recognizing diversity among students. Meant to be a student-centered learning model.
- Students are expected to do their own learning, so that they gain a full understanding of the material.
- Increased student involvement allows students to feel responsible for their own learning, and they should learn more through this individual learning

Drawbacks of OBE

- Outcomes are subject to interpretation across different programs or even different instructors.
- A holistic approach to learning is lost.
- Learning can find itself reduced to something that is specific, measurable, and observable.
- Assessments may become too mechanical, looking only to see if the student has acquired the knowledge.

- Assessors must be willing to put in the time required to create a valid, reliable assessment, that ideally would allow students to demonstrate their understanding of the information, while remaining objective.
- Assessing liberal outcomes such as creativity, respect for self and others, responsibility, and self-sufficiency, can become problematic.
- There is not a measurable, observable, or specific way to determine if a student has achieved these outcomes.

Attributes of Learning Outcome

- ABET and NBA Similarity
- Knowledge of Maths; Science and Engineering;
- Problem Analysis; Design and Development of Solutions;
- Investigation of Complex Problems;
- Modern Tool Usage;
- Societal Concerns; Environmental Sustainability; Ethics;
- Individual and Team work; Communications;
- Project management and Finance;
- Life long Learning.

Implied Tasks

- Formulation of Programme Objective with participation of all stakeholders
- Assessing Programme outcome Equipping students with knowledge, skills and attitudes relating to specified outcomes
- Developing instructional techniques and assessment procedures to prepare students to achieve those outcomes

Creating a Course

- Planning and identifying course content and defining measurable objectives
- Selecting and implementing instructional methods to achieve the specified objective
- Selecting assessment methods that can show whether the objectives have been achieved.

Expectations

- Nationwide Curricular revamping; Changing content driven courses.
- Developing a coherent curriculum in tune with the institutional and programme mission.
- Responsive to interests of all stakeholders
- Energizing all the faculty to understand the goals and approaches and ensure their full involvement.
- Not left only to those preparing SSRs

Illustration

- The video lectures and course descriptions such as OCW-MIT or SEE-Stanford.edu are the best examples of programme objectives and learning outcomes.
- Senior Professors handling First Year Courses; Clear introduction to objectives and outcome
- Advance intimation about teaching methods and assessment procedures.
- Video Lectures available for repeated viewing. Can be useful for Evaluation during Accreditation visits.

Programmes and Courses

- A Programme consists of several courses.
- Each course has specific course objective and learning outcome.
- Sum of all these constitute programme objective and programme outcome.
- Each course teacher sets own objective and outcome.
- Website should outline all courses of a programme and corresponding objectives and outcome, textbooks, honor code, plagiarism policy, etc.

Types of Institutions

- IITs, IISc, IIITDM, IISERs, IIITs, NITs, CUs, State Universities (running Programs in their campuses)
- Private universities, Deemed Universities, Affiliated Colleges, Autonomous Colleges, Constituent colleges
- Estimated no. of programmes : > 30000
- Directions to fulfill demand not clear

AICTE Approved Institutions 2015–16

Programmes	*UG*	*PG*
Engineering and Technology	3384	2304
Architecture and Planning	117	29
Hotel Management	77	4
Management	-	3452
MCA	-	1344
Pharmacy	1027	834
Applied Arts and Crafts	15	1

Long way to Go

Total number accredited : 247
(Mostly Engineering)
Five year period : 80

Two year period	:	167
No. of NITs	:	71

Shortcomings

- The Centrally funded technical institutions and some autonomous state universities and Colleges can meet the expectations of OBE
- Vast majority of other institutions (universities and affiliated colleges) downplay maths, science and humanities.
- Focus mainly on syllabus and examinations; Learning beyond syllabus is rare
- Innovative forms of teaching and learning and life long learning nonexistent.

Desirable Approaches

- Some of the programme outcomes (eg. Communications, Ethics, Societal Implications, Contemporary issues) should be embedded in every course and not offer special courses
- Lab. Experiments to be innovative and challenging and objective oriented and not manual based verifications.
- Team based lab work with all members equally familiar with every aspect of the experiment.

Questions

- What happens to unaccredited or unaccreditable programmes?
- What is the standing of graduates from unaccredited programmes?
- How to persuade universities and colleges on the scope and value of OBE?
- Is Weightage given to Learning outcome in NBA table adequate?
- Should lack of probity be counted for negative scoring?
- Should undesirable governance practices (eg. Family control) account for negative score?

Dr. M. Anandakrishnan

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Dr. M. Anandakrishnan, obtained his Bachelor of Engineering (B.E) degree in Highway Engineering in 1952 from College of Engg., Guindy, Madras University in 1952 and M.S. Degree in Civil Engineering in 1957 and Ph.D in 1960 from University of Minnesota, USA. While pursuing his studies for Ph.D and for a year after completion, he worked on a part time basis as a teaching assistant in the University also as Research Engineer in a private firm - Twin City Testing and Engineering Laboratories.

On his return to India in 1962 he served first as a Senior Scientific Officer (Grade I) at the Central Road Research Institute in Delhi for a year and moved on to Indian Institute of Technology (IIT) Kanpur in 1963 as a member of the Faculty of Civil Engineering. He served there until 1974 in various academic positions as Assistant Professor, Professor, Senior Professor, Chairman of Civil Engineering Dept., Dean, Acting Director besides as advisor on campus development, Chairman of Central Recruitment Committee for staff members and so on.

In 1974 he went on deputation for five years to the Department of Science and Technology, Govt. of India to be posted as the first Science Counselor, Embassy of India, Washington D.C, a position newly created. After a distinguished service as Science Counselor, he was offered a position as the Chief of New Technologies, in 1978, in the Office of Science and Technology (OST), United Nations, New York. He was promoted as Deputy Director in the Centre for Science and Technology for Development (CSTD), United Nations, New York. During this period he was also the Secretary of UN Adivisory Committee on Science and Technology for Development (UNACAST). He retired from the UN service in 1989 at the age of 62. During his service with the UN he travelled extensively in the continents of Asia, Africa, Europe, Latin America and North America, on development of project proposals as well as seminars and conferences relating to development and application of science and technology for social and economic benefits. He has been associated with more than hundred different international activities since 1974. Some of the activities were after leaving the United Nations service. He was associated with the an International Expert Committee for Strengthening Science and Technology in Brazil during the period 1990 to 1997 supported by the World Bank for which he was honored by the President of Brazil with the Award of Order of Scientific Merit.

On his return to India after UN Service he was appointed as Vice-Chancellor of Anna University, a prestigious State University of Tamil Nadu. He served in this position for two term from 1990 to 1996. There after he was appointed as the Vice-Chairman of the Tamil Nadu State Council for Higher Education (TANSCHE), the State level policy making body on all matters relating to higher education. He concurrently served as the Advisor to The Chief Minister of Tamil Nadu on Information Technology and e-governance and retired in 2001. He is credited with the development and implementation of the 'Single Window admission System' for engineering institutions in Tamil Nadu. He is also responsible for the abolition of Common Entrance Test for admissions to engineering colleges in the State. Though retired from formal positions, he continues to hold several responsibilities in high level policy making bodies in India in a honorary capacity. These include

Chairman, Board of Governors, Indian Institute of Technology, Kanpur for three terms (*From 2006 – Till Date);* Chairman, Higher Education Committee, Federation of Indian Chamber of Commerce and Industries (FICCI), New Delhi, *From 2009 – Till Date:* Member of the Executive Council of Central University Kerala *(From 2009 till date);* Member of the Executive Council of Central University, Haryana *(from 2009 till date)* Member of the Executive Council of Central University, Sikkim *(2007- 2011);* Member of the Executive Council of National University on Educational Planning and Administration (NUEPA), New Delhi *(2005 till date)* and similar positions. He was Chairman of several Academic bodies such as Science City, Tamil Nadu State Science and Technology Centre, Chennai; Madras Institute of Development Studies (MIDS), Chennai; High-Power Committee for the Review and Reorientation of the Undergraduate Engineering Education in India; Board of Undergraduate Studies of AICTE, New Delhi. He has published more than 100 papers in various journals and contributed several articles in edited volumes. The major areas of his current and active interest are related to development of higher and technical education and quality assurance processes. He is actively involved in issues relating to e-contents. He serves on committees relating to higher education policies, regulation and legislation. As Chairman of the Transparency International, Chennai Chapter, he articulates issues on probity and ethics.

His honours and awards include Padma Shri from the President of India (2002); The Order of Scientific Merit from the President of Brazil (1996); Distinguished Leadership Award of the University of Minnesota (2003); Honorary Fellow of the Indian Society for Technical Education (2005); UGC National Swami Pranavananda Saraswati Award in Education (2006); Doctor of Science (Honoris Causa) from Kanpur University (2008); Fellow of the Institution of Engineers, India and Fellow of the National Academy of Sciences, India.