OBE-Student Learning Outcomes

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Outcomes Based Education (OBE)

OBE: Restructuring of curriculum, assessment and reporting practices in education to reflect the achievement of higher order skills (Tucker, 2004).

Aim: to facilitate desired changes within the learners, by increasing knowledge, developing skills and/or positively influencing attitudes, values and judgment. first determine what needs to be achieved.

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OBE is an educational theory that bases each part of an educational system around goals (outcomes).

Each student should have achieved the goal by the end of program.

Not defined specified style of teaching or assessments should all help students achieve the specified outcomes.

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Institutional vision & Mission

Program Outcomes

Student Learning Outcomes

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Purpose of Developing Outcomes

- Modify, outline, and improve quality of programs.
- Assist in meeting accreditation requirements, models of best practices,
- To meet national and global benchmarks
Deciding on the program outcomes

- Why are you offering this program?
- Why are students enrolling in this course?
- What knowledge and/or skills will students gain from taking this course?
Learning objectives vs. outcomes

Learning Objectives: Describe what a teacher needs to teach.
Ex: Students will understand the X and Y concepts

Learning Outcomes: What students to know and or be able to do as a result of completing a particular degree or course or certificate program.
Ex: Students will be able to choose suitable X and Y for respective domain.
Student learning outcomes (SLOs)

- **Levels** (course, program, institution) – What the students to know, think and able to do when they complete a course, major program of study, degree?

- **Institutional Level**: From our campus the graduate can apply quantitative reasoning to real world

- **Program Level**: what students should be able to know, think, or do across all courses within a curriculum.

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Student learning outcomes (SLOs)

- **Course level**: student learning outcomes are more specific and describe achievement expected in a particular course.

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Student Learning Outcomes

Statements
To specify what learners will know, think, be able to do or be able to demonstrate when they complete or participate in a program/activity/course/project.

Outcomes are expressed as knowledge, abilities/skills, attitudes or values.
Student Learning Outcomes

Learning outcomes relate to the mission and goals of your college and/or your department or program.

Learning outcomes define what the graduate should know and be able to do at the end of your program.
Characteristics of SLOs

- They should be:
  - Based on POs: Realistic
  - Student centric: Specific
  - Action oriented: Cognitively appropriate
  - Measurable
  - Meaningful
  - Understandable
  - Achievable

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Why are we doing this?

- Annual **assessment** as the foundation for program review.

- Program review (assessment) are required by **NBA** or other **accreditation body**.

- **NBA** is our accrediting body. If we are not accredited, most students cannot obtain admissions in **world class universities IN FUTURE**.

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How to Write PSLOs

- 5–7 program student learning outcomes (courses or units).
- Identify 2 appropriate assessment strategies for each learning outcome (at least one direct).
- Develop a scoring guide/rubric.
- Identify the criteria for success.
- Identify the course/s where assessment will occur.
- Using words such as “understand,” “demonstrate,” or “appreciate” as they don’t convey clear expectations.
- Use Bloom’s Taxonomy to find appropriate words for your LOs.

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Bloom’s Taxonomy

Cognitive skills

- It involves knowledge and the development of intellectual skills.

- There are six major categories based on degrees of difficulties, which are listed in order in next slide, starting from the simplest behavior to the most complex.
Cognitive skills

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Recalling previously learned information such as facts, terminology, rules, etc.

Answers may be memorized.

Students can list the major theoretical approaches of the discipline (knowledge).

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Comprehension

- Ability to understand the meaning of material.
- Answers must be in the student’s own words using terminology appropriate to the material.
- Students can describe key theories, concepts, and issues for each of the major theoretical approaches (comprehension)

Ex: Differentiate between Engineering and Technology

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Application

- Requires recognizing, identifying, or applying a concept or principle in a new situation or solving a real-life problems.

- Students can apply theoretical principles to solve real-world problems (application).

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Analysis

- Ability to **break (top down)** material down into its **component parts** and to understand its underlying structure.

- May require students to compare and contrast or explain how an example illustrates a given concept or principle.

- Require students to identify **logical errors** or to **differentiate** among facts, opinions, assumptions, hypotheses and conclusions.

- Expected to **draw relationships** between ideas.

- Differentiate, estimate, diagram

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Students can **analyze strengths** and **limitations** of each method or technique for understanding specific phenomena (**analysis**).

**Ex:** **Analyze** a tennis player’s game statistics with data mining techniques and provide effective feedback.
Synthesis

- **Opposite** of Analysis (bottom up)
- Ability to **combine parts** to form a new whole
- To synthesize a variety of elements into an original and significant whole.
- Produce something **unique** or original
- Solve some **unfamiliar problem** in a unique way
- Combine, create, formulate, construct

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Students can **combine** theoretical approaches to explain complex phenomena (**synthesis**).

**Ex:** Produce a strategic plan for a small manufacturing business.

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Evaluation

- Ability to **evaluate** a total situation
- To **judge** the value of material for a certain purpose
- Combining elements of all the other categories and also **value judgments** based on defined, fixed criteria.
- Judge, critique, justify, discriminate

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Evaluation

- Students can select the theoretical approach that is most applicable to a phenomenon and explain why they have selected that perspective (evaluation).

Ex: Analyse and evaluate the theories and applications underlying multiple data collection techniques used in data mining.

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Bloom’s Taxonomy

- **Affective Domain**
  - It deals with things emotionally, such as feelings, values, appreciation, motivations, and attitudes.

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Affective Domain: Example

- Graduates will be able to evaluate educational research critically and participate in the research community and social relevant problems.

- **Display** a professional commitment to ethical practice.

- **Resolve** conflicting issues between personal beliefs and ethical considerations.
Psychomotor Domain

- The psychomotor domain includes **physical movement, coordination**, and use of the motor-skill areas. Development of these skills requires practice and is measured in terms of speed, precision, distance, procedures, or techniques in execution.

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Psychomotor Domain

- **Motor skills** are *motions* carried out when the *brain, nervous system, and muscles* work together.

- **Motor skills** are small movements — such as picking up *small objects* and holding a spoon — that use the small muscles of the fingers, toes, wrists, lips, and tongue.
Psychomotor Domain: Examples

- Perform an ‘exercise to music’ routine that includes a warm-up, developmental and cool-down phase.
- Construct and test a simple circuit using a digital multimeter, a DC power supply and a ‘breadboard’.
Example 1

- Students will be able to use Excel.
- Given a sample dataset, students will use Excel to create a spreadsheet that incorporates simple mathematical formulas.
Example 2

- Students will **analyze** global political systems.

- Students will **analyze** 20th century western democracies and responsibilities of citizens in those democracies.
Computer Science : Student Outcomes

- **Impart an understanding of the basics of our discipline**: Each graduated student should be able to:
  - **Apply** fundamental principles and methods of Computer Science to a wide range of applications
  - **Design**, correctly **implement** and document solutions to significant computational problems
  - **Develop proficiency in the practice of computing**. Each graduated student should be able to:
    - **Formulate** solutions to computing problems
    - **Analyze** and **compare** alternative solutions to computing problems
    - **Design** and **implement** effective solutions to computing problems
    - **Apply** sound principles to the synthesis and analysis of computer systems

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Data structures: Student Outcomes

- Understand the basic properties of various data structures
- Identify the strengths and weaknesses of different data structures
- Ability to Design and employ appropriate data structures for solving computing problems
- Ability to Analyze and compare the efficiency (time and space) of algorithms
- Ability to design and implement efficient algorithms for solving computing problems

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Data structures: Student Outcomes

- Students develop knowledge of basic data structures for storage and retrieval of ordered or unordered data.

- Students develop knowledge of applications of data structures including the ability to implement algorithms for the creation, insertion, deletion, searching, and sorting of each data structure.

- Students learn to analyze and compare algorithms for efficiency using Big-O notation.

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Who sets the SLOs

- Faculty Who teach in the degree program.
- Experts in the discipline

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How do we decide the SLOs

- Regular faculty meetings.
- Expert facilitator.
- Assessment workshop.

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Why Assess?

- Improves students’ learning.

- Identifies instructional, course, or assignment challenges.

- Ensures grading is reflective of students’ learning towards course outcomes.

- Makes grading more systematic and objective.

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The Assessment Process: Plan-Do-Review

1. Establish PEOs and missions
   For programs

2. Write Student Learning Outcomes (SLO’s)

3. Develop means of assessment and criteria for success for evaluating SLO’s

4. Incorporate SLO’s and assessment tasks into instruction

5. Evaluate assessment results

6. Use results to refine instruction (close the feedback loop)
No “correct” list of PSLOs – they will differ by institution
Assessment of Learning Outcomes

- A variety of appropriate methods are used.
- The selected assessment measures the extent the outcome has been achieved.
- Assessment is meaningful
- Assessment guides program changes to improve quality of the program
Appropriate measures of Learning Outcomes

Direct Measures (all students)

- Capstone projects/senior projects
- Samples of student work
- Observations of student behavior (internships)
- Performance on a case study/problem
Appropriate measures of Learning Outcomes

Indirect Measures

- Alumni, employers, student surveys, Parents
- Focus target groups
- Job placement and higher studies statistics
- Exit survey with graduates
Capstone Project

Capstone Project is one year process in which students pursue independent research or project on a problem of their choice, engage in the relevant disciplines, under the guidance of a faculty.

produce a scientific paper and product that reflects a deep understanding of the topic

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First of all, I would like to express MY sincere thanks to all the **participants**.

I express my gratitude to Principal -JNTUHCEJ, Registrar ,Rector, Vice Chancellor and Chancellor of My university (JNTUH) for encouraging .

I would like to thank all the faculty members of my university(JNTUH) for their critical advice and guidance.

I would like to express my special gratitude and thanks to Google management, web content developers , URL management , content publishers and referees for providing learning outcome material .

I would like to say special thanks to SRKR management and IACC 2016 committees for providing platform to share this presentation.

I would like to express my deep sense of gratitude to my family members.

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Thank you to all

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