

# Performance Outcomes: An Integral Component of Program Assessment

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The Council on Post-Secondary Accreditation in the US Department of Education has mandated that accrediting agencies use outcome assessments in evaluating their programs. As a result, the American Council for Construction Education (ACCE) and the Accrediting Board for Engineering and Technology (ABET) are including outcome assessment as part of their requirements for accreditation. Several articles have been published dealing with outcome assessment models for construction programs. Each of these articles outlines procedures for developing outcome assessment based on the mission and strategic plan of the institution and program. Although these previous articles establish reasonable and well thought out processes for assessment, the question still remains: how do the course content and student performance outcomes tie to program goals, objectives, and program assessment? This paper will explain how student performance outcomes can be related to the program goals and objectives and at the same time become the foundation for the assessment outcomes.

**Key Words:** Outcome Assessment, Program Assessment, Accreditation, Performance Outcomes, Curriculum Development

## Introduction

Outcome assessment is a requirement at most academic institutions. The Council on Post-Secondary Accreditation in the US Department of Education has mandated that accrediting agencies use outcome assessments in evaluating their programs. In addition, the six regional associations for schools and colleges require outcome assessments as part of the requirements for granting or renewing accreditation. As a result, the American Council for Construction Education (ACCE) and the Accrediting Board for Engineering and Technology (ABET) also include outcome assessment as part of their requirements for accreditation. In addition, taxpayers, parents, and employers want to be assured that students have the skills necessary to secure jobs and keep them. To say that all of our graduates obtain employment is not good enough. Educators must be able to document that students have the knowledge, skills, attitudes and behaviors necessary to perform on the job. All construction programs must examine their goals and objectives, then develop outcome assessments to meet the assessment requirements.

Several articles dealing with outcome assessment models or program assessment for construction programs have been published (Slobojan, 1992, Yoakum, 1994, and Shahbodaghlu, 1994). Each of these articles outlines the procedures for developing outcome assessment based on the mission and strategic plan of the institution and program. The program mission is written and then goals and objectives are developed to drive the achievement of the mission. Shahbodaghlu

(1994) outlines measurable objectives for each program goal and identifies how the objectives will be measured and data collected. Youkum (1994) concentrates on developing the criteria for a reasonable yet simple assessment plan. Slobojan (1992) looked at the purpose of outcome assessment and how to write goals and measurable objectives. He stated that assessment was the result of external forces and internal forces. Examples of external forces are accreditation and institutional requirements, and examples of internal forces are improved marketing and quality improvement programs. Programs must determine which forces are going to dominate their assessment efforts because it will impact how they write their objectives. Slobojan addresses establishing outcome assessment at the program level including three categories of objectives: demographic, attitudinal and performance objectives. These authors established reasonable processes, but they do not go far enough to meet the demands of accountability facing today's construction educator. Their processes do not address how we as educators can prove that students can do what we say they can do at the completion of the program.

Auchey, Mills, Beliveau, and Auchey (1997) moved in the direction of student performance outcomes when they developed The Learning Outcomes Template (LOT). LOT is used to incorporate learning outcomes into each course and provides a mechanism to discuss the competencies and skills to be included in each course syllabus and their progression through the core curriculum. The LOT is an excellent model to use once the learning or performance outcomes have been identified. Although the authors suggest that the mission and goals of the curriculum be reviewed, they make no connection to the learning outcomes identified. In addition, they do not indicate how they will support the goals and objectives of the program, college and institution.

Currently, construction faculty across the nation are developing outcome assessments for their programs that are part of the over-all assessment process for their institution. At the same time, many are developing performance outcomes for their programs to meet accreditation requirements. In many cases, these two endeavors are viewed as separate, unrelated activities and there is no connection between the student performance objectives and the objectives for the program, college, and institution. ACCE has been working on the new criteria for accreditation. The new criteria has identified core topics and Essentials Elements of Instruction (EEI). The core topics and EEI are to be defined according to the program emphasis and within the institutional constraints. Once the EEI have been identified, student performance objectives and assessment outcomes must be developed that support the goals and objectives of the program. This paper will explain how student performance outcomes based on EEI can be tied to the program and college goals and objectives while at the same time supporting the institutional goals, objectives, and assessment plan.

### **Program Planning and Assessment Process**

A typical program planning and assessment process includes the institutional, college, and program levels as shown in Figure 1. An institutional mission statement is written and a strategic plan developed. Next, the college and program levels develop their mission, goals, and outcomes. Most faculty have a limited and superficial involvement in the process at the college and institutional level. As a result, faculty commitment is minimal. Flaws in the system develop

when the educators fail to ask how the program and college levels impact and drive the mission, goals, and objectives of the institution.

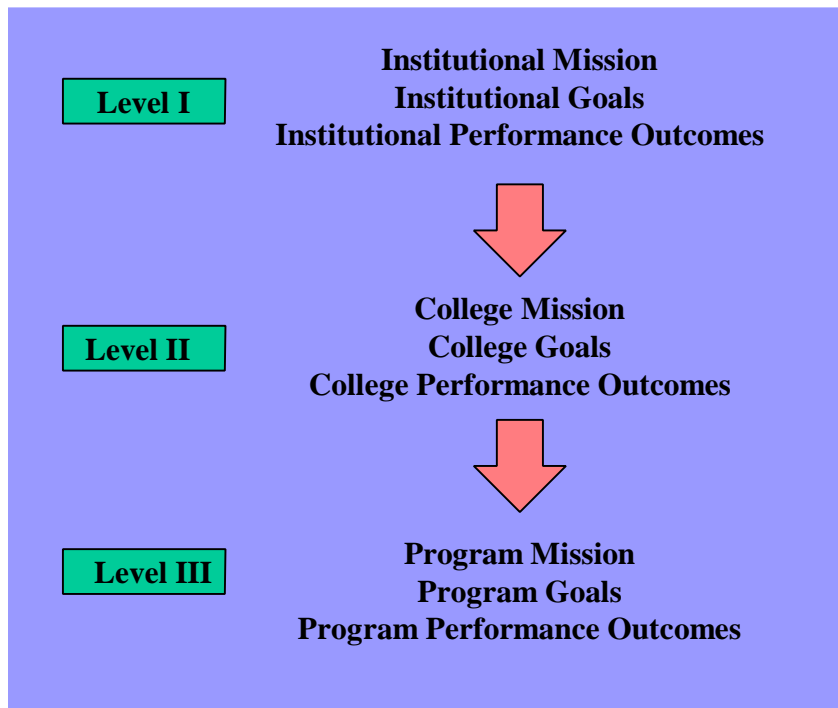


Figure 1: Typical program planning and Assessment process.

When the planning and assessment process is expanded to the course level as shown in Figure 2, everyone teaching a course would have the responsibility of connecting what is taught to the mission, goals, and outcomes of the program, college and institution. The process shown in Figure 2 also includes two other components. Information input from advisory committees, students, graduates and industry is asked for at the program and course levels. Likewise, such input from industry, graduates, and students helps educators keep the content current and pertinent, thus producing a graduate who meets the mission, goals, and outcomes of the program, college and institution. Also, the general education component of the institution that encompasses the whole educational process is integrated into the mission, goals and performance outcomes at each level. The general education component, common to all institutions, is that aspect of education that develops a well-rounded educated graduate and is an integral part of the mission, goals and outcomes at all levels. In conjunction with the course content, the general education component produces an individual who will meet the needs and challenges of an ever changing world.

Each educator has the responsibility to identify and include comprehensive course content. To ensure that all levels work together to support and drive the institutional mission we must ask:

1. What competencies should students have when they complete a degree?
2. How can students demonstrate that they have achieved the competencies at the desired level of performance?

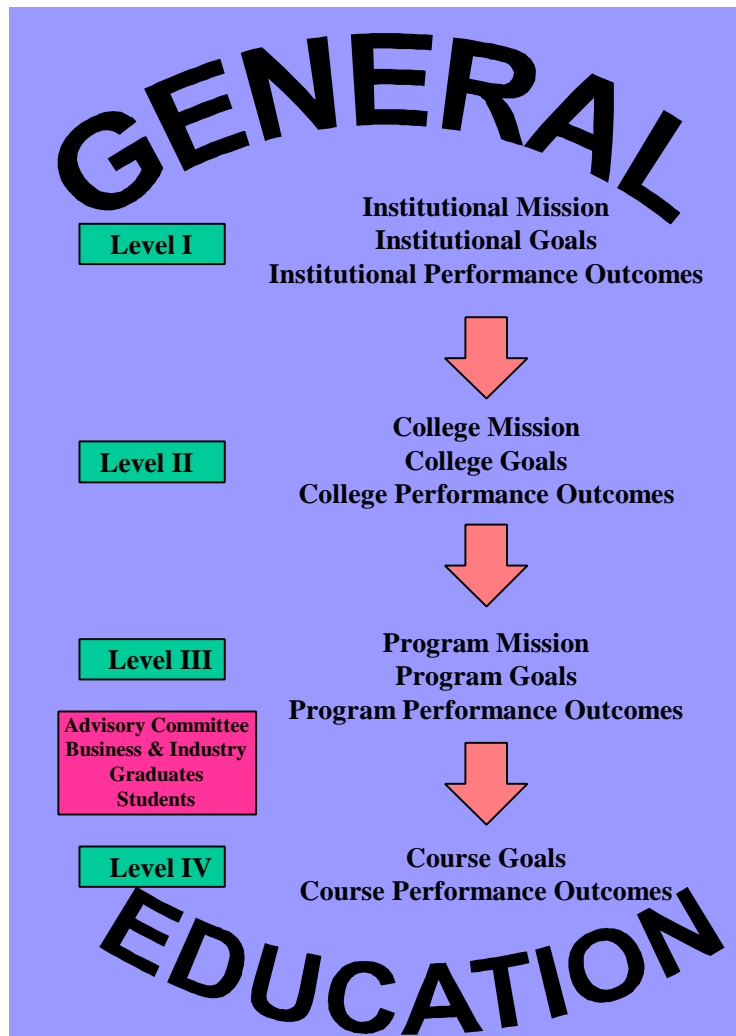


Figure 2: Comprehensive program planning and Assessment process.

If these two questions are asked at each level and asked with increasing vigor at the program and course levels, course performance outcomes will become an integral part of the entire assessment outcome process. Before concentrating on the course level, it is important to revisit the mission, goals and outcomes at the program, college and institutional levels and make sure these questions are answered.

For the purpose of this paper, the following program mission statement, program goals, and course content goals have been developed. These are intended to serve as a generic example to provide the explanation for the Comprehensive Program Planning and Assessment Process Model (Figure 2), and the Flow Chart for Developing Course Performance Outcomes (Figure 3).

An example of a program mission statement is:

The Construction Management program's mission is to prepare graduates to assume responsible management positions in the construction industry.

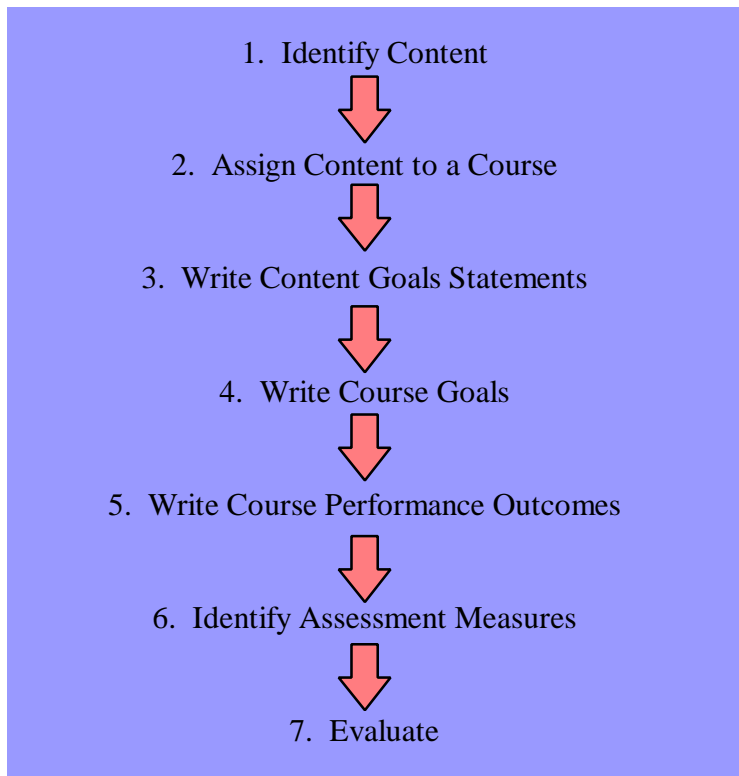


Figure 3: Flow chart for developing course performance outcomes.

Examples of program goals are:

1. Provide a comprehensive construction management curriculum blending the fundamentals of construction management, business management, and engineering.
2. Provide graduates with opportunities for growth and development in their personal, professional and public life.
3. Provide graduates with opportunities to develop and enhance communication and interactive skills.
4. Provide a curriculum that includes comprehensive general education to develop a well-rounded individual with insight into social and human issues.

Prior to developing course goals and student performance outcomes, programs must identify program content (Figure 3 -- Step 1). Accredited programs or programs seeking accreditation will need to compare their content to the core topics and EEI identified in the accreditation criteria. Active involvement of advisory committees, business and industry, graduates and students at this level will ensure program content is current and pertinent to the needs of the industry.

Once the program content is identified, it can be assigned to the appropriate courses (Figure 3 -- Step 2). This process enables faculty to look across the curriculum to identify overlaps, to spot voids in the content, to sequence the courses, and to sequence the content within each course. After the content has been assigned to a course, the content goal statements can be written

(Figure 3 -- Step 3). Daniel E. Vogler (1991) states in his book *Performance Instruction: Planning, Delivering and Evaluating* that “Content goals are a simple and effective means to communicate curricular intent and specific curricular content”(p.3). The content goal should be focused toward the learner and allow the learner to have a clear picture of the knowledge, skills and attitudes required to exit the learning experience. Vogler’s Curriculum-Pedagogy-Assessment model, explained in his book, facilitates instructional decisions while maintaining great flexibility. The roots of this model can be traced to Bloom’s well-known *Taxonomy of Educational Objectives* that categorize learning activities into learning domains and performance levels (Figure 4).

LEVEL	DOMAIN		
	Cognitive	Psychomotor	Affective
Simple	Fact	Imitator	Awareness
	Understanding	Practice	Distinguish
Complex	Application	Habit	Integrate

Figure 4: Domains and levels.

According to Vogler, the key factors to consider when writing content goals are:

1. Write content goals as action statements in the present tense.
2. Choose a verb for the action statement which donates an action which can be measured.
3. Limit one verb per content goal statement.
4. Focus on the performance you will require from students in order to demonstrate a specified level of competency for a given content area.
5. Orient the action verb to the domain and level where you want the learner to exit the learning experience. It is assumed that to exit at a higher level in a domain the learner must also be able to perform at the lower levels in that domain.
6. Develop a goal to communicate what the student will be able to do not an instruction method.
7. Group content goals into units so that broad performance objectives may be developed for the course rather than a performance outcome for each content goal. Detailed or sub-performance outcomes are developed in the lesson plan.

Examples of content goal statements for a typical construction course, *CME 315 Specifications and Contracts* are:

1. Explain construction contracting methods
2. Analyze agency relationships
3. Differentiate organization types
4. Examine contract disputes and torts
5. Explain construction bonding process
6. Interpret construction contract documents
7. Analyze construction specification components and organization
8. Analyze technical section components and organization
9. Analyze contract conditions
10. Prepare construction specifications
11. Explain construction insurance
12. Interpret subcontracts
13. Analyze contract relationships
14. Explain dispute resolution processes
15. Recognize ethical construction issues

The program mission, program goals and the content goals identified for *CME 315 Specification and Contracts* provide the foundation for the development of the course goals (Figure 3 -- Step 4). The question is what should students be able to do upon completion of the course? In this example, the student should be able to have a fundamental knowledge of construction contracts and enough knowledge and skills to write a construction specification. Each course goal should address these issues.

Examples of course goals are:

1. Provide students with a fundamental knowledge of construction contracts and their associated liabilities and incentives.
2. Provide students with knowledge and skills to interpret and write construction specifications.

After the course goals are written, student performance outcomes can be developed to reflect what students must do to demonstrate their competencies for the specified content goals. Since content goals are written as simple action statements, they are easily converted to student performance outcomes (Figure 3 -- Step 5). Course content goals will cluster into units of instruction. Performance outcomes are developed by units or clusters of content goals. The simple, yet crucial question to be asked is: what should students be able to do at the completion of this course to demonstrate their skills and knowledge? Examples of student performance outcomes are as follows:

1. The student will identify the components of the contract, interpret the requirements, and explain the project manager's role in the administration of the contract.
2. The student will identify the stakeholders and analyze the contractual relationships.
3. The student will explain the organization of the specification and compare and contrast performance and descriptive specifications.
4. The student will prepare a performance and descriptive specification.

5. The student will be able to identify ethical construction issues and discuss attitudes and values related to the ethical issues.

Once the students performance outcomes have been identified, assessment measures can be developed (Figure 3 -- Step 6). Assessment measures must evaluate the action specified in the content goals and performance outcomes to effectively assess student achievement.

Examples of assessment measures at the course level are listed below:

1. The students will be provided a set of contract documents. They will
  - answer questions about the documents
  - list the contract requirements, and
  - write a paper to discuss the project manager's role in the administration of the contract.
2. The student will write and prepare both a performance and descriptive specification based on a set of criteria.
3. The student will identify a construction ethics issue and write a paper to discuss the attitudes and issues involved.
4. The student will complete short answer and essay questions to identify the contractual issues involved, relationships of the contracting parties, and discuss possible solutions to resolve the dispute presented in a case study.

These four assessment measures tie directly to the five course performance outcomes and the two course goals previously identified. The assessment measures and course goals resulted from the content goals developed for the *Construction Specifications and Contracts* course. Construction specifications and contracts are an integral part of construction management fundamentals identified in Program Goal 1. Performance outcomes that require students to think, organize and write in response to a given assignment support the general education components in Program Goals 3 and 4. Performance outcomes, dealing with construction ethics, attitudes and values, support the growth and development of the individual identified in Program Goal 2. These in turn support the program mission statement that stresses that graduates must be prepared to assume responsible positions in the construction industry. At each stage of the process, student expectations have been addressed and specified. This process keeps the focus on the mission, goals and performance outcomes of the program, college, and institution.

The final step in the process for developing course performance outcomes is evaluation (Figure 3 -- Step 7). The evaluation process insures that course content and student competencies are appropriate and at the same time continue to support the mission and goals of the institution, college, and program while meeting the needs of the industry.

### **Summary**

Expanding the program planning and assessment process to include course goals and student performance outcomes evolved while addressing the requirements in the ACCE accreditation self study. This report requires that the syllabus state the course objectives in relation to the



program goals and objectives. The requirement, on the surface, appears to be simple but becomes more complex as one tries to tie the course content specifically to specific goals of the program, college, and institution.

The Planning and Assessment Model (Figure 2) develops a complete planning and assessment process that transcends assessment beyond the program level to the specific course and student performance outcomes. The model provides a mechanism for faculty to evaluate individual course content as well as content across the curriculum in relation to the needs of the construction industry. In addition, this process becomes a tool for improving teaching and learning. Faculty must answer whether or not the content identified does, in fact, help the student achieve competencies identified by the program and the industry. Focusing teaching and learning in this way eliminates non-essential material and helps facilitate the learning experience. Students benefit from this process because the intent of the content and requirements for satisfactory performance are clearly specified. Student performance outcomes with assessment measures identified for each course serve as the foundation to develop and implement a comprehensive assessment plan for the program, college, and institution.

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