

CURRICULUM DESIGN FOR OPTIMUM LEARNING

Efforts to improve learning are applauded. The planning stage is the first essential step required for optimum learning to occur, yet it is often skipped entirely or given superficial attention. A much too common consequence is one that Grant Wiggins refers to as "aimless activity" and "superficial coverage." Students expect and appreciate learning relevant knowledge and skills that are transferable; your efforts to improve learning will not go unnoticed.

BACKGROUND/CONTEXT

"To begin with the end in mind means to start with a clear understanding of your destination. It means to know where you're going so that you better understand where you are now so that the steps you take are in the right direction." (Covey, 1989, p.98)

Ralph Tyler introduced the idea of backward design in 1949. The main premise of backward design is that learning outcomes determine the type of materials, content, instructional delivery, and assessments used. Evidence of the popularity of this approach to curriculum design continues to exist throughout North America and is evident and promoted by Lethbridge Community College.

In 1997, Lethbridge Community College adopted an outcomes-based curriculum as one of the principles for planning, developing, implementing, and evaluating programs as part of its strategic plan. As a result, each program and course offered at Lethbridge Community College must identify measurable learning outcomes. This provides direction for the development of appropriate learning activities, selection of the most effective instructional strategies, and development of the most appropriate assessment tools. The overriding goal is to address the learners' needs.

LCC's mission "to develop the present and future workforce by providing high quality lifelong learning opportunities based upon knowledge and skills required by the community, business and industry" is supported by the adoption of an outcomes-based curriculum.

In a learning college, instructors plan, deliver, and assess learning by asking the fundamental questions: "What do I want students to learn?" and "How will I know when they have learned?" This is a departure from the traditional teacher-centred model. The focus has moved from "providing instruction (read, essentially, 'lecturing') to producing student learning." (Barr, 1998, p. 19)

A constructivist approach to learning is promoted in a learning college. Students in a learning college actively seek, organize, integrate knowledge with previous knowledge and use this information to complete activities that are relevant to the real world. Real world problems as we know are "messy" and have no easy solutions. When students are given real world challenges, they become engaged, develop deep understandings of issues, and learn how to apply the knowledge they have to new situations.

The sections that follow will deal briefly with the teaching/learning process, learning outcomes, program outcomes, steps in developing program outcomes, curriculum mapping, course outcomes, the relationship between learning outcomes and assessment, the relationship between learning outcomes and learning activities, and curriculum design standards.

THE TEACHING/LEARNING PROCESS

Curriculum Development

Curriculum development is the first phase of the teaching/learning process. It involves three major steps - the development of learning outcomes, the development of clear expectations of performance for the learning outcomes, and the development of learning activities. Attention must be given to the development and grouping of courses and the sequence in which these courses are delivered. These steps take place before contact is made with students.

While direct contact with students does not occur at this stage of the teaching/learning process, it is extremely important to consider the learner profile for a specific program, course, or lesson. Specific strengths, weaknesses, background, interests and dislikes of the learner must be taken into account in the development of curriculum.

Adjustments to the curriculum are necessary as the needs of the learners change. For example, if the vast majority of students are entering programs with proficient computer skills, it may prompt the removal of an introductory computer class from the curriculum. Depending upon the program outcomes, it may require the addition of an advanced computer course.

Feedback from students, alumni, Advisory Committee members, and assessment tools can also prompt changes to the design of the curriculum.

Instructional Delivery

The next phase of the teaching/learning process, instructional delivery, naturally requires interaction with students. Adjustments are made to instructional strategies, learning resources and learning activities according to the learners' needs, and feedback from assessments, students, alumni, and Advisory Committee members.

Assessment

The third phase of the teaching/learning process deals with assessment. Assessment considerations permeate the curriculum development process as well as the process of instructional delivery. Assessment results can help identify areas where students have done well and areas where they have struggled. These results can prompt changes in the curriculum design or in the instructional strategies, resources, and activities used. Assessment results can also cause students to reflect and adjust what they are doing in the learning process. Assessment occurs in all phases of the teaching/learning process.

LEARNING OUTCOMES

Learning outcomes are statements describing what we expect students to know, understand or be able to do with the knowledge acquired at the completion of a lesson, module, course, or program. * They serve as the foundation for curriculum design, delivery and assessment. The curriculum, then, is viewed as a means to an end.

Regardless of the type of learning outcome being developed (college wide, core, specialized, course, module, lesson), specific guidelines should be followed when developing outcomes. The following checklist can be used for developing and reviewing learning outcomes.

Each learning outcome should

1. be learner focused rather than instructor focused
2. focus on the learning resulting from an activity rather than on the activity itself
3. be aligned at the college wide, program and course levels
4. focus on knowledge or a performance that is essential
5. include external standards where applicable
6. be stated broadly enough to capture important learning but specific enough to be measurable
7. be stated clearly to be understood by all stakeholders
8. describe learning that is transferable
9. begin with an appropriate verb that reflects the level of thinking or performance required

* A distinction is made here between knowledge and understanding. Someone may know information and achieve an "A" on a test that measures basic recall of knowledge. This same student, however, may not have a deep understanding of that knowledge. The student may not be able to apply that knowledge to a new situation or problem. Have you ever heard a student say, "You asked the wrong questions"?

Learning outcomes should be shared with students prior to their learning experiences. They are useful to students because they

1. inform the learners about what they will be learning.
2. inform the learners about the expectations of the course or program
3. provide an opportunity for self-assessment as the learner progresses through a lesson, module, course, or program.

Learning outcomes are useful to instructors and programs because they

1. direct instructors in the development of relevant learning activities
2. inform colleagues what students learn in courses that are prerequisites for other courses.
3. help eliminate unnecessary duplication of content
4. direct instructors in choosing the most appropriate instructional strategies.
5. facilitate Prior Learning Assessment.
6. direct instructors in choosing and developing the most appropriate assessment tools.

PROGRAM OUTCOMES

Program outcomes consist of three components - college wide, core, and specialized outcomes. Each program expects that the learner, upon successful completion of the program, will achieve these outcomes. While business and industry representatives on advisory committees play an important role in the development and validation of program outcomes, other external sources can also be used to validate outcomes. Finally, the development of program outcomes must involve faculty members, the Program Leader, the Team Leader and the Curriculum Development Administrator.

College Wide Outcomes

College wide outcomes are statements of abilities that all graduates of LCC share. In BP 9700, Lethbridge Community College identified technology, employability, entrepreneurship and internationalization as major curricular directions. All college credential programs must include college wide outcomes that reflect each of these four directions.

A general description of each of the major curricular directions is defined below. In addition, a sample of learning outcomes is provided for each of the major directions.

***Programs may select or develop outcomes that are appropriate to their programs as long as each of these four directions is represented and supported.**

***At least two college wide outcomes from each area must be incorporated into the program outcomes.**

Technology

Technological advancements, particularly in the use of computers and communication systems, demand that students are capable of using these technologies effectively.

The graduate will

1. use computers to communicate
2. use computers to manage data
3. use computers to conduct research
4. use specialized technology in applications required in a specific discipline
5. identify and explain the legal, ethical, and ideological issues regarding the use of technology

Employability

The changing nature of work demands that individuals have the requisite skills to gain employment and adapt to changes in the workplace.

The graduate will

1. communicate clearly and concisely*
2. demonstrate the application and development of workplace skills in a work-site setting.*
3. identify and solve problems in an appropriate manner
4. plan, design, and carry out projects meeting acceptable standards
5. apply knowledge of group process skills to complete a task in a team environment
6. evaluate and develop personal skills, attitudes and behaviors necessary to achieve success in the workplace
7. demonstrate the ability to adapt to change in the workplace

* All programs must include this as one of their program outcomes. It may be revised to "make sense" for the program.

Entrepreneurship

The competitive environment that exists in North American society requires individuals develop entrepreneurial characteristics such as leadership and opportunism in order to succeed in finding and maintaining a job.

The graduate will

1. demonstrate initiative by identifying needs or opportunities and developing and carrying out plans to meet these needs or achieve goals
2. identify, assess and respond to industry and business opportunities as predicted by market trends and industry needs
3. assess, weigh, and manage risk to achieve goals
4. market acquired skills to search for appropriate employment

Internationalization

The world has become increasingly interdependent as a result of advances made in communications and trade. Multiculturalism and interdependency are prominent characteristics of our society.

The graduate will

1. acknowledge the importance of diversity
2. analyze issues from a global perspective
3. explain the interrelationship of international, national, and local economies

Core Outcomes

Core outcomes refer to statements of abilities that are common to graduates from a cluster of programs. Programs that share common outcomes typically belong to the same centre, although not all programs in a centre necessarily share a common set of outcomes. Outcomes that relate to counseling skills, for example, might be common for Child and Youth Care, Nursing, and Rehabilitation Services. Representatives of programs that share core curriculum must develop the core outcomes.

Specialized Outcomes

Specialized outcomes refer to statements of ability that are unique to graduates of a specific program. The development of these specialized outcomes must involve faculty members, the Program Leader, Team Leader and the Curriculum Development Administrator.

STEPS IN DEVELOPING PROGRAM OUTCOMES

The process of developing program outcomes is essential as these statements represent the results of your efforts and those of your students. The program outcomes also provide the starting point in the planning process for the entire program. If care and thought is invested at this stage, a strong foundation exists for the development of meaningful learning activities and legitimate assessment tools. The process requires the involvement and collaboration of faculty members, representatives from industry and business, and curriculum development personnel. The following steps can be used to help develop a set of program outcomes:

1. Determine the knowledge and skills necessary for individuals to succeed in a specialized field. Input from members of the advisory committee as well as other representatives of business and industry is valuable at this point.
2. Identify future trends that may affect a specific career. Again, input from advisory committee members and other external representatives is very important.
3. Make a list of all of the information collected from steps #1 and #2. Classify the information according to specific skill and knowledge sets that are used in the field. Eliminate non-essential skills and knowledge.
4. Make a draft of the specialized learning outcomes – those outcomes unique to a specific career. Refer to the resources available in the next section of this handout and the following web sites for assistance in choosing appropriate verbs to begin the learning outcome statements. It is important to choose an action word that accurately reflects the level of learning required and the domain of learning as this will provide direction in determining learning activities, delivery method, and assessment tools chosen later. Web sites:
<http://www.kcmetro.cc.mo.us/longview/ctac/blooms/html>
<http://tec.unm.edu/newetip/newbloom.html>
5. If core outcomes exist or have been developed that are suitable for your program, add these to the list.
6. Review the college wide outcomes and select, modify or develop two learning outcomes that support capabilities in each of the areas of technology, employability, entrepreneurship, and internationalization. These will also be added to your program outcomes.
7. At this point, the program outcome list will include college wide outcomes, specialized outcomes, and if appropriate, core outcomes. Evaluate each program outcome against the checklist provided on page 3. Revise as needed.
8. Seek feedback from faculty members, Program Leader, Team Leader and Curriculum Development personnel.
9. Present program outcomes to the Advisory Committee for review and validation.
10. Revise as necessary.

COURSE OUTCOMES

Each course is required to have a set of learning outcomes. Each of the course outcomes listed on a course outline should identify an essential skill or understanding of knowledge that supports at least one of the program outcomes. Several courses combined and delivered over a one-year or two-year time frame should result in a student achieving all of the program outcomes.

A course outcome is more specific than a program outcome. Each course outcome should require approximately six to eight hours of classroom instruction. For a 5-credit course, for example, there should be approximately 10 to 15 course outcomes. Course outcomes should provide enough specificity that a new instructor could develop learning outcomes for modules and lessons to support the achievement of the course outcomes.

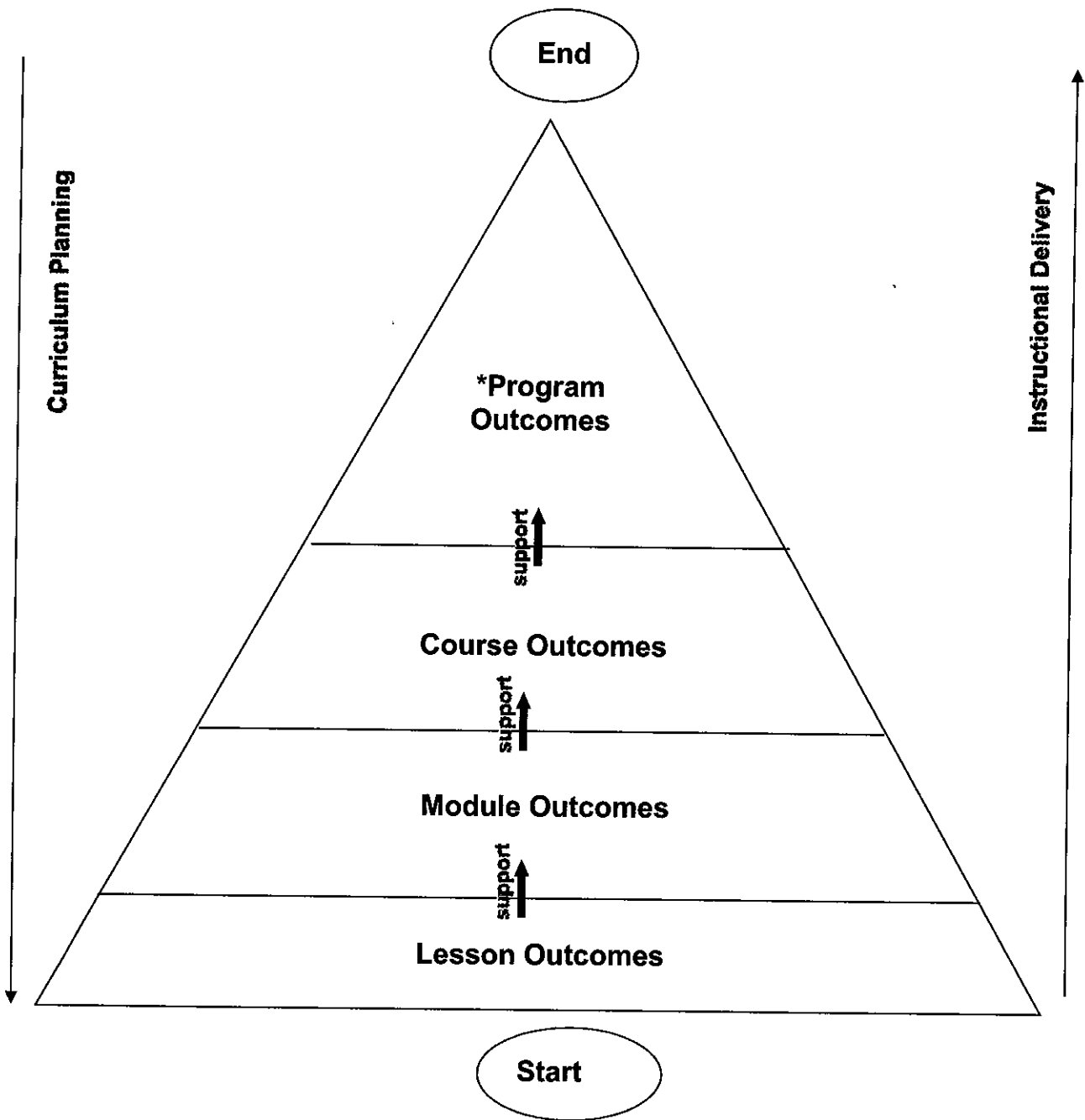
Each course outcome, then, is broken down further in the planning process. The instructor should develop learning outcomes for units or modules. These will, in turn, be broken down into learning outcomes for daily lesson plans.

Curriculum alignment should exist among the outcomes at the lesson, module, course, and program levels. In other words, the lesson outcomes support module outcomes, module outcomes support course outcomes and course outcomes support the program outcomes. Refer to Figure 1 on page 12.

CURRICULUM MAPPING

Once the program outcomes are identified, the next step for new programs is to develop course outcomes for courses that will be developed. These course outcomes must support the program outcomes. If program outcomes have been revised, the next step is to ensure that the course outcomes within the program support the program outcomes. This is facilitated with the development of a curriculum map. A curriculum map identifies what is being taught in each course and what courses support specific program outcomes. It also, among other things, identifies the grouping and sequencing of the courses in the program. This map helps identify gaps and repetition that may exist in the curriculum. Modification of the curriculum is prompted then by a documented need. If the program outcomes are validated and modified as needed as a result of changes in the required skill and knowledge sets in the workplace, then course outcomes must also be modified to reflect these changes.

The number of courses and the credit hours for each of the courses in the program should be determined on the basis of the intended learning outcomes. When designing the curriculum, attention should be paid to curriculum standards suggested by college policy, IKPI, BP 9700, NB 2000 and learning college principles. A summary of the curriculum standards is found on pages 14 and 15.



*Program Outcomes include college wide outcomes, core outcomes, and specialized outcomes

Figure 1. Curriculum Design

THE RELATIONSHIP BETWEEN LEARNING OUTCOMES AND ASSESSMENT

The second step instructors perform once the learning outcomes are identified is to determine clear expectations of performance for each of the outcomes. It is helpful to think like an assessor when developing learning outcomes. Instructors need to know how they can tell when students have learned what they expected them to learn. Clear expectations of performance should be considered at the planning stage. This facilitates the development of assessment tools later. The design process is a dynamic one. Results from assessments used may require adjustments in the learning outcomes.

Expectations of performance (clearly established criteria) should be given to students before they are asked to complete an activity that will be assessed. Students should not have to guess what is expected of them. Given criteria ahead of time allows students the opportunity to assess, adjust and improve their performance.

Each course outcome must be assessed in the course. Assessments can be designed and weighted to accurately reflect the emphasis given to certain learning outcomes in a module or course. This ensures that instructors are fair to their students and that they do what they say they are doing.

THE RELATIONSHIP BETWEEN LEARNING OUTCOMES AND LEARNING ACTIVITIES

Once intended learning outcomes and clear expectations of student performance are identified, instructors can then engage in the third and final step of the planning process. This is the development and sequencing of the learning activities to ensure that the intended learning outcomes are met. When developing learning activities, we should pay attention to the potential interest of the learners, learning styles, sequence of activities, the learning potential inherent in the activity, and the instructional delivery mode. For example, while an activity may be of interest to students, it may not necessarily have educational value. Every time we plan an activity, we should ask ourselves, "How will this activity contribute to the knowledge, skill or understanding necessary to achieve the learning outcomes?"

The curriculum development process involving the development of learning outcomes, identification of clear expectations of performance, and the development of learning activities prepares the way for relevant and effective learning and efficient use of class time.