Curriculum Development in Vocational/Technical Education and Skill Development

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Introduction

Curriculum is a key element in the educational and training process. Its scope is extremely broad, and it touches virtually everyone who is involved with teaching and learning. This article focuses on curriculum for skill development in which it is in the context of vocational and technical education. It focuses not only on the foundations of curriculum but also on the process of development. There were many factors appeared to cause the differences that exist between the vocational/technical curriculum and curricula in other areas. One major factor is the goals of education. The two types of educational goals may be referred to as "education for life" and "education for earning a living." The two types are not mutually exclusive. But they are quite different in the process of curriculum development.

Education for work has its beginnings almost four thousand years ago. This earliest type of vocational education took the form of apprenticeship programs or curricula for scribes in Egypt are recorded as early as 2000 B.C. At about that time, schools that provided two stages of training. The first or primary stage consisted of learning to read and write ancient literature. The second was an apprenticeship stage during the learner was placed as an apprentice scribe under an experienced scribe, usually a government worker. Thus the early form of education for work was organized in such a way that basic knowledge could be developed in a classroom setting and applied skills could be developed "on the job."

Even as organized apprenticeship programs began to flourish, this same basic arrangement persisted. Apprenticeship programs initiated in ancient Palestine, Greece, Scandinavia and other countries followed a similar pattern with youngsters learning a craft or trade through close association with an artisan. Although apprenticeship programs expanded rapidly as various skilled areas become more specialized, reliance continued to be placed on training in the actual work setting - which, in most cases, consisted of conscious imitation. The apprenticeship form of instruction thus remained virtually unchanged until the nineteenth century.

With the advent of the Industrial Revolution in the early 1800s, apprenticeship began a steady decline. The great demand for cheap, unskilled labor obviously could not be met trough apprenticeship programs, and many newly established industrial firms did not desire persons with such extensive training as was provided through the traditional learner-artisan relationship. However, as the Industrial Revolution progressed, owners and managers soon began to realize that skilled workers would be a definite asset to an organization. This increased demand almost seemed to correspond with the rapid decline of formal apprenticeship programs in many skilled areas. The present-day curriculum of skill development may be perceived as being a part of the broader area known as vocational/technical education. In actuality, the purposes of vocational/technical education and skill development are the concept that each curriculum developer needs to define and refine before curriculum development process is carried out (Finch and Crunkilton; 1993).

Foundations of Curricula

In the development of a curriculum, the knowledge and insights derived from the major disciplines of education inform nearly every aspect of planning. Curriculum developers draw upon this knowledge not only prior to the development of a curriculum, but also during the process and product stages. After all, curriculum development does not take place in a vacuum. Questions concerning the nature of learning, the nature of society, teaching methods, desired outcomes, and the nature of learners are crucial ones that must be answered at every stage of development. Skills, knowledge, and attitudes toward work of the learners are the crucial outcomes of vocational education and training for skill development. They are the capability of human being in which they could be trained and retrained to the upper limit of each individual. The understanding of human nature to learn what that fits to the needs of each individual and society is involved with many disciplines. These form the thought pattern in the development of a curriculum. The major disciplines that contribute to the curriculum development are the philosophy, psychology, and sociology (Brady; 1992).

1. The contribution of philosophy
   There are four main philosophical concerns in education: metaphysics, epistemology, ethics, and philosophy of mind.

   1.1 Metaphysics. (What is reality?) It is concerned with the meaning, interpretation of meaning, or meaning of meanings. The questions that are typically the concern of philosophers in this area are as follows.

   > What is skill?
   > What is curriculum?
   > What is development?

   1.2 Epistemology. (How to know the reality?) It is generally understood that knowledge comprises more than facts. It also includes knowing how to do things. Such a distinction between "knowing what" and "knowing how" is a lead-in to an area of philosophical debate about the relationship between practical and theoretical knowledge. Some concerns of epistemology are as follows.

   > How to differentiate the knowledge and skill?
   > Are there any distinct forms of skill?
   > How to differentiate the "education" and "training"?
   > How to be a skilled person?

   1.3 Ethics. (How to act according to reality?) Question of value underlie the concept of education. For example, some would hold the view that if one person is more educated than another, this implies that he or she is more worthwhile. The most basic questions involve the issue of whether any knowledge is worthwhile and whether some forms of knowledge are more valuable than the others. Ethical issues in education are as follows.

How can a particular curriculum or curriculum form be justified?

How can a particular subjects within a curriculum be justified?

On what grounds are some objectives or qualities more worthwhile than the others?

1.4 Philosophy of mind. (What is the function of mind?)

Philosophers in this area are often critical of assumptions made by psychologists about the nature of mind. For instance, behaviorism is sometimes attacked for only taking account of what can be observed. The questions in this area are as follows.

Are all behaviors caused?

Are some mental processes objectionable on moral grounds (e.g. conditioning)?

How are different behaviors caused?

Apart from the four main philosophical concerns just discussed, there are other, more specific, concerns in which philosophy can also contribute to an understanding of curriculum. They are related to one or more of the four broad areas already mentioned, such as the nature of aims and objectives, the clarity of term, the priority among objectives, the interrelatedness of objectives, the curriculum activities, the curriculum structure, the nature of a good life, and etc.

2. The contribution of sociology

The purpose of sociology is the analysis of organized human relationships. Its major contribution to curriculum has been the making of decisions about the content of the curriculum, and its main focus has been the understanding of the direction of social change and the socialization of the individual. The following is a brief look at some areas in which sociology is acknowledged to contribute to curriculum development.

2.1 Future trends
2.1.1   Demographic change
2.1.2   Family changes
2.1.3   Female role changes
2.1.4   Multiculturalism
2.1.5   Economic changes
2.1.6   Technological changes
2.1.7   Participation in education
2.1.8   Problem of change
2.1.9   Public interest in education

2.2 Social background
2.3 The role of teacher and school
2.4 Teacher attitudes
2.5 Methodological issues

Social factors that may influence curriculum are divided into two major parts, family and community. The issues of each part are as follows.

Family:
1. The nature of the family (nuclear or extended).
2. The composition of the family (single parent; large or small).
3. The cultural, emotional and intellectual climate of the home.
4. The education level and occupation of parents.
5. The division of labor in the home, and sex roles in the division of labor.
6. The child rearing practices, that is, obvious indications of parental behavior to children (e.g. discipline).
7. The parental expectations of children and the school.
8. The pattern of family life (paternal unemployment, working mothers).

Community:
1. The socioeconomic status of the family and community.
2. The social class of the family and community.
3. The social, cultural and economic characteristics of the community.
4. The nature of community groups.
5. The mores and beliefs of community groups.
6. The community's activities and recreational facilities.
7. The nature of the student's peer group.
8. The nature and extent of any disadvantage.
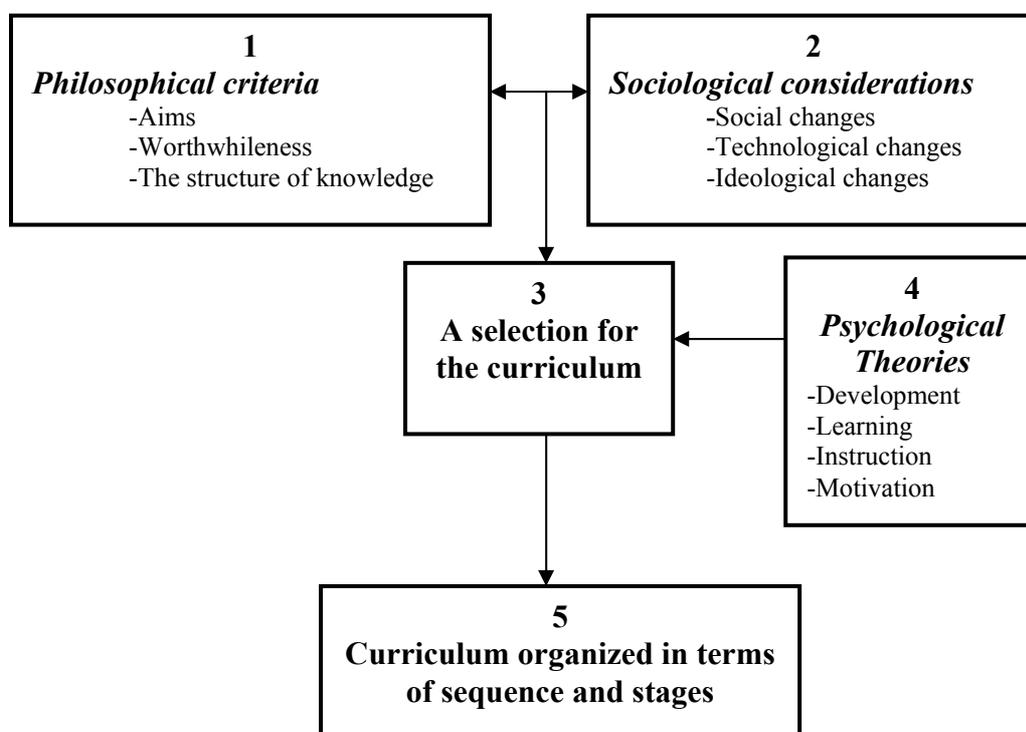
3. The contribution of psychology

The purpose of psychology is to study of human behavior. Psychology and philosophy contribute both information and their own methods of inquiry to the examination of curriculum. They provide information and concepts that assist curriculum planning. They employ methods of investigation that can be used generally in education. The area in which psychology informs curriculum planning is virtually endless. The following is a guide to the most frequently acknowledged areas in which psychology contribute to curriculum development.

3.1 The nature of students
3.2 The process of thought
3.3 The selection of learning experiences
3.4 Learning theory
3.5 The conditions for learning
3.6 Motivation
3.7 Teaching methods
3.8 Distinguishing feasible goals
3.9 Individual differences
3.10 Personality
3.11 Teacher effectiveness

The areas briefly outlined above comprise only a small part of the contribution of psychology to curriculum development. They may assist curriculum planners by providing some factors for consideration when approaching the task of curriculum development. A curriculum is not a subject or discipline as such. It is a set of recommended practical activities. Psychology comprises a comprehensive theory or theories of human behavior, which can assist the curriculum planners by increasing understanding of these practical activities as well.

Foundation disciplines in curriculum planning were summarized as follow.
1. Philosophy: The nature of knowledge and teaching
2. Sociology: The social conditions already experienced or likely to be experienced
3. Psychology: The growth, needs, interests and readiness of students

1 *Philosophical criteria* -Aims -Worthwhileness -The structure of knowledge	2 *Sociological considerations* -Social changes -Technological changes -Ideological changes

3 **A selection for the curriculum**	4 *Psychological Theories* -Development -Learning -Instruction -Motivation

5 **Curriculum organized in terms of sequence and stages**

Several points can be made to clarify the steps illustrated.
Box 1. The developers have opinions about the nature of knowledge and about what worthwhile for knowledge, skills, and attitudes.
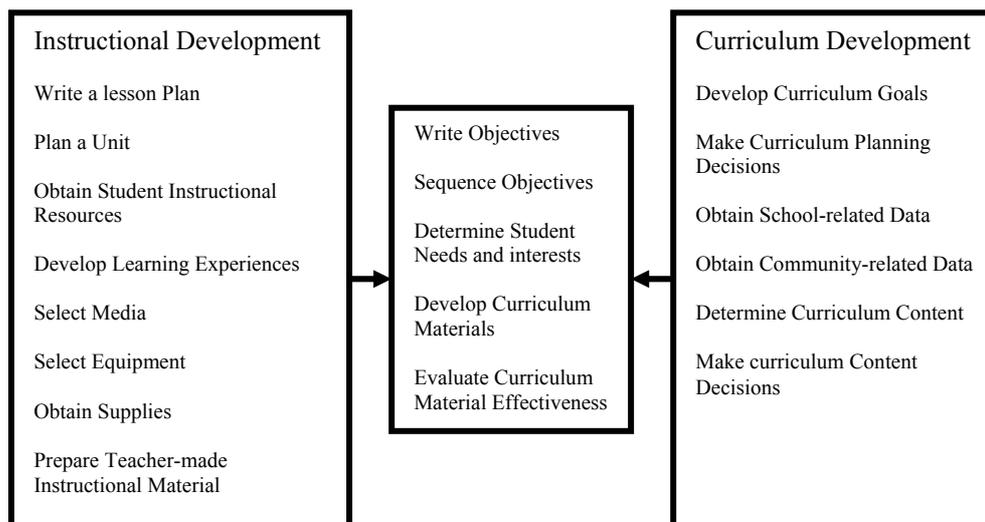**Box 2**. Developers consider these opinions in relation to the nature of society.
Box 3. Consideration of the relationship between the philosophical and sociological factors enables developers to make a selection for the curriculum based on psychological theories.
Box 4. This box is modified in the light of information from psychology.
Box 5. The curriculum is thus developed in a process informed by the three disciplines.

Curriculum and Instruction

Curriculum may be defined as the sum of the learning activities and experiences that a student/trainee had under the auspices or direction of the school or institute. Instruction may be perceived as the planned interaction between teachers/trainers and students/trainees that (hopefully) results in desirable learning. Possible shared and unique aspects of instructional development and curriculum development are as follows.

Instructional Development	Write Objectives	Curriculum Development
Write a lesson Plan	Sequence Objectives	Develop Curriculum Goals
Plan a Unit	Determine Student Needs and interests	Make Curriculum Planning Decisions
Obtain Student Instructional Resources	Develop Curriculum Materials	Obtain School-related Data
Develop Learning Experiences	Evaluate Curriculum Material Effectiveness	Obtain Community-related Data
Select Media		Determine Curriculum Content
Select Equipment		Make curriculum Content Decisions
Obtain Supplies		
Prepare Teacher-made Instructional Material		

Characteristics of the Vocational/Technical Curriculum

It should be noted that most discussions presented in this paper will center on the vocational/technical education and training curriculum. One must, however, recognize that from a conceptual point of view the *ideal* curriculum is neither "academic" nor "vocational and technical." Vocational and technical curriculum terminology is used throughout this paper merely as a means of emphasizing this area of study within the total curriculum and highlighting the unique aspects of vocational and technical education curiculum building.

Even though vocational/technical education and skill development is included within the overall framework of education, the curriculum has certain characteristics that distinguish it from the rest of the educational milieu. These characteristics represent a curricular focus that may be best associated with curriculum building, maintenance, and immediate and long-term outcomes. Whereas each of these characteristics is, to a greater or lesser degree, associated with other curricula (e.g., general or academic), their influence on the vocational and technical curriculum development process is important to note. Collectively, they represent the potential parameters of any curriculum that has as its controlling purpose the preparation of persons for useful, gainful employment. These basic characteristics of the vocational/technical curriculum include orientation, justification, focus, in-school success standardsl, out-of-school success standards, school-community relationships, government involvement, responsiveness, logistics, and expense (Finch and Crunkilton;1993).

1. Orientation: Traditionally, the vocational/technical curriculum has been product or graduate-oriented. Although a major concern of vocational has been to provide a means for each student to achieve curricular outcomes, the ultimate outcome is more far-reaching that the educational process. The ultimate success of a vocational/technical curriculum is not measured merely through student education achievement but through the results of that achievement--results that take the form of performance in the work world. Thus, the vocational/technical curriculum is oriented toward process (experiences and activities within the school setting) and product (effects of these experiences and activities on former students).

2. Justification: Unlike its academic counterpart, the vocational/technical curriculum is based on identified occupational needs of a particular locale. These needs are not merely general feelings; they are clarified to the point that no question exists about the demand for workers in the selected occupation or occupational area. Thus, curriculum justification extends beyond the school setting and into the community. Just as the curriculum is oriented toward the student, support for that curriculum is derived from employment opportunities that exist for the graduate.

3. Focus: Curricular focus in vocational/technical education is not limited to the development of knowledge about a particular area. The curriculum deals directly with helping the student to develop a broad range of knowledge, skills, attitudes, and values, each of which ultimately contributes in some manner to the graduate's employability. The vocational and technical education learning environment makes provision for student development of knowledge, manipulative skills, attitudes, and values, as well as the integration of these areas and their application to simulated and realistic work settings. The vocational and educational curricular focus also includes the integration of academic studies such as mathematics, communication skills, and science with applied studies so that students are better able to link these academic content areas to applied vocational/technical education content.

4. In-School Success Standards: Although it is important for each student to be knowledgeable about many aspects of the occupation he or she will enter, the true assessment of student success in school must be with "hands-on" or applied performance. For example, knowledge of the metric system is important to the extent that it contributes to student success in applied situations such as cutting metric threads on a lathe, administering medication, or repairing a car. In-school success standards must be closely aligned with performance expected in the occupation, with criteria used by teachers often being standards of the occupation. The student may be required to perform a certain task or function in a given time using prescribed procedures, with each of these standards having its parallel in the work world.

5. Out-of-School Success Standards: The determination of success is not limited to what transpires in a school setting. A vocational and technical curriculum must also be judged in terms of its former students' success. There is a major concern for the product or graduate of the curriculum, particularly with respect to employment-related success. Although success standards vary from place to place, they quite often take the form of affective job skills, technical skills, occupational survival skills, job search skills, and entrepreneurial skills. There are certainly other standards that could be added to this list; however, the above items are out-of-school success standards that vocational and technical education as well as business and industry leaders rank as being very important curricular outcomes.

6. School-Community Relationships: Although it is certainly recognized that any educational endeavor should relate in some way to the community, vocational/education is charged with the responsibility of maintaining strong ties with a variety of agriculture, business, and industry-related areas. In fact, strong school-community partnerships exist in many locales. Since there are a number of potential "customers" in the community who are interested in products (graduates), the curriculum must be responsive to community needs. Employers in the community are, likewise, obligated to indicate what their needs are and to assist the school in meeting these needs. This assistance might consist of employers serving on curriculum advisory committees, donating equipment and materials to the schools, or providing workstations in the community for students enrolled in cooperative vocational education. Whatever relationship exists between the vocational curriculum and the community, it should be recognized that strong school-community partnerships may often be equated with curriculum quality and success.

7. Government Involvement: The extent to which government involvement affects the curriculum may constitute a distinct asset or a liability. Requirements such as certain clock hours of vocational instruction and certain types of equipment to be used in the shop or laboratory might foster a higher level of quality. On the other hand, there may be certain requirements that place undue restrictions on curriculum flexibility, and thus hinder attempts at innovation or at meeting the needs of certain student groups.

8. Responsiveness: Another basic characteristic of the vocational and technical curriculum is its responsiveness to technological changes in our society. Many years ago, programs and their content that prepared people for work were quite stable. Typically, the skills and knowledge developed in an apprentice program would be useful for the rest of one's productive life. Today, however, the situation is quite different. The integration of technological concepts into our everyday life has had a profound impact on vocational/technical education curricula. The contemporary vocational curriculum must be responsive to a constantly changing world of work. New developments in various fields should be incorporated into the curriculum so that graduates can compete for jobs and, once they have jobs, achieve their greatest potential.

9. Logistics: Bringing together the proper facilities, equipment, supplies, and instructional resources is a major concern to all persons involved in the implementation of vocational curricula. The logistics associated with maintaining any curriculum are often complex and time-consuming, but the sheer magnitude of most vocational curricula makes this factor quite critical to success or failure. Some logistical concerns are associated with any curriculum. Materials used in the curriculum must be purchased, stored, inventoried, replaced, and sometimes sold. The need for coordination of cooperative vocational programs with businesses and industries in a community working closely to establish and maintain relevant workstations for students presents a unique set of logistical problems. The logistics associated with operating a vocational/technical curriculum are indeed complex, and these complexities need to be taken into account when a curriculum is being established and after it becomes operational.

10. Expense: Although the cost of maintaining a vocational curriculum is not inordinately high, the money associated with operating certain vocational curricula

are sometimes considerably more than for their academic counterparts. This expense may depend on the particular area of instructional emphasis, but there are some items in the vocational curriculum that show up quite regularly. These include basic operating costs such as heating, electricity, and water; purchase, maintenance, and replacement of equipment; purchase of consumable materials; and travel to work locations that are away from the school. Some of these costs are necessary to operate any school; however, the vocational/technical curriculum may often require greater basic operating expenditures because of facilities that have a large square footage or equipment such as welders, ovens, or computers that require large amounts of energy for their operation. Equipment must be updated periodically if the teacher expects to provide students with realistic instruction, and this updating process can be most expensive for a school to carry out. The ever-increasing costs associated with the purchase of high-quality equipment make this area one of tremendous concern to vocational educators. Finally, the purchase of consumable material requires a sustained budgetary commitment to the curriculum. Money needs to be available to buy consumables as they are used by students throughout the school year. These items are not limited to pencils and paper; they might include such diverse items as oil, flour, shampoo, steel, wood, or fertilizer.

A Rationale for Curriculum Development in Vocational/Technical Education

The uniqueness of the vocational/technical curriculum raises a critical question. What is the basic direction that curriculum development in vocational and technical education should take? History tells us that, traditionally, curricula have been developed in a somewhat haphazard manner with little consideration given to the impact of the development process. Another point is that a vocational/technical curriculum soon becomes outdated when steps are not taken to keep it from remaining static. Finally, it must be recognized that the vocational/technical curriculum thrives on relevance. The extent to which a curriculum assists students to enter and succeed in the world spells out success.

As a curriculum is being developed, the vocational developer is obligated to deal with these concerns in such a way that quality is built into the "finished product" or graduate. Any curriculum that is not developed systematically, or that becomes static or irrelevant, will soon have an adverse effect on all who come in contact with it. In order to avoid this difficulty, curriculum developers must give consideration to the basic character of the curriculum and build in those factors that contribute to its quality. Whereas some of these factors might apply equally well to any sort of curriculum development, they are especially relevant to vocational/technical education. As the development process is going on, outcomes of this process must be made clear. It is hoped that these outcomes will lead to a vocational/technical curriculum that is data-based, dynamic, explicit in its outcomes, fully articulated, realistic, student-oriented, evaluation-conscious, and future-oriented.

1. Data-Based: The contemporary vocational and technical curriculum cannot function properly unless it is data-based. Decisions about whether or not to offer a curriculum need to be founded upon appropriate school-and community related data. Curriculum content decisions should be made after a variety of data, such as student characteristics and the nature of the occupation being prepared for, have been assembled and examined. The quality of curriculum materials is determined after

data have been gathered from teachers and students who use them. In fact, the use of data as a basis for curriculum decisions cannot be overemphasized. The reason for this is that developers of traditional curricula have often neglected to place emphasis on the relationships that should exist between data and curriculum decisions.

2. Dynamic: It might be said that a static curriculum is a dying curriculum. Just as vocational/technical education is in a dynamic state, its curricula must, likewise, be dynamic. Administrators, curriculum developers, and teachers must constantly examine the curriculum in terms of what it is doing and how well it meets student needs. Provision must be made for curricular revisions, particularly those modifications that are tangible improvements and not just change for the sake of change. This does not mean that once each year or so the curriculum is checked over by a panel of "experts." Provision must be made to redirect, modify, or even eliminate an existing curriculum any time this action can be fully justified. The responsiveness of a curriculum to changes in the work world has much bearing on the ultimate quality of that curriculum and its contribution to student growth.

3. Explicit Outcomes: Not only must the contemporary vocational and technical curriculum be responsive to the world of work, it must also be able to communicate this responsiveness to administrators, teachers, students, parents, and employers. Broadly stated goals are an important part of any curriculum; however, these goals are only valid to the extent that they can be communicated in a more explicit manner. Although it is recognized that we cannot state all curricular outcomes in specific measurable terms, many of these outcomes may be written down in such a manner that the broad curricular goal are made more quantifiable. To the extent that outcomes are explicit, we will be able to tell whether students achieve them and how the outcomes relate to a particular occupation. This perhaps the most commanding reason for ensuring that curriculum outcomes are clear and precise.

4. Fully Articulated: Although courses and other educational activities contribute to the quality of a curriculum, the way that they are arranged in relation to each other makes the difference between experiences that are merely satisfactory and experiences that are superior. Curriculum articulation may involve the resolution of content conflicts across different areas or development of a logical instructional flow from one year to the next. Articulation might extend to determining the ways curricular activities, such as student vocational organizations, lend support to the rest of the curriculum or deciding which mathematics concepts should be taught as a prerequisite to a particular technical course. It may include the articulation of curriculum content between vocational/technical and general education courses. In this regard, articulation may extend to each level of kills in the process of skill development.

5. Realistic: The vocational and technical curriculum cannot operate in a vacuum. If students are to be prepared properly for employment, the curricular focus must be one that is relevant. Content is not developed merely on the basis of what a person should know but also includes what a person should be able to do. Vocational curriculum content is typically based upon the actual worker's role with relevant tasks, knowledge, skills, attitudes, and values serving as a foundation for what is to be taught. Great emphasis must be placed upon practicality. Since the bulk of a worker's time is spent in applied areas, many student experiences must, likewise, be of a practical nature. Hands-on experiences in a laboratory or cooperative educational

setting provide the student with a relevant means of transferring knowledge, skills, and attitudes to the world of work.
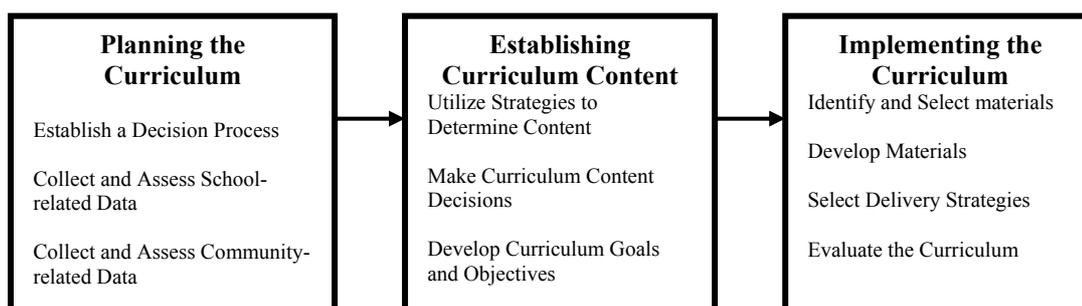
6.Student-Oriented: Most curricula are, to some extent, student-oriented, and curricula in vocational/technical education and skill developemnt are certainly no exception. Currently there is a great deal of concern about how a curriculum can best meet students' needs. Various approach such as team teaching, differential staffing, and individualized instruction have been used by teachers to help meet these needs. But, regardless of the approach a teacher uses, a basic question has to be answered: To what extent will the approach actually assist students in preparing for employment or gaining for skills?

Another aspect of student orientation deals with the teaching-learning process. Not only must the curriculum meet group needs, but there is an obligation to meet the individual student's needs. In order for these needs to be met in an expeditious manner, arrangements could, for example, be made to provide instruction that accommodates various students' learning styles, to develop in dividual training plans, or to make available alternate paths for the achievement of course objectives. Whatever the means used to assist students, a basic concern should be with the individual and how he or she may be helped in the best possible ways.

7. Evaluation-Conscious: Evaluation is perceived by many to be an activity that comes periodically in conjunction with accreditation procedures. Realistically, administrators and teachers cannot wait that long to find out how successful they have been. Curriculum evaluation has to be an ongoing activity--one that is planned and conducted in a systematic manner. Anyone who is involved with the vocational and technical curriculum should be aware that evaluation is a continuous effort. As a curriculum is being designed, plans must be made to assess its effects on students. Then, after the curriculum has been implemented and data have been gathered, school personnel may actually see what strengths and weaknesses exist. Although most educators recognize that evaluation is not a simple activity, it is one that should be carried out concurrently with any curriculum effort.

8. Future-Oriented: Persons responsible for the contemporary vocational/ technical curriculum need to ensure that ongoing curricula are considered in relation to what will or may occur in the future. As decisions are being made about curriculum content and structure, thought should be given to the future results that might come from those decisions. Any curriculum that hopes to be relevant tomorrow must be responsive to tomorrow's as well as today's needs. The extent to which a curriculum is successful twenty, thirty, or even forty years from now will be largely dependent on the future-oriented perspective associated with it.

Curriculum Development in Vocational /Technical Education

Planning the Curriculum	**Establishing Curriculum Content**	**Implementing the Curriculum**
Establish a Decision Process	Utilize Strategies to Determine Content	Identify and Select materials
Collect and Assess School-related Data	Make Curriculum Content Decisions	Develop Materials
		Select Delivery Strategies
Collect and Assess Community-related Data	Develop Curriculum Goals and Objectives	Evaluate the Curriculum

Curriculum Development
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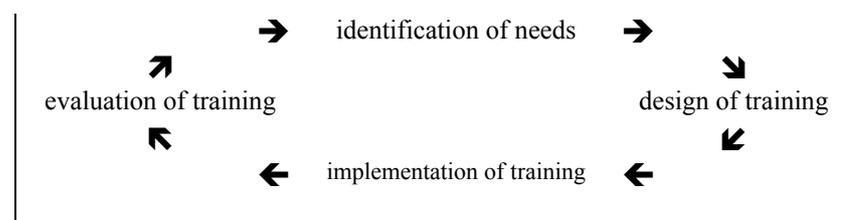# The Process and Stages of Curriculum Development

The process brings together a number of individuals from a variety of backgrounds, including staff development and expert workers in the job for which the curriculum is being developed and, of course, instructors who contribute their expertise to the content of the learning process. This model could be adapted for a particular training such as for skill development.

For each stage of the curriculum development process, it will answer the questions:

- *What is curriculum development?*
- *What is the purpose?*
- *How is it carried out?*
- *What are the products?*
- *Who is responsible?*

What is Curriculum Development?

The term *Curriculum Development* describes a systematic approach to the development of training, which satisfies a need that is relevant, complete, and of consistent quality. The most common approach to curriculum development is based on the *training cycle:*

$$\rightarrow \quad \text{identification of needs} \quad \rightarrow$$

$$\nearrow \qquad\qquad\qquad\qquad\qquad \searrow$$

evaluation of training   design of training

$$\nwarrow \qquad\qquad\qquad\qquad\qquad \swarrow$$

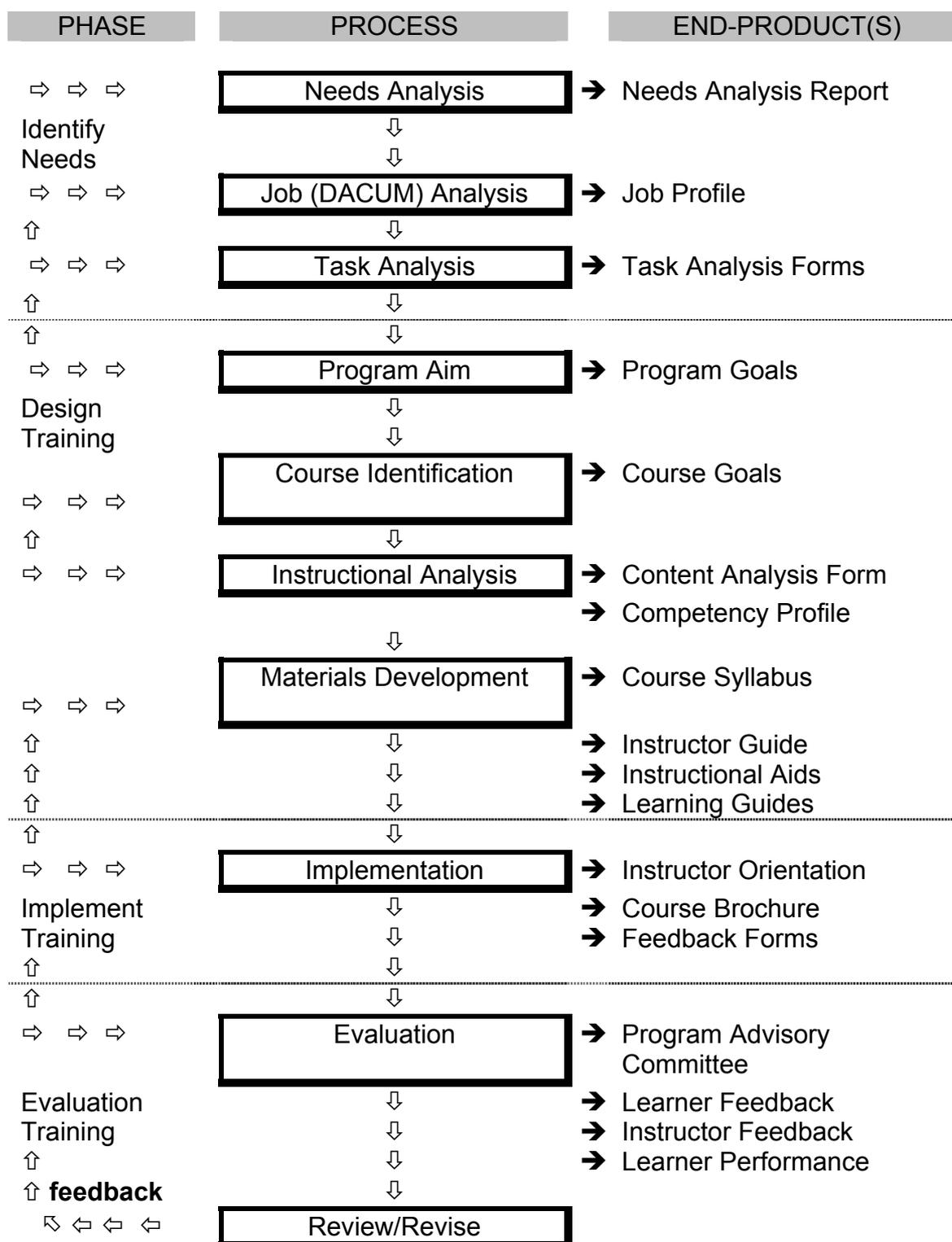$$\leftarrow \quad \text{implementation of training} \quad \leftarrow$$

The training cycle is one of continuous *monitoring and improvement*. Changes in the *need* for training will bring about a change in the design of training; continuous *evaluation* enables the training to be modified and improved.

A Curriculum Development Model

This model is based on this training cycle. Even if you are not involved in every stage of development, it is important that you understand the process, your role in the process, and be able to use the products that are designed to support you in preparing your curriculum. This model has been used by the British Columbia Institute of Technology (BCIT), Canada. The model is presented in the form of a chart on the following page.

CURRICULUM DEVELOPMENT MODEL

PHASE	PROCESS	END-PRODUCT(S)
⇨ ⇨ ⇨	Needs Analysis	➜ Needs Analysis Report
Identify Needs	⇩ ⇩	
⇨ ⇨ ⇨	Job (DACUM) Analysis	➜ Job Profile
⇧	⇩	
⇨ ⇨ ⇨	Task Analysis	➜ Task Analysis Forms
⇧	⇩	
⇧	⇩	
⇨ ⇨ ⇨	Program Aim	➜ Program Goals
Design Training	⇩ ⇩	
	Course Identification	➜ Course Goals
⇨ ⇨ ⇨		
⇧	⇩	
⇨ ⇨ ⇨	Instructional Analysis	➜ Content Analysis Form
		➜ Competency Profile
	⇩	
	Materials Development	➜ Course Syllabus
⇨ ⇨ ⇨		
⇧	⇩	➜ Instructor Guide
⇧	⇩	➜ Instructional Aids
⇧	⇩	➜ Learning Guides
⇧	⇩	
⇨ ⇨ ⇨	Implementation	➜ Instructor Orientation
Implement Training	⇩ ⇩	➜ Course Brochure / ➜ Feedback Forms
⇧	⇩	
⇧	⇩	
⇨ ⇨ ⇨	Evaluation	➜ Program Advisory Committee
Evaluation Training	⇩	➜ Learner Feedback
	⇩	➜ Instructor Feedback
⇧	⇩	➜ Learner Performance
⇧ feedback	⇩	
⬊ ⇦ ⇦ ⇦	Review/Revise	

Needs Analysis

What is a Needs Analysis?

> A *needs analysis* is a process of determining the causes of, and the solutions to, performance problems. It determines whether the solutions to problems can be achieved through training, or if it is possible to solve them in other ways.
>
> If training is seen as the solution to a particular problem, then a decision may be made to:
>
> - Develop a new program or curriculum
> - Revise, or modify, an existing training program or curriculum

Labour Market Analysis

> Because post-secondary education prepares individuals for specific jobs within the labour market, it is important that educators know what that market is. A labour market analysis provides a process for obtaining information by:
>
> - Surveying and/or interviewing employers
> - Examining historical and future labour supply and demand trends
> - Reviewing the need for training new workers, and retraining or upgrading existing workers
> - Identifying new processes and procedures for a job
> - Identifying which jobs in an occupational group require further development

Product of Needs Analysis

> The product of a needs analysis is a Needs Analysis Report, in which a recommendation may be made to proceed with the development of an appropriate training program.

Who is Responsible for the Needs Analysis?

> - Staff Development Managers
> - Appropriate Department Head(s)
> - Other nominated staff members, trained in Needs Analysis process

Job Analysis

What is a Job Analysis?

> A *job analysis* breaks down the complexity of a job into its constituent duties and tasks. There are a number of ways in which a job analysis may be performed, but this model uses the *DACUM* process.

The DACUM Process

> *DACUM* was initially created as a joint effort of the Experimental Projects Branch, Canada Department of Manpower and Immigration, and General Learning Corporation. DACUM may be defined as "a single sheet skill profile that serves as both a curriculum plan and an evaluation instrument for occupational training programs" (Adams, 1975, p. 24).
>
> *DACUM* is an acronym for the phrase: **D**eveloping **A CU**rriculu**M**. It is an effective method of quickly determining the duties and tasks that must be performed by employees in a particular job.
>
> The DACUM process is led by a facilitator, who works with a carefully selected group of expert workers (often including their immediate supervisors) from the job under consideration. The DACUM process uses the collective expertise of the group in order to brainstorm their job's duties and tasks.
>
> DACUM works on the following three premises:
>
> - Any job can be described in terms of duties and tasks performed by successful expert workers.
> - Expert workers are better able to describe/define their job than anyone else.
> - Any task may be analyzed in order to determine the knowledge, skills, and attitudes that expert workers must have in order to perform those tasks satisfactorily.

Product of DACUM Process

> The product of the DACUM process is the *job profile*. The job profile presents an easily assimilated visual display of the duties and tasks that comprise a particular job. It has a standard format, which includes:

- *Job Title*   displayed at the top of the page
- *Duties*   in boxes, down the left side of the page
- *Tasks*   in boxes, displayed across the page

Before being accepted, the job profile is sent to other expert workers, who did not attend the DACUM workshop, to validate and verify..

Who is Responsible for the Job Analysis?

- Instructional Designers
- Individuals trained in the DACUM process.
- Expert Workers.
- Immediate Supervisors of Expert Workers.

Task Analysis

What is a Task Analysis?

The job profile defines tasks in simple terms. The purpose of a *Task Analysis* is to determine, for each task:
- Procedural steps
- Required knowledge, skills and attitudes
- Special tools and equipment
- Critical safety requirements
- Levels of difficulty and importance
- Conditions and standards

There are several ways to do a task analysis, including:

- Modified DACUM process
- Interviews with expert workers
- Observations of expert workers

Another approach is to have an instructor identify the tasks and procedures, and then have it reviewed by one or more expert workers from industry.

Product of the Task Analysis

The product of the task analysis process is the *Task Analysis Form.*

Who is Responsible for the Task Analysis?

- Instructional designers
- Internal subject experts (Instructors)

- External subject experts
- Expert workers
- Immediate supervisors of expert workers

Designing the Program

Practical Considerations

Training must be technically, economically, and politically feasible. Therefore, you should see what resources are available and identify any constraints you may face. These include:

- Financial resources
- Human resources
- Time
- Facilities
- Equipment
- Materials and supplies
- Organizational characteristics

Program Aims and Goals

After the detailed planning work has been completed, work can now start on designing the new program. At this point, you should ask the questions:

- What must be learned for someone to do this job
- Can the real working conditions be simulated in the training environment?
- Can the real working standards be achieved?

From the results of the job analysis and task analysis, it is possible to:

- Formulate the general aims and goals of the program.
- Identify the courses to be included in the program.
- Write goals for those courses.
- Establish standards for evaluating competence.

Program Aim
The *program aim* is a statement that clarifies the intended direction of the program.   It includes broad statements of the program's:

- Purpose
- Direction
- Scope

Program Goals

The *program goals* are general statements, written from the learner's point of view, that identify the program's:

- Educational outcome
- Major content areas

Course Titles

From the major content areas identified in the program goals, *course titles* begin to emerge.

Course Goals

The expected outcome of a course is expressed as a *course goal*. The *course goal* statement appears in the course documents: *Course Syllabus* and *Instructor Guide*.

Learning Outcomes

Learning outcomes are a series of statements that specify the skills that must be acquired in order to achieve the Course Goal. Each *Learning outcome* is expressed as learner-centered behavioural objectives. The *Learning outcome* statement appear in the course documents: *Course Syllabus* and *Instructor Guide*.

Learning Outcomes are arranged in a sequence of instruction:

- General to specific (or vice-versa)
- Known to unknown
- Concrete to abstract
- Simple to complex
- Practical to theoretical (or vice-versa)

Product of Program Design

The end-product of the *program design* process is the *competency profile*. The *competency profile* has a similar format to the job profile. It has a standard format with:

- *Course Title*   -displayed at the top of the page.
- *Course Goals*   -in boxes, down the left side of the page.
- *Learning Outcome statements*   -displayed across the page.

Who is Responsible for the Program Design?

- Instructional designers
- Instructors trained in the program design process

The Course Syllabus

What is a Course Syllabus?

A *course syllabus* is a course document containing:

- Course description
- Course goals
- Pre-requisites
- Course duration
- Evaluation procedures and expectations
- Award /credits
- List of textbooks
- List of equipment (where applicable)
- List of supplies (where applicable)
- Units of instruction, comprising
  * Learning outcome statements
  * Content

What is the Course Syllabus Used For?

A *course syllabus* is used for a variety of reasons:

- It provides important information to learners.
- It helps learners organize their learning, and anticipate topics.
- It helps prevent misunderstandings about the assignments, grading, instructor expectations, etc.,
- It can guide prospective learners who are not sure whether or not they want to attend the course.
- It provides information to employers.
- It provides information to administrators on the content of the course, evaluation procedures, etc.
- It can be used for transferability negotiations with other Institutions that offer similar programs.
- It supplies the basic information required for the development of the instructor guide.

Who is Responsible for the Course Syllabus?

- Instructional designer
- Instructors

The Instructor Guide

What is an Instructor's Guide?

An *instructor guide* is a course document containing:

- General information about the course, including:
  * Rationale statement
- Specific information about the course, including:
  * Pre-requisites
  * Duration
  * Evaluation procedures and expectations
  * Awards/credits
  * Course goals
  * Reference list
- List of equipment (where applicable).
- Units of instruction, including:
  * Learning outcome statements
  * Learning tasks
  * Recommended instructional methods
  * Recommended instructional aids
  * Duration
  * Reference/resource list

What is the Instructor Guide Used For?

An *instructor guide* is a valuable document for instructor. It can function as:

- The standard to ensure that curriculum is adhered to, regardless of which instructor teaches it.
- The main resource for the development of a Lesson Plan.

Who is Responsible for the Instructor Guide?

- Instructional designers
- Instructors

The Evaluation Process

How is a Program or Course Evaluated?

At the beginning of this paper, the process of *curriculum development* was described as being a cycle, with continuous evaluation enabling the training to be modified and improved.

Program evaluation comprises three components:
- Evaluation of *Program effectiveness*
- Evaluation of *Program acceptability*
- Evaluation of *Program efficiency*

Evaluating the Effectiveness of a Program

Evaluating a program for its effectiveness determines *how well the learners mastered the learning outcomes of the curriculum.* In other words, is there *still* a performance discrepancy?

The most important measure of program effectiveness is how well the knowledge, attitudes, and skills delivered in the program were transferred into jobs and employment opportunities.

Obtaining Evaluation Information
Information from which the effectiveness of a program may be evaluated is obtained from feedback surveys of employed graduates of the program, their supervisors, and their employers.

Another criterion for measuring the effectiveness of a program is the number of learners who graduate from the program. No matter how successful the *graduating* learners are, no course or program is really successful if *many* learners do not complete the course.

Evaluating the Acceptability of a Program

Evaluating a program for its acceptabilit*y* determines *whether the learners are satisfied with that program.* A program, or course, that achieves all of its objectives may still be judged a failure if the people involved disliked the experience**.**

Obtaining Evaluation Information
The purpose of obtaining evaluation information is to determine how the acceptability of a program can be enhanced.

Learners are asked to complete a questionnaire at the end of the course. Because the instructor plays such an important part in the success of a course, this questionnaire will supply feedback on the instructor, as well as on the course itself.

Learners' reactions are not the only indication of an acceptable program. The feedback process should also determine the reactions of instructors and administrators**.**

Evaluating the Efficiency of a Program

Evaluating a program for its efficiency determines *whether the program merits the use of the resources.*

Obtaining Evaluation Information
While some aspects, such as an instructor's time, energy, and enthusiasm cannot be measured accurately, there are some indicators that can reveal the efficiency of a program. For example:

- Do the outcomes of the program justify its resources?
- Is there any obvious wastage of time, materials, or resources?
- Are personnel or equipment under-utilized?
- How does the program compare with others?

Who is Responsible for Evaluating a Program?

Different individuals are responsible for evaluating different aspects of a program or course. Instructors are responsible for supplying feedback questionnaires to your learners at the end of each course, so that their views on that course's effectiveness and acceptability may be monitored.

A Final Word on Program Evaluation

The internal evaluations of a program or course, described here, may lead to changes that are designed to improve their effectiveness, acceptability, and efficiency. Another factor that may also lead to a change in the course, is a *change in the need* - described under *Needs Analysis*. Needs change. New equipment is introduced. New technology appears. Processes change. New regulations change the way things must be done. Jobs become obsolete, and new jobs appear. If a program or course is to survive, it must change with the changing needs.

Curriculum Development is an on-going process - it doesn't stop once a course has been developed! This is an unfinishing work.

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