

A MULTI-LEVEL CURRICULUM MODEL
FOR VOCATIONAL EDUCATION IN AGRICULTURE:

"IDENTIFYING THE STRIKE ZONE"

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"Our teacher," says Linus, "has an interesting theory. She says teaching is like bowling. All you can do is roll the ball down the middle and hope you touch most of the students."

Replies Charlie Brown, "She must be a terrible bowler."
(Schultz, 1976)

The dilemma of teachers is succinctly addressed in the preceding exchange. How to meet the needs of students taxes the creativity of even the most resourceful teacher. Yet, from a student's viewpoint and with keen insight Charlie Brown senses that there must be a better way.

Obviously, curriculum design is central to the problem. Public policy (Act 94-482) and educational theorists promote competency based vocational education, "mainstreaming" (inclusion of handicapped and disadvantaged persons in regular classes), career education, and individualized instruction to name a few concepts currently popular. Ultimately, it is the teacher who must translate such concepts into educational practice. Weisman (1973) warns, however, that "it is much easier to promulgate policy statements and objectives regarding services . . . than it is to provide successful occupational and ancillary experiences." Without adequate curriculum design and instructional materials, as well as administrative support, the teacher is forced into the dilemma characterized in the opening statement of this article.

Curriculum design is the key. However, curriculum projects reported in ERIC since 1974 fail to conceptualize a vocational curriculum model oriented around student needs and abilities as well as occupational competencies. Land (1975) in an individualized learning pack project for disadvantaged youth does better than most. In that project, tasks were arranged so that simple tasks were performed first, followed by tasks of increasing complexity. Unfortunately, tasks were not organized according to occupational requirements.

Curriculum Model

Let me propose a conceptual framework for curriculum that attempts to embody all aspects of curriculum design. For curriculum purposes, four levels of vocational development are recognized: (1) operational, (2) skilled, (3) technical, and (4) professional. To illustrate the hierarchy with an example from agricultural mechanics, an operator runs a garden tractor, a skilled employee repairs it, a technician builds it and a professional designs it. Most jobs are organized along these classifications.

Vocational-technical education is directly involved in the first three. Currently most curriculum, as well as supportive curriculum material, is organized around subject matter so that the skilled and technical skills are taught simultaneously to all students. Operational tasks are often not taught at all (Shipley and Williams, 1974).

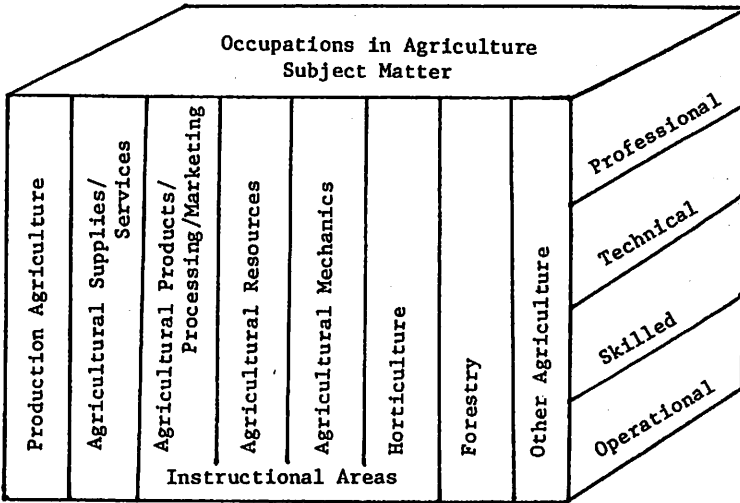
Success in jobs does not necessarily dictate that employees be trained at all levels up to that job classification. To illustrate, a small engine repairman (a skilled job) does not necessarily have to be trained at the operational level (operating a lawn mower) although such experience would probably enhance that persons worth as a mechanic.

The four-level job classification scheme has important implications for curriculum design and instructional materials for at least three reasons: (1) adaptations to meet the varying interest and ability levels of youth are required, (2) the broader the range of operational tasks learned by students, the greater their employability, and (3) the design of instructional materials to include operational, skilled, and technical levels can promote upward mobility of students.

The model of job levels and their relationship to educational programming is illustrated in Figure 1. The model is developed from the content of agricultural education although it certainly has wider application. In the model, four levels of occupations in agriculture are shown on the right with the operational level in the lower right hand quadrant. The seven instructional areas in agriculture are shown in the center. No hierarchy is implied. Subject matter competencies needed for occupations in agriculture are depicted as the contents of the cube. Student capability as a variable is entered along the left margin of the cube.

Figure 1

VOCATIONAL CURRICULUM DEVELOPMENT MODEL FOR AGRICULTURE



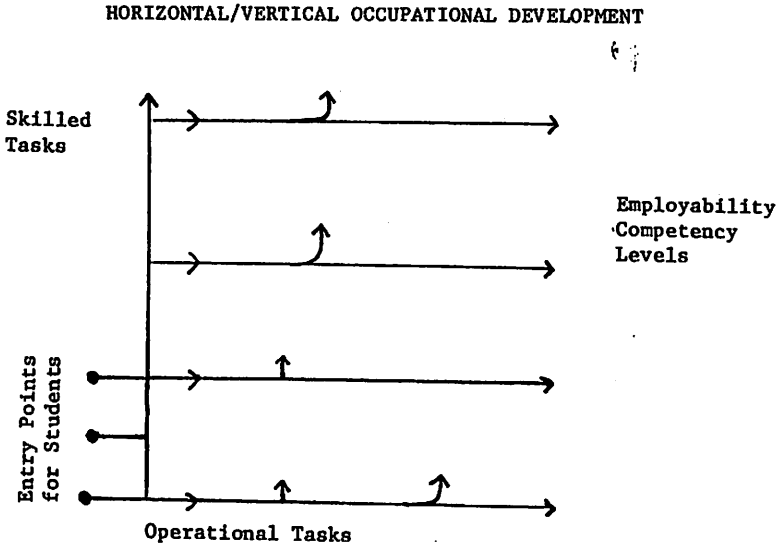
Operational Level

To fully understand the implications of the model, it is crucial that the operational level be thoroughly understood. This level constitutes the operations and tasks of entry level jobs as defined by the *Dictionary of Occupational Titles (DOT)* (1965) under levels 1, 2, and 3 for General Education Development (GED). The six GED levels of the *DOT* span the four classifications of occupational levels from operational through professional for reasoning, mathematical, and language development. Physical demands of the job are listed elsewhere in the *DOT*. GED levels 1, 2, and 3 deal with entry level jobs in ascending order of difficulty. GED level 1 for reasoning development, for example, is "carry out instructions in simple one or two step instructions. Deal with standardized situations." (*DOT*, 1965). Thus, it can be seen that operational level jobs require the least vocational education and are usually entry level for the high school graduate or drop-out with minimum skills. Occupations in agriculture in this classification are dairy farm hand, dairy milker, park attendant, nursery or greenhouse worker, farm or turf equipment operator. How, then, do operational level tasks fit into the curriculum design and the development of instructional materials?

Horizontal/Vertical Progression

Curriculum must be designed to encourage horizontal/vertical occupational development of students as their interests and capabilities allow. What this means is that as a student becomes competent in a cluster of operations or tasks at the operational level, curriculum provisions should be made so that the student can progress horizontally to learn other clusters of skills at the operational level; or, progress vertically to learn clusters of skills at the skilled level. One of the benefits derived from this type of organization of curriculum is that the disadvantaged student is equipped with many operational competencies upon leaving school. Clearly, the greater competency base possessed, the greater the likelihood for employment and advancement. Likewise, the student choosing the skilled level route starts from the base of operational competency, but is not hindered from occupational or educational advancement. The same logic applies between the skilled and the technical job levels. Obviously, the individualized mode of instruction is an essential component in this concept. Figure 2 illustrates this concept, showing entry level at several points, depending on competency with both vertical or horizontal progression available and possible.

Figure 2



Instructional Materials

Unless instructional materials support the curriculum design, the model is incomplete. The operational, skilled, and technical levels are logical divisions for curriculum development. Instructional materials at the operational level are often neglected except for those developed for disadvantaged youth. Knowledges and tasks to be learned must correspond to the occupational competencies required for level of employment. Performance standards must never be lowered below what is required for occupational competency. This is a crucial point. There is no merit in a vocational program that does not provide youth with occupational competencies needed for employment. So, whatever the particular vocational program, instructional materials must provide students with the content and the standards required for employment.

How to discover what these competencies are is critical. Job analysis can provide them. Too frequently, though, job analyses are conducted by asking the employer or supervisor what competencies are needed for employment in a particular job. And, speaking frankly, too frequently these persons don't know. The result in many instances is that competencies are listed that aren't needed.

DOT job descriptions are not adequate either for at least two reasons. First, they are not written in sufficient detail for instructional materials development and can only be used as guidelines. Secondly, in small firms an employee will probably be performing operations that span two or more of the occupations described in the *DOT*.

What is necessary is to verify the competencies needed in a position by observing and interviewing persons employed in that position. Competencies named by employers can be verified by analysis of the employee doing the job.

Building the content of instructional materials through job analysis insures relevance and currency. Once competencies needed have been verified, it is important in instructional materials development to fortify them with the background knowledge that explains why the operation is performed. The "why" of an operation is usually best explained when the "how" is being illustrated. To say that students need to know "why" before they learn "how" is contrary to good learning theory (Drawbaugh and Hull, 1971). For example, a sharp lawn mower blade cuts the grass cleanly, rather than tearing the grass which causes the grass to turn brown at the point of cutting. Knowing this, a student is more likely to perform the sharpening activity properly. To neglect teaching "why" at the point of teaching "how" is wasteful of students' and teachers' time.

Summary

The curriculum model proposed in this article accomplishes two central objectives: (1) it is designed according to the realities of the world of work rather than a subject matter approach that usually spans all levels of occupational development within a single unit, and (2) it is geared to the interests and capabilities of students.

The model will work only when "fleshed-out" with appropriate instructional materials for each occupational level. To date, most curriculum materials in agricultural education do not readily adapt to the model. If our goal is maximum development of employable youth, it is proposed that we adopt this curriculum model without delay; then exert our efforts to support the model with curriculum resources so that teachers do not have to "roll the ball down the middle."

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