IF ANY benefits are to accrue from the efforts of curriculum specialists to improve instruction, these efforts must be aimed at the encouragement of diagnostic teaching. The ultimate improvements in teaching and learning will only be realized when teachers can assume the role of learning diagnosticians, with a basic commitment to prescribing learning opportunities which will enable the pupil to meet his individual needs as a learner.

This form of teaching, which will be referred to as "the diagnostic process," consists of at least four integral phases. These phases are: determining the needs of individual learners; specifying instructional objectives which, when they are achieved, will help the pupil satisfy his needs; prescribing and guiding learning opportunities to help the pupil achieve his objectives; and assisting in the process of evaluating the pupil's progress toward achieving his goals.

The diagnostic process requires a great deal of skill and effort from the professional teacher. Alone, the teacher cannot adequately perform all the necessary functions of diagnosis and prescription. However, with assistance from service personnel in the school, diagnostic teaching can become a reality. The role of the curriculum specialist is a critical one. He can contribute greatly to the improvement of instruction by helping the teacher accomplish his tasks as a diagnostician.

**Determining Needs**

The teacher's function in determining individual needs is a complex task. The point of departure for discussing this function should be the basic needs of individuals. Much has been said on this topic. Saylor and Alexander point to the existence of seven basic needs for all individuals: ¹

- The physiological needs
- The safety needs

Belongingness and love needs
Esteem needs
Need for self-actualization
The desire to know and understand
The aesthetic needs.

The task of the diagnostic teacher, in relation to these needs, is to determine the status of the individual pupil in his attempt to satisfy these needs, and which of these needs is most demanding at a given time. The entire diagnostic process depends upon the accurate identification of this status.

The role of the curriculum specialists in helping the teacher in this phase will be determined by what the teacher requires to accomplish this task. The most outstanding requirement of the teacher is, and logically so, time to plan with individual pupils. This requirement will run through all phases of the diagnostic process.

Another important task for the curriculum specialist is to make available to teachers the data, or means of acquiring data, about pupils which is necessary for determining pupil needs. This should take the form of supplying test data that is available, providing services for testing students, and providing test batteries which could be used for this purpose.

Not of least importance is the role the curriculum specialist should play as liaison between the teacher and other service personnel. He must arrange for the services of social workers, psychologists, physicians, nurses, and guidance workers where these personnel can be of assistance in assessing needs of individual learners.

**Specifying Instructional Objectives**

The teacher’s task in specifying instructional goals is a twofold process. First, the teacher must provide alternative suggested goals which, if achieved, would assist the pupil to satisfy his needs. Second, the teacher must help the pupil understand these goals by stating them in terms of expected behavioral outcomes. Only then can the student select those objectives which he would most like to achieve, and clearly realize the outcomes expected from achievement of the goal.

The curriculum worker can assist the teacher by providing extensive lists of behavioral objectives which can help pupils satisfy specific needs. Such lists are available in curriculum guides, resource units, and resource guides, in addition to various professional and instructional materials. Most important, the curriculum specialist can offer suggested lists of objectives which are appropriate for specific needs. The teacher can then select those which are most appropriate for individual learners.

**Prescribing Learning Opportunities**

The teacher prescribes instructional activities and materials suitable to the learner, which will help the pupil to achieve his chosen objective. These oppor-
tunities for experience will vary according to the objectives and the characteristics of the learner. An activity that might help one pupil achieve an objective might be of little value to another pupil due to his unique nature. The teacher's task is to differentiate between those opportunities which are useful for a given pupil in achieving a given objective. Once he has prescribed the appropriate activities and materials, the teacher must become a logistician for the guidance of these experiences. Often this must be accomplished individually with pupils, occasionally with small groups or the total class.

The curriculum specialist's role in helping teachers prescribe learning opportunities is also partially logistical in nature. His first task, however, is to provide a wealth of suggested activities and materials which are appropriate for achieving specific instructional objectives. These lists can be found in all the sources mentioned under objectives. In addition, the curriculum worker can provide suggested activities and materials acquired throughout his experience as a teacher and his work with other teachers.

Along with the list of suggested activities and materials, the curriculum worker should provide relevant data about their appropriateness for certain learner characteristics. That is, data such as reading level or interest area should be provided so that teachers can prescribe appropriate learning opportunities to specific individuals. Needless to say, the curriculum worker must also insure the ready availability of these resources.

Evaluation

Evaluation is a two-pronged process for the teacher. First, evaluation is necessary to assess needs and, second, to evaluate the pupil's progress toward achieving his objectives. Assessment of needs has already been covered, although evaluation of progress begins the process all over. Evaluation of progress must be carried on continuously throughout the diagnostic process.

This stage can only be carried out if the objectives have been stated in terms of expected behavioral outcomes. Stated in such a way, the teacher can help the pupil determine his degree of achievement of the objective. This can be done in many ways, depending upon the objective. Devices especially appropriate for evaluating progress are standardized tests, paper-pencil essay and objective tests, rating scales, checklists, logs or diaries, and direct or self observations. Evaluation of this type can provide for resetting goals and prescription of new learning opportunities.

The curriculum specialist can be especially useful in assisting teachers with pupil progress evaluation. He can help teachers to state their instructional objectives behaviorally. He can do this by frequently asking the teacher what behavioral outcomes he expects from his pupils. Frequent reminders of this may be necessary as well as assistance in clarifying the goals in these terms.

Another way the curriculum worker can help is by offering suggested techniques for evaluating progress for specific objectives. In fact, he should keep at hand a complete card file of evaluation devices, filed according to appropriate goals.
would be a ready reference for teachers who could then use the devices with individual pupils as necessary.

Perhaps a final way to help the teacher in evaluating pupil progress is to give individual and group guidance to teachers building new measuring devices. The curriculum worker can provide the needed assistance for finding new and better ways to evaluate.

Diagnostic teaching is an imperative if we wish to attain lasting improvement of instruction. This process consists of at least four phases: determining individual needs, selecting goals, prescribing and guiding learning experiences, and evaluation. The teacher has major responsibility for the direction of the diagnostic process, but the curriculum specialist should play a vital role. To facilitate the diagnostic process, the curriculum specialist should perform the following functions to help the teacher:

1. Provide time for teacher-pupil planning by reducing class size, providing clerical assistance, and eliminating routine functions from the teacher's schedule.
2. Provide data, and means for acquiring data, about pupils.
3. Serve as liaison between teacher and service personnel.
4. Provide extensive lists of behavioral objectives keyed to the needs to which they are related.
5. Provide suggested activities and materials keyed to the objectives to which they relate.
6. Provide data about the relevance of resources to the characteristics of learners.
7. Organizing logistics to make resources readily available to teachers.
8. Help teachers to state objectives behaviorally.
9. Provide extensive files of evaluation devices keyed to the objectives to which they relate.
10. Provide assistance to teachers to create new and better methods of evaluation.

The Changing Curriculum:

**SCIENCE**

by RICHARD E. HANEY

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