

Directional Tests for Educational Guidance

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Despite the fact that many scholarly papers have been written on the general subject of "aptitudes" and "aptitude testing," there is considerable confusion as to their *functioning* in terms of different types of work or study. Part of this confusion arises because educational and vocational problems can hardly be differentiated, and part because of an overlapping of objective measures of *achievement* with those of *aptitude*. Thus, the college dean or guidance officer, influenced by the "round peg in square hole bogie" of vocational guidance, and lacking a clear conception of "educational aptitude," may prematurely emphasize the choice of a career at a time when emphasis should rather be placed upon curricular planning appropriate to the student's particular kind of readiness to learn.

As an example, we may compare "vocational aptitude" for accounting with "educational aptitude" for mathematical studies. Accountancy is an admirable profession, offering excellent opportunities for those possessing the attributes essential to success therein. Among these is at least one phase of mathematical ability. The same basic learning power, or educational aptitude in respect to dealing readily with figures and quantitative concepts, which is demanded for qualification for the C.P.A. degree, might find equal scope in other fields. Astronomy, actuarial work, statistical method, and certain operations in physical science readily come to mind. The important point is first to identify and cultivate mathematical aptitude where it exists.

The term aptitude itself is often so loosely employed that it must be here defined. The accepted use of this word among students of mental measurements is substantially that given in Warren's *Dictionary of Psychology*.¹ An aptitude is there defined as a

"condition or set of characteristics regarded as symptomatic of an individual's ability to acquire training in some (usually specified) knowledge, skill, or set of responses such as the ability to speak a language, to produce music, etc."

Two points especially are to be noted in this definition. In the first place, aptitude is differentiated from skill. Skill is the ability to perform some given responses at a given time; aptitude is the ability to acquire skill under appropriate conditions, regardless of whether those conditions have arisen or not. In the second place, the definition does not involve any assumption as to whether aptitudes are acquired or innate even though

¹ Warren, Howard C., ed., *Dictionary of Psychology*, Houghton-Mifflin Co., N. Y., 1934.

it is important theoretically. This usage is essentially the same as that outlined by W. V. Bingham in *Aptitudes and Aptitude Testing*.²

Within the field embraced by this definition, colleges and universities are more concerned as to a still more limited area, which, for convenience, may be called the area of *educational aptitudes*. Their concern is in terms of the students' abilities to acquire knowledge and skills demanded for specific curricula. Many so-called aptitude tests are at the *skill level* but the problem here is somewhat different—and much more limited—than the measurement of ability to acquire *trade skills* in clerical or factory work. For example, a report³ in aptitude testing in the textile industry deals with the measurement of "work capacity" in that field. It involves such indices of promise for training as knot tying by hand or with a knotting machine, the visual sorting of threads, tactual sorting of fabrics, etc. These are not the kind of measures with which college deans and guidance officers are concerned.

Yet, an interesting parallel exists in methods of approach to the testing technique between primarily vocational and educational instruments. A consideration of this relation helps clear up some of the confusion over the functions of aptitude and achievement tests. We may take as analogous to *achievement* measures in education, the various "trade tests" designed to measure an individual's attained skill in a particular job, or his knowledge of operational processes. Examples of this are the type of mechanical ability test which calls for identification of tools and equipment, and the oral trade questions used by the United States Employment Service. The parallel to *educational aptitude* tests are the various instruments designed to measure the (as yet) untrained individual's *potentiality* for acquiring vocational skills. For instance, we administer finger dexterity tests to measure "teachability" or apprenticeship promise before assigning girls to vestibule school training in tube mounting operations. Aptitude tests as so conceived have been utilized more extensively by industry at the *skill level* than by colleges at the higher levels.

As far as colleges are concerned, the ultimate utilization that is made of students' aptitudes, after further training, in a particular field, is surely less important than is prompt recognition and development of this learning capacity *per se*. It is likely that vocational guidance will take care of itself in time, if intelligent planning has laid the proper foundation for personal growth and intellectual development. Narrow specialization based on specific vocational guidance is not sound. The choice of any particular occupation should not be prematurely or narrowly determined while the educative process is still in flux.

From this point of view, the present state of aptitude testing in colleges is far from adequate or helpful. Well validated achievement tests or other measures of learned materials are not of any great use as

² Bingham, Walter V., *Aptitudes and Aptitude Testing*, Harper and Brothers, N. Y., 1937, p. 17.

³ Bauer, W., "Aptitude Testing in the Textile Industry," *Industrial Psychology*, 16, 41-44 (1939).

aptitude identifiers, and they often prove misleading. Resulting data fail to suggest any promise for fields of study to which a student has not been exposed. Hence, neither the student nor the guidance officer can have a suggestion as to other fields which offer scope to intellectual powers of a different type. Achievement tests throw some light on what *he might* have acquired under other educational circumstances, or from other courses than those already experienced, but they are neither prognostic nor analytical.

A similar criticism might be applied to scholastic ability tests as measures of capacity to learn. It is assumed that scores on scholastic ability—or intelligence—tests indicate the extent of one's ability to achieve in most abstract fields. Such tests are supposed to measure abstract intelligence, but they are usually validated in terms of the language-academic curriculum with all the limitations of usefulness that such validation implies.

The difficulty in discovering valid educational aptitudes is further aggravated by factors at work in the extra-college environment. There is always the danger that some combination of primarily subjective circumstances and opinions, stemming from family or social influence, may too soon press an individual towards some course of study for which his mental make-up is not well suited. Often a girl or boy thus misdirected may not realize the presence of relative talents and limitations for a particular educational area until rather late for optimum development. In the extreme instances—which are not few—such potentialities may never be explored, with some frustration rather than fruition as the result. *There is a clear need for some kind of aptitude measurements which will discover latent learning abilities of a specialized sort*—and such abilities that might not otherwise be discovered. We need aptitude tests that have directional significance.

There is no intention here to minimize the difficulty of fulfilling this need. There is very little with which to start. Yet, research-minded educational psychologists who choose to meet the challenge will some day develop educational aptitude tests to the degree that they have intelligence and achievement tests, and will find for them equal, if not greater, acclaim in the field of education.