## **From the Student to the State**

Excerpted from Chapter III of *Knowing the Learner*

## What Is Educational Information?

The examination of educational assessment and evaluation presented in the preceding chapters revealed that educational information (i.e., information that serves strictly essential educational functions) centers around attention to how well individual learning goals have been attained. In fact, it is illuminating that the essential educational functions (*curriculum*, *assessment*, and *instruction*) can be defined on the basis of the concept of the learning goal. In this chapter, we will consider the forms which this kind of information must take to be educationally productive and how to prevent the misuse of that information. As has already become evident, the most serious misuse of educational information is its application for non-educational purposes. This can distract attention from the goals for learning, dilute effectiveness of instruction, and produce deleterious side effects.

### Practical Learning Goals that are Specific and Distinct

#### Specific

Practical learning goals are intended learning outcomes specified at a level appropriate to planning, carrying out, and evaluating instruction. We call this the *critical level of specificity*. Practical learning goals are distinct from the learning goals that make up the common *educational standards* promulgated by state agencies. These educational standards are typically broad learning goals within which more specific learning goals are contained. Those who must take responsibility to design and carry out activities that help students attain such standards realize that working with broad goals is impractical and so break them down into more specific components. For example, the Education Department of the State of Georgia has identified “**Map and Globe Skills**” among its standards, and then more specific learning goals such as ‘*7. use a map to explain impact of geography on historical and current events*’ and ‘*10. use graphic scales to determine distances on a map*’.[[1]](#footnote-1) Goals at the latter level of specificity are what is needed to plan instruction and build assessments.

#### Distinct

We have seen that the aggregation of information from disparate learning goals results in loss of educational usefulness. When building assessment in practical contexts then, the learning goals must have the property of being distinct from each other as well as specific. That means that one and only one practical learning goal is being addressed.

Because of the particular usefulness of the practical learning goal to instructional planning and evaluation, educational assessment is also best designed and carried out at this level of specificity and distinctiveness. Implementing standards always requires work at the level of goals that are distinct and specific. The term *learning objective* is often used to refer to the critical level of specificity of practical learning goals. However there is sufficient variation and lack of precision in the use of the term *learning objective*, that we find it productive to use the term *practical learning goals* instead and to refer to a *critical level of specificity*.

### Practical Learning Outcomes

The critical unit of educational information then must be learning outcome information aligned to *practical learning goals*. Such information provides the most salient and useful basis for planning, carrying out, and evaluating instruction in practical educational settings, at the scenes of what we have referred to as educational events. This applies irrespective of whether the settings are classrooms, computer based learning, or experiential learning activities. The outcome information aligned to a distinct learning goal at the critical level of specificity can be called the *practical learning outcome*.

What is not widely recognized is that practical learning outcome information is generalizable and can be useful on a large as well as a small scale. Not only is it the information most needed at the scene of educational events, we will show that it is at the same time the very information most needed for educational research, program evaluation, accountability, and decision making at all levels of educational programs from the student to the state. This underlying multiple utility of the same information suggests the potential for a previously unimagined level of efficiency for educational information collection and use.

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Educational assessments generate information about practical learning outcomes — information on how well practical learning goals have been attained. This is the primary information needed to support the work of teachers and learners at the scenes of educational events—the most vital level of the educational enterprise. Practical learning outcome information can be used to infer how well learning goals have been attained. This information provides the evidence needed to support planning, evaluation, and program improvement

### From the Student to the State Illustrated

The following illustrations[[2]](#footnote-2) are intended to demonstrate how the degree of attainment of *practical learning outcomes* can serve information needs at all levels of educational systems. Examples are drawn from an assessment activity known as **Cubes and Liquids**.**[[3]](#footnote-3)**

Figure 3.1 shows how the level of attainment on a learning goal can be depicted visually. We chose to characterize the lowest level as ***no evidence*** *of attainment* rather than as ***no*** *attainment* because of the inherent limitations of educational assessment. Assessment can elicit and present evidence concerning how well a learning goal has been attained, but cannot tell us definitively that a student has *not* attained a particular learning goal. At best we can say that we have found no evidence of attainment. Failure to obtain evidence of attainment could be a result of faulty or ineffective assessment practices as well student non-attainment. For visual simplicity two levels: ‘attained’ and ‘proficient’ have been combined although under certain conditions these might be profitably distinguished. Indeed, levels might be characterized with even finer distinctions where appropriate for particular learning goals.



**Figure 3.1 Key to levels of attainment for a practical learning outcome**

The levels of student performance on a single learning goal can then be displayed for a single class as in Figure 3.2. The display provides the teacher with detailed information about the number and percentage of individuals performing at each level. Performance information is aggregated across students while discrete information about the learning goal is maintained. A teacher can use such information to gauge overall attainment for an entire class. Corresponding reports can be generated to compare any groups within the class.



**Figure 3.2 Performance of all students in a class on a single practical learning outcome**

Teachers need to consider the attainments of individual students as well as overall class progress for any given learning goal as instruction progresses. Figure 3.3 contains a report of individual student outcome information over time for a single learning goal. A 9th grade teacher has chosen to display the performance of all of her students on measures of **density of solid objects** at the beginning and midpoint of the school year in order to plan how she will address this learning goal during the remaining portion of the year. She also called up information on how these same students were performing on the learning goal before they entered her class (in this case at the end of the 8th grade). Figure 3.3 contains a sample of individual student performance outcomes to illustrate that it is possible to consider the class and individuals at the same time. In this case she chose to display assessment results for all of her students, but she might also have generated a report for the classes separately to see if they differed in any substantial way. The top portion of the figure moves from left to right displaying class performance on this learning goal over time. Progress in attaining this learning goal is indicated by the increasing raw values and percentages of students represented in green and yellow. The bottom portion of the figure illustrates how the detailed information on individual students can be represented as well as the group as a whole.

Thus the progress of individual students on a learning goal can be easily viewed at any point in time up to the most recent date of assessment. Imagine that teachers need not wait for the end of unit, quarter, semester, or year for such reports but can obtain this type of assessment information whenever they need it. Such reports are simple and practical and such timeliness is within the purview of current information technologies. A report in this form allows the teacher to give special attention and differential instruction to individual students based on their current levels of attainment as well as to prepare an overall instructional strategy for groups. Similar reports can be generated in near real time to study potential differences in performance for any identifiable sub-group, for example students who have received different instructional treatments or to see if boys are responding to instruction in the same way as girls.



**Figure 3.3 Assessment results for a single learning goal for combined classes over time**

Supervisors and administrators can generate similar reports to monitor district-wide progress within and across grade levels for learning goals of interest over any period of time desired (Figure 3.4). These reports would be based on exactly the same information that was used by teachers for instructional planning, namely assessment data on how well students attained practical learning goals. Increase in the green and yellow portions of the displays from left to right signifies growth in attainment. White indicates that assessments were not conducted. Blank portions of the figure indicate that attention has turned away from assessing some learning goals, perhaps because a sufficient level of attainment has been attained overall in the mind of the user. Note that the aggregation is always across students on a single learning goal. This is completely different from the aggregation across diverse learning goals that characterizes conventional tests and grades.



**Figure 3.4 Learning outcomes for multiple practical learning goals, school or district wide, aggregation: all students by grade level**

Note that one class has surpassed school, district and state performance levels by mid-9th grade, even though it began with a typical profile. Students in this class seem to have progressed more rapidly than students at all other institutional levels in spite of the fact that their performance was more or less uniform at the outset. Such a finding suggests the existence of a factor that has positively affected attainment related to the targeted learning goal. Could this factor be associated with something that the teacher is doing? If so, is there something that can be learned from this teacher by other teachers across the district and the state having to do with realizing the targeted learning goal? Can this teacher become a resource for professional development for the school, the district, the state? The results for the school suggest the possibility that this may already be happening locally.

Deliberation concerning such unexpected goal attainment can be useful at all levels. Such evidence can provide a basis for decisions concerning professional development and resource allocation. The evaluative application of this information can lead to needed resources being directed to areas where individuals and groups are performing below expectations or to glean resources (e.g., expertise) from settings that are experiencing particular success. Thus, constructive rather than punitive actions can be the main line of follow up for those who are concerned with accountability. Non-oppressive means can be applied to support the aims of state initiatives such as *No Child Left Behind* and *Every Student Succeeds*.

What is presented in Figure 3.5 is precisely the information that is missing from most analyses of educational data. It should be clear that to serve as the basis for the type of constructive decision making proposed, information must be maintained in terms of how well *discrete* learning goals are being attained! If the targeted capabilities are core capabilities such focus in no way gives too much attention to a small set of learning goals.



**Figure 3.5 Aggregation at all levels *From the Student to the State***

Thus the same unit of information (i.e., practical learning outcomes aligned to practical learning goals) is available for purposes of instructional planning, evaluation, resource allocation, professional development, and even accountability at all levels of educational institutions. Such information is simple, to the point, and immediately meaningful and appropriate for decision making and action on the part of teachers, students, parents, supervisors, evaluation specialists, policy-makers, and legislators, in other words at all levels from the student to the state. This makes possible a virtually unparalleled efficiency in collection and use of educational information. Moreover, it is *the* information that is most salient for all of these purposes at all those levels.

Reports and inference of this kind do not require the arcane methods for scaling, analysis, and reporting that currently characterize the work of state education agencies and the testing industry when they construct and report on tests. The fixation with cutoff scores, item difficulty, and elaborate scaling and analysis methods that has dominated educational measurement for a century has stemmed from their history of association with high-stakes, norm-referenced testing and grading. The focus concomitant with the HSNR tradition has been on ranking, comparing, and discrimination of students—and more recently of teachers— all for non-educational purposes! This tradition has exacted an immense cost from the educational enterprise with little or no educational benefit. It does not take long after examining any of the almost omnipresent HSNR tests and methods, and the way they are applied, to see that they have little to do with helping people teach or learn.

Thus action at the level of the educational event can be supported and its value increased in various ways through action from other levels; school, district, state agencies, and professional organizations can all provide support in the form of professional development and resources based on practical learning outcome information. Practical learning outcomes can meet the information needs of all these levels and, in fact, can do so more effectively and efficiently than any other information currently used for these purposes.

1. https://www.georgiastandards.org/standards/GPS%20Support%20Docs/gps\_Socialstudies\_skills\_matrix.pdf [↑](#footnote-ref-1)
2. The graphics that follow are not based on analysis of real data. Rather, they are heuristic simulations illustrating ways in which practical learning outcomes can serve as the information needed for planning, evaluation, resource allocation, and accountability at all levels of educational programs. A working version of this system exists however and can be adjusted to function at all the levels that will be shown. [↑](#footnote-ref-2)
3. http://acase.org/cubes-liquids/ [↑](#footnote-ref-3)