

Table 1
Structure of the Original Taxonomy

1.0 Knowledge

1.10 Knowledge of specifics

1.11 Knowledge of terminology

across the spectrum of categories. Almost always, these analyses have shown a heavy emphasis on objectives requiring only recognition or recall of information, objectives that fall in the *Knowledge* category. But, it is objectives that involve the under-

Revising Bloom's Taxonomy

Write original compositions that analyze patterns and *Understand* through *Create* are usually considered

under 2. *Understand*. Since the student is asked to explain the "consequences of the Parliamentary

more important and long-lasting fruits of education: the more complex ones

Acts," one can infer that "consequences" refers to generalized statements about the Acts' aftereffects and is closest to *Bc. Knowledge of theories, models, and structures*. The type of knowledge, then, would

In addition to showing what was included, the Taxonomy Table also suggests what might have been but wasn't. Thus, in Figure 2, the two blank bottom rows raise questions about whether there

be *B. Conceptual Knowledge*. This objective would be classified in cell B2.

The key verb in the third objective is "write." Like the classification of the State of Minnesota's

might have been procedural or metacognitive knowledge objectives that could have been included. For example, are there procedures to follow in editing that the teacher could explicitly teach?

Paul R. Pintrich

The Role of Metacognitive Knowledge in Learning, Teaching, and Assessing

AS KRATHWOHL (THIS ISSUE) STATES, the revised Taxonomy contains four general knowledge categories: Factual, Conceptual, Procedural, and Metacognitive. While the first three categories were

general developmental trend vary from theory to theory, but they include the development of metacognitive knowledge, metacognitive awareness, self-awareness, self-reflection, and self-regulation.

Finally, there are a number of general strategies for problem solving and thinking. These strategies represent the various heuristics individuals can use to solve problems, particularly ill-defined

problems where there is no definite solution. Different tasks, but this is not necessarily the most adaptive use of the hammer—particularly if there are other tools that are better suited to the task. In the same way, specific learning and thinking strat-

solution. In the problem-solving area they can include the knowledge of means-ends analysis as well as knowledge of working backward from the de-

termined goal. For example, if one confronts a novel problem that is ill-defined, then general problem-solving heuristics

some subject matter content and retained it over some

Recognizing (also called *identifying*) involves
locating knowledge in long term memory that is

for example, a sample objective could be "Learn comparing (also called *contrasting, mapping,*
to translate number sentences expressed in words or matching) involves detecting similarities and

efficiency, and affordability. Notice that in this assessment task, students must not only apply a

Organizing (also called *finding coherence, integrating, outlining, parsing, or structuring*) involves determining how elements fit or function within a

determining how well the plan is working. A sample objective in social science could be "Learn to detect inconsistencies within persuasive messages." A corresponding assessment task could involve

is followed by a convergent phase, in which a solution method is devised and turned into a plan of action (*planning*). Finally, the plan is executed as the solution is constructed (*producing*). Not sur-

Note

[The body of the page contains multiple lines of text that are almost entirely obscured by heavy black redaction bars. Only a few faint fragments of text are visible, such as "the volume" at the top left and "the" in the middle right. The redaction bars vary in length and thickness, completely covering the underlying text in most areas.]

aligned with a lesson's or unit's objectives, all things being equal, then one might reasonably infer that instruction has improved.

Certainly there may be other ways for improving instruction. Examples would include en-

set about to collect appropriate descriptions of teaching. We were not seeking descriptions of excellent teaching or descriptions authored by teachers who were considered "master teachers" or "national board certified teachers" (although our teachers may well fit into these categories). Rath-

activities and assessment tasks are distinct, yet com- important details about the play (e.g., specific

teachers are able to raise the learning target of a particular lesson or unit, it can be argued that instruction has improved.

The Paradox of Simplicity Versus Complexity in Improving Instruction

There is a sense, akin to one of Murphy's

conceptual understanding of war and resources, and learn how to make comparisons in general. For this teacher, the activity statement may be a "shortcut" method of describing what is going on in class. This objective, while clear to the teacher, is implicit.

A second explanation for the conflation of objectives and activities is associated with the current push toward performance assessment (Wig-

problem, one classified as similar in cognitive challenge to the first, the tendency is to use the same strategy or approach used the last time. Thus di-

common sense—they are not so easy to implement. Somewhat paradoxically, the conflation of objectives, activities, and assessment tasks makes it dif-

perception that initial learning in several of these areas—particularly writing, research, and speaking

WC1. Understand and be able to explain the causes of the French Revolution

ing—often takes the form of applying procedural knowledge. In other words, there is a sequence of steps students must learn and use to engage successfully in basic writing, research, and speaking

WC2. Remember the major characters, events, and dates related to the French Revolution; and

WC3. Compare the three phases of the French

Table 1

Alignment of the UK's Objectives in Terms of the Taxonomy Table

| UK Objective | UK Objective Description | UK Objective Level | UK Objective Category |
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Figure 3
Serials, Historical Fiction, and Novel Worksheet

P. Ann Byrd

The Revised Taxonomy and Prospective Teachers

Revising Bloom's Taxonomy

the _____ guide for the course includes _____ we may be dealing with the *Conceptual Knowl-*

for students to work on several projects at a time _____ dress the learning needs of all students _____ at _____

the three components are well aligned, the assess- ticular types of objectives. Consider, for example,

The Cognitive Process Dimension

The Cognitive Process Dimension

| | | | | | | |
|----------------------|--------------------|----------------------|-----------------|-------------------|--------------------|------------------|
| The Knowledge | 1. Remember | 2. Understand | 3. Apply | 4. Analyze | 5. Evaluate | 6. Create |
|----------------------|--------------------|----------------------|-----------------|-------------------|--------------------|------------------|

Curricular Alignment: A Re-Examination

THERE IS A STORY that needs to be told. . . . It is a story about children and also about curricula—curricula transforming national visions and aims into intentions that shape children's opportunities for learning through schooling. (Schmidt & McKnight, 1995, p. 346)

We must "[change] the question from 'What students know and can do' to 'What students know and can do as a result of their educational experiences.'" (Burstein & Winters, 1994)

Content Coverage, Opportunity to Learn, and Curriculum Alignment

Figure 1 contains three primary components of curriculum: objectives (also known in today's vocabulary as content standards or curriculum standards), instructional activities and supporting materials, and assessments (including standardized tests). The sides of the triangle represent relationships between pairs of components. . . .

... the stress associated with

The Value of Curriculum Alignment

Even if the reader is convinced that the Taxonomy Table is a useful tool for estimating and increasing curriculum alignment, one question remains: Why should teachers be concerned about curriculum alignment? At least four answers to this question can be given.

research, students learn more in the college-preparatory classes" (p. 333). Consequently, "low-achieving high school students are capable of learning much more than is typically demanded of them. The key is to provide a serious, meaningful curriculum: 'hard content for all students'" (p. 336).

A third reason for the importance of curricula

The first is foreshadowed by the quotations with which this article began. Leigh Burstein was correct

lum alignment is that poorly aligned curriculum results in our underestimating the effect of instru-

Additional Resources for Classroom Use

...of objectives. While the book is indeed helpful

respects, Marzano's taxonomy is similar to the revision described in this issue of *TIP*. At the same time, there are notable differences that should be evident to those reading both volumes.

or helping beginning teachers learn to teach.
East Lansing, MI: National Center for Research on Teacher Education.

Fairman, Nancy, and Pauline G. ...

Ferguson, Using the Revised T ... of conversations with experienced and less

Promoting Thinking Through Peer Learning

Reflection: A lesson plan classroom approach comprehensive approach to teaching and testing. This

ment as an everyday, ongoing, integral part of teaching, not something that is separated from life in classrooms. The organization of the text follows the natural progression of teacher decision making—from organizing the class as a

highly practical book helps educators design a deeply aligned curriculum that produces academic results and a level playing field for all students. Each chapter covers principles of testing and curriculum building, and concludes with a summary of the key concepts presented. The

