Cone of Experience

Michael Molenda
Indiana University

Introduced by Edgar Dale (1946) in his textbook on audiovisual methods in teaching, the Cone of Experience is a visual device meant to summarize Dale's classification system for the varied types of mediated learning experiences. The organizing principle of the Cone was a progression from most concrete experiences (at the bottom of the cone) to most abstract (at the top). The original labels for Dale's ten categories are: Direct, Purposeful Experiences; Contrived Experiences; Dramatic Participation; Demonstrations; Field Trips; Exhibits; Motion Pictures; Radio – Recordings – Still Pictures; Visual Symbols; and Verbal Symbols.

[Insert Figure 1 here.]

Dale made minor modifications of the visual in the second edition (1954), changing Dramatic Participation to Dramatized Experiences and adding Television. By the third edition of the textbook, Dale (1969) acknowledged the growing popularity of Jerome Bruner's (1966) cognitive psychology concepts by overlaying Bruner's classification system for modes of learning—enactive, iconic, and symbolic—on top of his own categories. This adaptation of his own schema may have been portentous, perhaps giving implied license to others to make other creative adaptations and interpretations, not always to the credit of Dale's original notion.

Application of the construct

Dale's textbook in its three editions remained popular for over a quarter century. Inasmuch as the Cone provided the organizing principle for the book, it became ingrained in the thinking of generations of educational technology students and professors who used the textbook. It stimulated many efforts to extend the original idea by developing its implications for elementary education, secondary education, adult education, corporate training, and even counseling.

As a visible leader in audiovisual education, Dale and his work had a great deal of authority within the field. The Cone may be regarded as the earliest highly influential conceptual schema in the field. Dwyer (1978) in his landmark work on visual learning credits Dale as one of the thinkers who inspired the visual education movement:

> An explanation for the current widespread use of visualization can be traced back
> to the 1940s and 1950s when a number of theoretical orientations were
> identified—specifically the iconicity theory identified by Morris (1946) [and]
> Dale's (1946) cone of experience… (p. 6)

Dale's own claims for this classification system were modest and qualified. He advised against viewing the categories as "rigid, inflexible divisions (p. 37)." He insisted that the classifications should not be regarded as any sort of "hierarchy or rank order (p. 47)." This addresses one of the most prevalent misconceptions of the Cone—that the progression from concrete to abstract represented a value judgment about concrete over abstract learning activities. Instead, Dale advocated the use of whatever methods or media were appropriate for the learner and the task, acknowledging that words can be a powerful and efficient means of conveying ideas even for the youngest children. If he had a bias regarding media it was toward rich combinations of concrete and abstract experiences: "Abstractions must be combined, if we are

to have rich, full, deep, and broad experience and understanding. In brief, we ought to use *all the ways of experiencing* that we can (p. 48)."

Because many of those who referred to the Cone were advocates for specific media or for audiovisual media in general, they had a tendency to selectively emphasize those parts of Dale's work that supported their claims. Thus by the time of the third edition of *Audiovisual Methods in Teaching* (1969) Dale found it necessary to devote six pages of the chapter on the Cone to "Some Possible Misconceptions (pp. 128-134)." At the core of the misconceptions are the notions that the value of an activity increases with its realism and that the learner's understanding grows by beginning with direct experience and progressing to increasingly abstract activities.

One explanation for the prevalence of other interpretations of the Cone is that Dale did not explicitly draw the distinction between a descriptive construct and a prescriptive theory. He surely intended the Cone to be descriptive—a classification system—and not prescriptive—a road map for lesson planning. He came close to drawing this distinction when he stated in the Summary of his chapter on the Cone: "The cone, of course, is merely an aid to understanding this subject…something to help explain the relationship of the various types of sensory materials...(p. 52)." The key words are "understand" and "explain." These words indicate a descriptive purpose, not a prescriptive one.

On the other hand, Dale himself sometimes fell prey to the urge to extend the descriptive construct to prescriptions, as pointed out by Subramony (in press). References to "uses" or "implications" of the Cone are scattered throughout the various editions of Dale's textbook (Dale 1946, 1954, 1969). An example found in the third edition (1969) states "When properly understood and used, however, the Cone can be a helpful and practical guide (p. 110)." With

this sort of ambiguity from the author, it is not surprising that many of his followers attempted to use the Cone as a prescriptive guide to lesson planning.

Origins of the Cone's concepts

Ideas parallel to those expressed by Dale in the Cone of Experience appeared in the literature of education prior to 1946. Paul Saettler (1990), the historian of the field of instructional technology, points to *Exposition and Illustration in Teaching*, published in 1910 by John Adams "which included the following 'order of merit' concerning concreteness: '(1) the real object, for which anything else is a more or less inefficient substitute; (2) a model of the real object; (3) a diagram dealing with some of the aspects of the object; and (4) a mere verbal description of the object.' (p. 140). However, a more direct ancestor of the Cone is probably a diagram presented by Hoban, Hoban, and Zisman (1937).

[Insert Figure 2 here.]

They made the conceptual breakthrough of constructing a graph in which visual media are arranged along the y axis while the learner's level of development—from the concrete level of thinking to the abstract level of thinking—is arrayed along the x axis. In applying the graph to a particular case, one would locate the learner's current level of conceptual development (concrete to abstract) then trace up to the slope line and then horizontally over to the visual medium that intersects at the same point. For example, an experienced learner with a highly developed (abstract) knowledge of "jet propulsion" would be expected to be able to learn more about jet propulsion effectively with diagrams and verbal texts.

Hoban, Hoban, and Zisman's categories were: total situation, objects, models, films, stereographs, slides, flat pictures, maps, diagrams, and words. Dale's schema differs mainly in the addition of several classes of media and active learning experiences and the simplification of

the schema by showing only y axis—the media, indicating the other dimension (concrete-abstract) by the pyramidal shape of the cone. Although Dale's schema appears to be quite derivative of Hoban, Hoban, and Zisman's graph, he does not explicitly acknowledge this source, although he makes several references to their book elsewhere in his textbook.

Misappropriation of the Cone

It is important to discuss what the Cone is *not* as well as what it is because of a widespread misrepresentation that has become ubiquitous in recent years. At some point someone conflated Dale's Cone with a spurious chart that purports to show what percentage of information people remember under different learning conditions. The original version of this chart, shown in Figure 3, has been traced to the Socony-Vacuum Oil Company, according to Dwyer (1978), who cites Treichler (1967).

[Insert Figure 3 here.]

As Dwyer points out, the reported percentages are impossible to interpret or verify without specifying at least the method of measurement, the age of the learners, the type of learning task, and the content being remembered (p. 10). Despite the lack of credibility, this formulation is widely quoted, usually without attribution, and in recent years has become repeatedly conflated with Dale's Cone, with the percentage statements superimposed on the cone, replacing or supplementing Dale's original categories. The examples are too numerous to document here, but are discussed in detail and with citations in Subramony (in press). A rather sophisticated example of this conflation is shown as Figure 4.

[Insert Figure 4 here.]

In summary, the Cone of Experience is essentially a visual metaphor for the idea that learning activities can be placed in broad categories based on the extent to which they convey the

concrete referents of real-life experiences. Although it has sometimes been interpreted as advocating the selection of certain media and methods over others (favoring "realism"), such was not Dale's stated intent. It has also been interpreted by many as a prescriptive formula for selecting instructional media. Dale's own explanations are nebulous enough to enable a wide variety of interpretations to find support. Finally, there is the contemporary problem of the conflation of the Cone with the "Socony-Vacuum percentages." The fact that the Cone has been taken seriously enough to be used in so many ways testifies to the robustness and attractiveness of Dale's visual metaphor.

References

Bruner, J.S. (1966). Toward a theory of instruction. Cambridge, MA: The Belknap Press of
        Harvard University Press.

Dale, E. (1946) Audio-visual methods in teaching. New York: The Dryden Press.

Dale, E. (1954) Audio-visual methods in teaching, revised edition. New York: A Holt-Dryden
        Book, Henry Holt and Company.

Dale, E. (1969) Audiovisual methods in teaching, third edition. New York: The Dryden Press;
        Holt, Rinehart and Winston.

Dwyer, F.M. (1978) Strategies for Improving Visual Learning. State College, PA: Learning
        Services.

Hoban, C.F., Hoban, C.F., Jr., Zisman, S.B. (1937) Visualizing the curriculum. New York: The
        Cordon Company.

Saettler, P. (1990) The Evolution of American Educational Technology. Englewood, CO:
        Libraries Unlimited.

Subramony, D.P. (in press). Dale's cone revisited: Critically examining the misapplication of a

    nebulous theory to guide practice. Educational Technology 43.

Treichler, D.G. (1967) Are you missing the boat in training aids? Film and Audio-Visual

    Communications 1: 14-16.