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In Defense of Advance Organizers: A Reply to the Critics*

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The most pervasively voiced criticism of advance organizers is that their definition and construction are vague and, therefore, that different researchers have varying concepts of what an organizer is and can only rely on intuition in constructing one—since nowhere, claim the critics, is it specified what their criteria are and how they can be constructed (Barnes, B. R. & Clawson, 1975; Hartley & Davies, 1976).

If these critics had read my books on meaningful verbal learning and on educational psychology (1963, 1968) as well as my research articles, they would have found precise operational criteria for an advance organizer and a discussion of how to construct one. Apart from describing organizers in general terms with an appropriate example, one cannot be more specific about the construction of an organizer; for this always depends on the nature of the learning material, the age of the learner, and his degree of prior familiarity with the learning passage.

From the exhaustive and explicit general discussion of the definition, nature, and effects of an organizer in various publications (Ausubel, 1960; Ausubel & Fitzgerald, 1961, 1962; Ausubel & Youssef, 1963; Fitzgerald & Ausubel, 1963), plus the description of how to construct an

*To avoid unnecessary repetition, this paper does not reiterate specific replies to Barnes and Clawson (1975) found in Lawton and Wanska's (1977) paper in this journal.

organizer for a particular topic (Ausubel, 1968), there should be no difficulty for different researchers to construct comparable operationalized organizers for particular learning passages and to replicate each others' studies. Joyce and Weil (1972), for example, had no difficulty in operationalizing the distinction between expository and comparative organizers in relation to teaching concepts and facts in multiplication. It is interesting in this connection that Barnes and Clawson (1975) use my 1963 volume as their authority regarding my position when a much more recent and complete discussion of organizers is available in my 1968 textbook on educational psychology.

As stated by Percy Bridgman (the originator of the concept of operational definition of phenomena in science) an operational definition specifies the *general* criteria of the independent variables, vis-a-vis other related variables, in investigating a given phenomenon. Thus it is clear that the criticism that Ausubel has ". . . made logical but not operational distinctions between organizers and overviews . . . [and] has not operationally defined the advance organizer" (Barnes, B. R. & Clawson, 1975, p. 653) is based on a gross mis-conception of the nature of operational definition and a failure to distinguish between operational and procedural criteria of such definitions.

In all cases I define advance organizers as introductory material at a higher level of abstraction, generality, and inclusiveness than the learning passage itself, and an overview as a summary presentation of the principal ideas in a passage that is *not necessarily* written at a higher level of abstraction, generality, and inclusiveness, but achieves its effect largely by the simple omission of specific detail (Ausubel, 1963, 1968).

Further, advance organizers also differ from overviews in being relatable to presumed ideational content in the learner's current cognitive structure (Ausubel, 1963, 1968). By any reasonable standard this is an operational definition.

Procedurally, of course, one can identify an advance organizer by simple comparison with its accompanying learning passage and from knowledge of the pupils' previously studied subject matter. At a more sophisticated level of methodology, one can obtain consensus among judges that the advance organizer *actually* fulfills its purported criteria in relation to the learning passage, and one can map existing concepts in cognitive structure either through pretests or by means of Piagetian clinical interviews. In view of these considerations it is apparent that the comment quoted by Hartley and Davies (1976, p. 256), "If it works it is an advance organizer; if it doesn't work it isn't," is both unfair and unworthy. And their conclusion "that there is currently no acceptable way of generating or recognizing advance organizers" (p. 256) is completely unwarranted in light of the clear operational criteria I have offered in many articles and books.

The distinction between expository and comparative organizers is also operationally unambiguous. Expository organizers are used when the new learning material is completely unfamiliar, as determined by pretests, and attempts merely to provide inclusive subsumers that are both related to existing ideas in cognitive structure and to the more detailed material in the learning passage (Ausubel, 1960, 1963, 1968; Ausubel &

Fitzgerald, 1962). Comparative organizers, on the other hand, are used when the new learning material is relatively familiar or relatable to previously learned ideas. In this case the aim of the organizer is not only to provide ideational scaffolding for the specifics in the learning passage, but also to increase discriminability between the new ideas and the previously learned ideas by pointing out *explicitly* the principal similarities and differences between them (Ausubel, 1963, 1968; Ausubel & Fitzgerald, 1961; Ausubel & Youssef, 1963; Fitzgerald & Ausubel, 1963).

The suggestion by B. R. Barnes and Clawson (1975) that advance organizers are nothing new and were advocated and used by Herbart and Morrison in the nineteenth and early twentieth centuries is a perversion of the historical record and a crude, ignoble attempt to deprive me of credit for my original discovery of a pedagogic device. Both Herbart and Morrison merely taught that the learner's apperceptive mass or existing cognitive structure vitally affects his ability to comprehend and retain related new ideas. They did *not* advocate that more inclusive ideas related to existing ideas in cognitive structure should be *deliberately* introduced *in advance* of learning material to bridge the gap between what the learner already knows and what he needs to know in order to learn new subject matter effectively. Further, they did not explain explicitly how existing ideas in cognitive structure convert *potentially* meaningful material into *actual* idiosyncratic meaning in the learner.

Methodological Considerations

One of the most common methodological misconceptions about the organizer studies stems from Anderson's (1967) frequently quoted criticism in his well-known *Annual Review* article. He stated:

The organizers are reported to contain nothing which could be directly helpful in answering posttest questions. Instead Ausubel believes that organizers facilitate retention in an indirect manner by providing "ideational scaffolding." The weak link in the argument is that none of the studies thus far have included controls to show that the organizer alone does not improve performance. Therefore the possibility remains that the organizers have a direct rather than an indirect effect. (p. 158)

Anderson apparently neglected to read the clear statement in the procedure of two of the organizer studies (Ausubel, 1960; Ausubel & Fitzgerald, 1961) that described the use of a *special* control group (in addition to the control group studying a non-organizer introduction) that studied the organizer *alone* without the learning passage. This special control group did not score significantly better than chance on the learning and retention tests.

Still another methodological, as well as pedagogic, criticism of organizers (Peeck, 1970) is that they are too time-consuming to be efficient adjunct aids and that, therefore, the time spent on them would be just as well or better spent studying the learning passage itself. To support this argument, Peeck simply understates *by half* the time actually spent by

our subjects on the learning passage that is reported in the research paper he cites (Ausubel & Fitzgerald, 1962). He also ignores the relative amounts of time spent in studying learning and organizer passages respectively, varying from $2\frac{1}{2}$ to $3\frac{1}{2}$ to 1 in favor of the former, that are reported in three other organizer studies (Ausubel, 1960; Ausubel & Fitzgerald, 1961; Ausubel & Youssef, 1963).

Faw and Waller (1976) purport to see a major methodological flaw in the organizer studies based on the failure to use a control group that spent the additional time (used by the experimental group in studying the organizer) in studying the learning passage itself. It is implausible (but testable) to suppose that an additional 12.5% to 20% in studying time for the learning passage per se would facilitate learning and retention as much as an organizer. In any case, however, it is a gross overstatement to imply that the failure to control for this factor *completely* invalidates the findings of the organizer studies on the grounds of "methodological inadequacies." The bias of these authors is clearly apparent both in the intemperateness of this conclusion and in the use of the plural to describe a *single* alleged methodological limitation.

Hartley & Davies (1976, p. 254) charge that my organizer studies have limited generality because they were all conducted in one midwestern state university and one high school in Champaign, Illinois. Any fair-minded critic, however, would readily concede that there is no plausible reason for supposing that the findings of these studies would be different if the research in question were conducted in 100 different state universities or small-town high schools. To insist on representative sampling as a criterion for generality in a non-normative study investigating the relationship between a *general* learning treatment and a learning *outcome* betrays lack of understanding of the nature and use of sampling techniques in research methodology. Their further comment on the same page that "none of the studies describe the procedures used for generating organizers" (p. 254) is also a misstatement of fact since these procedures are spelled out in detail in every case.

In the next paragraph these very same authors state that the studies carried out by other investigators since 1967 "have also attempted to overcome some of the *methodological limitations* [emphasis added] of the earlier studies as well as to widen the age and ability ranges of the subjects involved. The results, not surprisingly, are not so overwhelmingly in favor of advance organizers" (pp. 254-255). It should be pointed out here that to refer vaguely and globally to "the methodological limitations of the earlier studies" without even specifying what these so-called limitations are is generally considered unfair and unallowable in a purportedly scholarly review. Further, my earlier studies not only used a wide range of ability levels, as determined by SCAT scores, but also reported and discussed the interactions between organizer treatments and intellectual ability.

B. R. Barnes and Clawson (1975) recently reviewed 32 studies on advance organizers and identified nine recommendations for improving research on advance organizers and identified nine recommendations for improving research on advance organizers. Unfortunately, they failed to note two of the most serious problems in such studies. First, most studies do not attempt any systematic appraisal of already avail-

able relevant concepts in the learner's cognitive structure that might be employed through an appropriately constructed advance organizer. Similarly, no effect was made to analyze the conceptual and propositional content of the passages to be learned to ascertain what kind of concepts are to be "bridged" to existing subsumers. In short, the analysis of both the learner's relevant subsumers and the concepts to be learned is missing, and hence it is very unlikely that an optimal advance organizer (or cognitive bridge) could be constructed. For these reasons, almost none of the studies they review bear any relevance to the effectiveness of organizers.

Second, most studies fail to consider carefully the proper level of item difficulty or item discrimination required for the questions raised. Many of the conflicting results as to whether advance organizers favor high ability or low ability students might be explained by the range of item difficulties on the criterion test(s). For example, we should expect a good advance organizer to facilitate learning only for high ability students if most of the discriminating test items show a small percentage of students passing the items (technically, items with low difficulties). Similarly, we could not show benefit from advance organizers for high ability students with criterion measures on which most better students obtain near-perfect scores on discriminating items. We have already noted that advance organizers are designed to favor *meaningful* learning, and hence criterion tests that require only *verbatim* retention of material are inappropriate. Tests of application of concepts to novel problems, especially when administered six weeks or more after instruction, are much more likely to show the positive facilitation of meaningful learning that should result from appropriately designed advance organizers.

The Pedagogic Effectiveness of Advance Organizers

Extremely equivocal findings have been reported for studies involving advance organizers (Barnes, B. R. & Clawson, 1975; Hartley & Davies, 1976). In part this is due to failure to adhere to the explicit operational criteria of what an organizer is (see above), and in part to various methodological deficiencies in research design. Hartley and Davies, as well as B. R. Barnes and Clawson, claim that most recent studies tend to report *negative* findings. This assertion reflects the highly biased selection of studies reported in their reviews since numerous organizer studies have been conducted. Even if true, however, this would not necessarily indicate, for the reasons already specified, that advance organizers are pedagogically ineffective.

There is good evidence from related studies, on the other hand, which tends to confirm the findings of the earlier organizer research. For example, recent research on the use of adjunct questions in prose learning by Rickards (in press), Rickards and DiVesta (1974), and Rickards and Hatcher (1975) indicates that once (1) the rote learning methodological bias of Rothkopf and Frase (requiring verbatim recall of single text phrases) is discarded in favor of demanding substantive learning of entire paragraphs and (2) the vague and global "mathemagenic" variable is replaced by differential variables permitting

the testing of more specific explanatory hypotheses regarding the facilitating effects of adjunct questions, superordinate concepts in the adjunct questions facilitate the learning of subordinate textual material in much the same way that advance organizers do. Also, consistent with the findings of the organizer studies, these latter workers found that conceptual *pre*questions yield higher recall and more highly structured memories than conceptual *post*questions, that *conceptual* prequestions, unlike *verbatim* postquestions, increase delayed as well as *immediate* recall, and that meaningful postquestions, like advance organizers, tend differentially to facilitate the recall of *poor* as opposed to *good* comprehenders.

Working with 6- and 10-year-old children Lawton (1977b) found an acceleration and facilitated effect from advance organizers on the learning of subject matter in that advance organizers significantly accelerated "a move from the level of pre-operations to that of concrete operations." In other cases it facilitated the more complete understanding of "concrete operations . . . at least within the context of a social studies unit" (Lawton & Wanska, 1977b).

Finally, B. R. Barnes and Clawson (1975) raise the issue of whether organizers merely exert a statistically significant effect or actually influence learning outcomes sufficiently to be worthy of large-scale application in the classroom. In a recent study, H. L. Barnes (1972) found that organizers have a *practically* important effect on school learning. Statistical analysis of her findings to assess "practical significance" showed that in 98% of the cases an advance organizer resulted in a 10% to 18% increase in mean learning score. Compared to groups not using an advance organizer, the percentage of increase in mean concept transfer score effected by an organizer varied from 16% to 50% depending on the type of learning task involved.

In my opinion, our understanding of the effects of organizers on school learning would advance much more rapidly (1) if the authors of the numerous critiques would first read the description and criteria of an organizer that has been set forth in numerous of my articles and books before castigating it as vague, intuitive, and nonoperational in nature, and (2) if they would also consult the original *primary* sources on the research methodology used in the organizer studies, instead of quoting the various inaccurate and misleading secondary sources that bear little relation to the actual experimental procedures employed.

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