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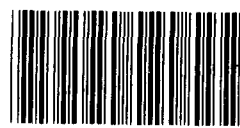


UNITED STATES GENERAL ACCOUNTING OFFICE RELEASED
WASHINGTON, D.C. 20548

HUMAN RESOURCES
DIVISION

September 26, 1984

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The Honorable Orrin G. Hatch
United States Senate "

The Honorable Robert T. Stafford
United States Senate

The Honorable Howard H. Baker, Jr.
United States Senate

Subject: GAO Evaluation of Report by Technassociates, Inc., on the Evaluation of Written Products Delivered by the National Center for Research on Vocational Education (GAO/HRD-84-79)

As requested by your offices, we reviewed an October 15, 1982, report prepared by Technassociates, Inc., entitled An Evaluation of the National Center for Research in Vocational Education, The Ohio State University, Columbus, Ohio: A Report of an Expert Panel on Written Products Delivered between January 1978 and January 1982. We reviewed the adequacy of the report's methodology and the support for its findings and recommendations.

Public Law 94-482 authorized the establishment of a National Center for Research in Vocational Education to conduct applied research on problems of national significance in vocational education and promote leadership development for state and local leaders in vocational education. Since January 1978, the Department of Education has contracted with the Ohio State University Research Foundation to operate the Center.

The Center was evaluated by Technassociates under a contract with the Department of Education, Office of Planning, Budget and Evaluation (ED/OPBE). The study was part of a broader ED/OPBE effort for purposes of obtaining information which would improve its ability to respond to program inquiries from the Congress and others. The Technassociates evaluation cost approximately \$87,000 and represented an estimated 100 staff days of work.

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Technassociates convened a panel of nine professionals representing different areas in vocational education to review a sample of the Center's documents. The study identified a number of findings which included, among other things, the adequacy of targeting certain documents, compliance with federal contractual requirements, and Center management. To correct the deficiencies, the report made recommendations to the Center. The results of panelists' reviews were summarized in the October 15, 1982, report to the Department of Education. This report also contained several recommendations regarding the Center's operations.

We did not review or evaluate any of the Center's written products. The objectives of our review were to assess (1) the theoretical appropriateness of the study's methodology and the appropriateness of the methodology as implemented by Technassociates in evaluating the Center's written products and (2) the degree to which the report's findings and recommendations were adequately supported by, and the logical consequence of, the data presented. Because we did not review the report's underlying documentation or discuss the methodology with Technassociates or the panel members, we were not able to separate deficiencies in the clarity and completeness of information reported from substantive methodological deficiencies.

The following is a summary of our assessment of the Technassociates study; a more detailed assessment is included in the enclosure.

The methodology employed in the Technassociates study was, in theory, a reasonable way of evaluating some aspects of the quality of the Center's work. The methodology's implementation, as described in the study and the reporting of study results, however, had several shortcomings.

In discussing the sampling procedures, the report neither states the size of the population from which the samples of written products were drawn nor maintains the distinction between a stratified random sample and two judgmental samples of Center documents in the analysis and reporting of results. Additionally, we found two significant omissions in the description of the study's data analysis. The first is the absence of any reporting of the number of responses on which reported results are based. The second is the absence of a description of the method by which a consensus rating was achieved or even whether such a rating was achieved when a document was reviewed by more than one panel member.

The report's findings are presented under seven sections that correspond to its seven evaluation questions. In all cases, because the report described neither the precise number of panelists responding to a question nor the analysis procedures used, it was difficult to assess the adequacy of the support for the findings. Nevertheless, based on information presented in the report, we found that the general findings in three of the sections were supported by the data presented. These findings were:

- the Center has complied with federal contractual requirements but did not meet the larger purposes of legislative intent;
- the Center's products added little to the existing knowledge about vocational education; and
- the Center's written products provide little basis in research for systematic improvement in the effectiveness or equity of vocational education services.

In two other sections we found that adequate supporting data for the findings were not presented. The first concerned the finding that the Center has not directed much of its written work at groups outside the traditional vocational education community. The second concerned the finding that most Center products address routine operational problems and are not adequately targeted to certain audiences.

We could not determine the adequacy of support for the final two findings--those concerning the quality of the Center's products and of its management. Regarding the former finding, there were not enough data presented to assess the adequacy of support. Regarding the latter finding, we believe that the report's stated scope, that is a review of published Center documents, was not sufficient to address the quality of management. There are indications in the report, however, that the actual scope may have included a review of internal management reports; consequently, we are unable to judge the adequacy of support.

The report's description of the sampling plan as well as its reporting of quantitative data resulting from the panel's review suggested, in our opinion, that Technassociates used rigorous evaluative procedures. In view of the shortcomings described above, however, we believe that the study should be viewed as a collection of the judgments of an expert panel regarding the quality and utility of the Center's documents, rather than as a methodologically rigorous examination of those

documents. The study's recommendations should, therefore, be viewed as a summary of panel members' judgments.

Assessing the recommendations in that context, we found that two of them, one concerning narrowing the Center's agenda and another calling for the Center's work to build ". . . the information base necessary to systematically improve the quality of vocational education," are logical consequences of the panel's judgments. The study's recommendation concerning the need for greater flexibility and guidance for the Center, while extremely general, also seems logically connected to the panel's judgments. The other two recommendations, however--one calling for an improvement in the quality of the Center's staff and another suggesting that a large portion of the Center's work be contracted out--are not, in our opinion, recommendations that could be adequately supported by a review of the Center's documents.

The matters contained in this report and its enclosure were discussed with Center officials; officials of the Office of Vocational and Adult Education and the Office of Planning, Budget and Evaluation of the Department of Education; and a consultant who acted as the project director for the Technassociates study. Officials of the Center and the Office of Vocational and Adult Education agreed with our positions regarding the material presented in the Technassociates report and provided no further comments. Officials of the Office of Planning, Budget and Evaluation and the ex-project director advised us that because the expert panel methodology in the Technassociates evaluation was a qualitative approach, our use of standards associated with a quantitative evaluation was inappropriate. However, as discussed here and in the enclosure, our concern was not with the use of an expert panel as an evaluative procedure, but with the report's implication that rigorous quantitative procedures were employed.

We trust that this information is responsive to your request. As arranged with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from its issue date. At that time, we will send copies to the Secretary of Education; the Director, Office of Management and Budget; and other interested parties and make copies available to others upon request.



Richard L. Fogel
Director

Enclosure

GAO EVALUATION OF
REPORT BY TECHNASSOCIATES, INC.,
ON EVALUATION OF WRITTEN PRODUCTS
DELIVERED BY THE NATIONAL CENTER FOR
RESEARCH ON VOCATIONAL EDUCATION

INTRODUCTION

Under contract with the Department of Education, Office of Planning, Budget and Evaluation (ED/OPBE), Technassociates designed and conducted an evaluation of the written documents produced by the National Center for Research in Vocational Education at Ohio State University. The study was conducted as part of a broader effort of ED/OPBE to obtain information to improve its ability to respond to program inquiries from the Congress and others. The Technassociates evaluation cost approximately \$87,000 and represented an estimated 100 staff days of work. A panel of nine professionals representing different areas in vocational education was convened to review a number of the Center's documents. The panel was asked to address the following seven questions concerning the Center's documents:

- °Are they responsive to federal requirements?
- °Whom are they meant to assist?
- °Do they provide useful assistance?
- °Do they add to knowledge about vocational education?
- °Do they exhibit high standards of quality?
- °Are they likely to improve vocational education?
- °What do they indicate about the management of the Center's program?

Technassociates developed two instruments for the panel's use in reviewing the Center's documents. These instruments were subjected to limited pretesting by the panel and were extensively revised as a result of the pretesting and discussions among the panel members. The first of these instruments was to be completed for each document reviewed. It consisted of 26 closed-ended items that asked each panel member to (1) identify the objectives and contents of the document, (2) identify the

document's target audiences and judge the perceived usefulness of the document to its audiences, (3) assess the editorial and scholarship quality of the document, and (4) judge whether the document would assist selected groups in achieving certain vocational education goals. The second instrument asked each panelist to make general assessments based on all the documents he or she had reviewed. It contained 18 open-ended items which paralleled, to some degree, the issues raised in the items in the first instrument. The items, in addition, asked the panelist, based on all documents reviewed, to (1) judge the Center's responsiveness to congressional intent and contractual requirements, (2) identify areas in vocational education in which the Center has done the most and least effective work and areas in need of improvement, and (3) address issues concerning research personnel staffing at the Center.

In selecting documents to be reviewed, three samples were chosen. The first sample was a random sample of 45 documents stratified by "functional area." The evaluation report does not clearly identify what "functional areas" are; however, it appears that they are the seven cost centers to which federal funds are allocated at the Center. These areas are:

- °Applied Research and Development
- °Information for Planning and Policy
- °Evaluation
- °Dissemination and Utilization
- °Clearinghouse
- °Leadership Development
- °Management

The second sample consisted of documents selected by each of the nine panel members. The report states that each panel member selected between 7 and 10 documents, basing his or her selection upon his or her area of interest or on the document title. The third sample was selected by the Director of the Center and was intended to reflect, in the judgment of the Director, the two best examples of the Center's written work in each of the functional areas.

The report states that each panel member reviewed approximately 25 documents with the total for each member varying as a result of the number of documents he or she selected on the

basis of their particular area of interest. Each document in the random sample was reviewed by at least three panel members. An appendix to the report indicates that a total of 74 of the Center's documents were reviewed.

Technassociates mailed each panelist a copy of each of the documents he or she was to review. After the individual reviews were completed, the panel met as a group to discuss their findings and recommendations. For these discussions, the panel members were divided into three groups. After these group discussions were held, the panel reconvened as a whole to hear a report of each group's findings, review a computer analysis of responses to the evaluation instruments, and conduct a general appraisal of the Center's documents.

OBJECTIVES, SCOPE, AND METHODOLOGY

We reviewed the final report of the Technassociates, Inc., study. This report included two appendixes that contained a list of titles of the documents reviewed by the study panel, and the two evaluation instruments used in the study. Those instruments are entitled Rating Schedule, Part I, and Rating Schedule, Part II.

Our review was limited to the report itself primarily because the report is represented as ". . . the most intensive one-time examination of any aspect of the NCRVE's [the Center's] work to date" and, in our opinion, should stand alone. Because we did not review the report's underlying documentation, nor discuss with Technassociates or the panel members the methodology actually employed, we cannot separate deficiencies in the clarity and completeness of information reported from substantive methodological deficiencies.

Our review of Technassociates' report had two objectives:

1. To assess the theoretical appropriateness of the study's methodology for evaluating an organization's written work and to assess the appropriateness of the methodology as implemented by Technassociates in the evaluation of the Center's written products and
2. To assess the degree to which (a) the methodology could address the stated evaluation questions and (b) the findings presented in the report were adequately supported by data gathered in the study and the report's recommendations were a logical consequence of the reported findings.

ASSESSMENT OF THE STUDY'S METHODOLOGY

The methodology used in the study, that of convening a panel of experts to systematically review a stratified sample of written products, was, in our opinion, reasonable. However, we believe that the methodology was not discussed in sufficient detail to permit a clear determination of the degree of confidence that could be ascribed to the reported results. Specifically, as discussed below, the report did not adequately discuss:

- Sampling procedures.
- Analysis process.
- Presentation and interpretation of data.

Sampling procedures

The report states that a random sample of 45 documents stratified by "functional areas" was selected. The intention was to allow conclusions to be made concerning all Center documents within and across "functional areas." Since the report does not, however, state the size of the population of products from which the random sample of 45 products was selected, it is not possible to determine the precision with which the panel's judgments about those products can be projected to that population of products.

The report presents the results of the panel's review without making any distinction as to whether those results are based on data from the stratified random sample only, one or both of the judgmental samples only, or the stratified random sample and one or more of the judgmental samples combined. If the reported results are based on data from any sample other than the stratified random sample, the reporting would, in our opinion, be misleading because the results would not be projectable to all Center documents as is implied by the report. If the panel's assessment regarding a specific aspect of the products in the judgmental sample(s) were consistent with the panel's judgment on that same specific aspect of the products in the stratified random sample, it would not be misleading to combine the results. There is no indication in the report, however, that such determinations of the degree of consistency were made.

Analysis process

The report states that some of the documents were reviewed by several panelists, with each panelist recording his or her answer to each of several items on the first evaluation instrument. It is unclear from reading the report how these panelist assessments were summarized. In discussing the results of the panelists' assessments, the report refers to "the percent of documents" that fell into each response category, saying for example, "70 percent of the written projects reviewed appeared to the panel to have been directed in some manner toward vocational education administrators." This phrasing would seem to imply that for each document, a single panel answer was determined for each question in the evaluation instrument. The report does not, however, describe how that panel answer was calculated in those cases in which a document was reviewed by more than one panelist. The absence of such a description raises the possibility that a single panel answer was not calculated for each item in each document. If this is the case, the report's use of the phrase "percent of documents" is misleading.

Likewise it is not clear how the general assessment questions were analyzed. Since each panelist could decide on his or her own wording for an answer and how much or how little to insert as an answer, it would be difficult to summarize the responses. Such a summarizing process usually requires some sort of content analysis in which analysts isolate the individual concepts or elements found in a subset of answers for each question, agree on a unique list of concepts, and tabulate them across all panelists. This is the most objective way of analyzing open-ended questions. A less rigorous approach would have asked the panel to decide by group discussion on a group answer to each question. This "group decision" approach has the drawback of losing the independence of the individual panelists.

Presentation and interpretation of data

It appears that most of the data presented in the report were based on responses to the general assessment questions. These questions asked panelists to make overall judgments based upon all the documents they had reviewed. Since these results reflect the overall opinions of the panelists about documents and are subject to the overall bias of each panelist, i.e., he or she could be emphasizing the good or the poor documents unequally, the results cannot be used to generalize to all of the Center's documents.

Data from the structured questions concerning each document could be used to generalize to the entire population of Center documents, assuming that the sample was representative of that population and that panelists' responses were summarized using an unbiased method. Generalizing to the population based on responses to these questions would be possible because each document would have received an individual rating, and when these ratings were aggregated, each document's rating would have received a quantitatively appropriate degree of emphasis.

In the presentation of data in the report, no distinction was made between these two types of data. A reader might therefore erroneously infer that statements made in the report that are based on panelists' responses to the general questions can be generalized to the entire population of Center products as would be the case with those based on responses to the questions concerning each document.

ASSESSMENT OF ADEQUACY OF SUPPORT FOR REPORTED FINDINGS

The study was intended to address seven evaluation questions. In reporting the results of the study, findings were grouped according to the evaluation question to which the finding applied. Our observations regarding the study's ability to address each question and the adequacy of the support presented in the report for each of the study's findings are discussed below.

Are they responsive to federal requirements?

The report does not state that the panel members had copies, or were aware, of the federal requirements to which the question refers. The panel members, however, had experience in and knowledge of the federal role in vocational education and it seems reasonable to assume that they had knowledge of the federal requirements against which they were to judge the Center's products. Therefore, we believe that it would have been reasonable to expect that this evaluation question could be answered through the panel's review of the Center's products.

The report presented the findings regarding this first evaluation question under the caption "Compliance." The report contained two findings concerning compliance. The first was that the Center has complied with federal contractual requirements. The second was that the Center's written products have not met the larger purposes of legislative intent. The first finding apparently was based on the panel members' responses to

a direct question about their impression overall as to whether the Center had delivered products that are responsive to the statement of work issued with the request for proposal for a National Center. The report states that all panelists agreed that the Center has done so. Assuming that the panel members knew of the contents of the statement of work, it would seem that the general finding was adequately supported.

In elaborating on the finding, the report quoted the panel as estimating that about 80 percent of the documents reviewed dealt with problems in vocational education of national significance. This statement appears to be based on responses to one or both of two closed-ended questions that were asked concerning each document reviewed. Both of those questions asked whether the document being rated ". . . deal with a problem in vocational education of national or multi-state significance." The two questions differed in that the first asked whether the document dealt with such a problem that existed at the time it was published, while the second asked if it dealt with such a problem that exists at the present time. Since the questions ask about both national or multi-state significance, it does not seem appropriate to conclude that all responses referred to national significance. In addition, and as discussed previously, since the report does not explain how or whether a single "panel answer" was developed for each question for each document reviewed, it is not clear how the 80 percent figure was determined.

The second of the two findings is that the documents have not met the larger purposes of legislative intent. Presumably this is based upon the panel members' responses to a general assessment question that asked, based upon the documents reviewed, whether or not the Center has "delivered research, development, and dissemination products which, overall, are responsive to Congressional intent." It is not made clear in the report on what basis the panel members were to determine what congressional intent was. Presuming, however, that the panel members had copies of the relevant legislation available and were to make their own individual interpretations of intent, the support for the finding seems adequate.

Whom are they meant to assist?

In our opinion this is fundamentally a factual question and not one that should be open to differing perceptions. Each Center document was presumably written with one or more audiences in mind; therefore, the Center would seem to be the authoritative source of information regarding intended audiences.

Concerning this question, the major finding in the report is that ". . . NCRVE has not aimed much of its written work at groups outside the traditional vocational education community." As a basis for this finding the report cited the fact that 70 percent of the products appeared to have been directed toward vocational education administrators and at least 50 percent toward other vocational education professionals, administrators, or policy boards, while only 20 to 30 percent had been aimed at the Congress, state legislators, governors, and mayors, and only 10 to 20 percent at corporate executives, owners of small businesses, and officials of organized labor. The percents cited presumably refer to responses to closed-ended questions that asked which of several groups was a target audience of the document being reviewed.

In addition to the previously cited difficulty in determining how such percents were arrived at in view of the fact that many documents were rated by more than one panel member, as stated above, the panelists do not seem to us to be in the best position to know what groups were the intended audience for each document. We believe that the Center would have been a better source for that information than was the panel. Thus, while within the cited limitations regarding the percent derivations, the finding statement could have been adequately supported only if the statement had made clear that it was based upon the panel's estimates of target audiences. The fact that the statement did not make that clear causes us to conclude that the finding is not adequately supported.

Do they provide useful assistance?

To best answer this question, we believe that the judgments of groups for which the documents were intended would have to be assessed. To attempt to answer it through an independent panel review, each reviewing panelist would have to have extensive knowledge of the specific assistance needs of each target group. Even then, however, the panelists would only be making second party judgments that should not be considered a direct measure of the product's assistance quality.

Concerning utility of the Center's products, the report's major finding was that the Center's work points the way to solving the problems which it addresses. The report cited two caveats to this finding, however. First, the bulk of the Center's products would be helpful in solving routine operational problems, and second, the Center has done a very inadequate job in preparing products aimed at some audiences.

As we stated earlier, we believe that the recipients of the Center's documents would have been a better source for an assessment of utility than was the panel. We recognize, however, that the panel members probably had knowledge of the needs of some groups. The general finding is apparently based on the panel members' responses to a general assessment question they were asked to answer. The report states that "panel members usually responded" affirmatively when asked whether the "National Center's work points the way to solving the problems which it addresses." The use of the word "usually" makes the statement of the finding less clear than it might have been. There were nine panelists. The statement would have been clearer if it had cited the number of panelists that responded affirmatively.

The first caveat, that to the effect that the product would be helpful in solving routine operational problems, was something that, according to the report, was agreed to unanimously by the panel. It is not clear precisely from what part of the evaluation process it was derived, however. Since a "summative evaluation" is referred to in the sentence following it, apparently it emerged from the deliberations engaged in by the panel after their independent reviews of documents.

The second caveat, that regarding the inadequacy of the Center's work for some audiences, apparently was based on a general assessment question that asked ". . . what groups or interests are likely to find the National Center's work most useful and least useful?" The responses to this question would not seem to us to directly support the caveat that "the panel concluded that the Center has done a very inadequate job in preparing the written deliverables which it has aimed at some audiences." First, there is the previously discussed question about the ability of the panel to know at what audiences the Center aimed a specific product. Second, the question concerning the groups or interests likely to find the Center's work most useful and least useful calls for an assessment based on all of the documents the panel member has reviewed. A panel member might conclude that a particular group or set of groups was targeted for only a few deliverables and thus even if he or she believed that those deliverables would have been quite useful to the target group or groups the panel member might have concluded that in total the Center's work would not have been of great use to that group or set of groups.

Stated differently, there is nothing in the question on which the second caveat was apparently based that refers to the audiences to which the documents were aimed. Thus, the question

does not ask the panel member to distinguish between (1) groups and interests that were poorly served because few documents were directed toward them and (2) groups or interests that were poorly served because documents that were directed toward them were of little utility. The caveat assumes that the latter is what all panelists meant when they identified groups or interests that would find the Center's work least useful. For these reasons we believe that the second caveat is not adequately supported.

Do they add to knowledge about vocational education?

A panel of experts in the field of vocational education should be able to judge the extent to which a product added to a knowledge base, particularly if the substantive areas addressed in the documents matched the substantive expertise of the panel members.

The major finding regarding the extent to which the Center's products add to the knowledge base in vocational education was that most panelists indicated that the Center's products ". . . added little to the existing fund of knowledge about vocational education." This finding is apparently based on the panel members' responses to a general assessment question about that subject. The report states that "most indicated . . ." Again, with only nine panelists to account for, we believe that citing the precise number of panelists responding in a particular way would have afforded the reader a better picture of panel sentiments than does the use of the word "most."

The report buttresses this finding by citing the results of analysis of the panelists' responses to one of the questions that were to be answered for each document reviewed. In this case the question asked for an assessment of what the document added overall to knowledge about vocational education. The report states that the panel felt that only 1 product in 20 contained "a great deal" of new information and about half contained "very little" or no new information. Apart from the previously cited difficulty of determining how a single assessment was made on documents that were reviewed by more than one panelist, the reporting on this question raises considerable difficulty. The question, as it appears in the evaluation instrument, is "Considering other information which may be available, what does this document add overall to our knowledge about vocational education?" The question had the following four possible responses: (a) a great deal, (b) somewhat, (c) very little, and (d) nothing.

If, as the report states, 1 product in 20 was assessed as containing "a great deal" of new information and almost half (presumably 9 of 20) were assessed as containing "very little" or no new information, it would appear that the remaining 10 of 20 must have had "somewhat" checked by the panelists. Thus, slightly over half were apparently cited as adding something to existing knowledge about vocational education. In our opinion this is a much more positive assessment of the Center's documents than the report's presentation of the responses to the question would lead the reader to believe was the case.

The lack of precision in reporting evaluation results continued in additional paragraphs concerning the knowledge value of the Center's work. The report states that the panel was not unanimous on the question of how much the Center's work has added to existing information about vocational education. It states that "several evaluators, including three with strong professional backgrounds in research were very critical." It also states that "panelists from non-research backgrounds, however, tended to take a more positive view of NCRVE's work."

Presumably the initial statement that most panelists indicated that the Center's products added little to the existing fund of knowledge about vocational education accurately portrays the panel members' responses to the general assessment question on that subject. In our opinion, however, the reporting in this portion of the report of the study is much less precise than it could have been.

Do they exhibit high standards of quality?

This is an extremely difficult evaluation question to answer because different persons might have different standards of quality. Each panel member might be able to judge the selected Center products according to his or her own subjective standards. Thus, if the question could be paraphrased to ask "Do they meet the panel members' standards of quality?" the question would, in our opinion, be one which the study's methodology could be capable of addressing.

On the subject of quality of the Center's work, the major finding in the report was that the quality of the written products has varied greatly. Presumably this finding refers to the panel members' responses to a general assessment question that asked whether the panelist thought that the Center's products reflect high standards of scholarship and editorial quality.

The report distinguishes between the assessments accorded written products produced for the Center's dissemination, clearinghouse and leadership development functions and those in the areas of applied research, policy information, and evaluation. Products in the former group are said to have received the "highest marks," while those in the latter group are reported to have generated "widespread dissatisfaction." It seems likely that these statements are based on responses to two of the questions that were to be answered concerning each document reviewed. Those two questions asked the panelist to rate the scholarship and editorial quality, respectively, of the document being reviewed on a scale from "excellent" to "poor." Since the report cites no "numbers," however, it is not possible to assess either the overall frequency of "excellent" or "poor" ratings or the frequency of such ratings for products in the various functional categories.

In discussing the subject of quality, the report, in our opinion, misses an opportunity to report some results of the evaluation that would be directly relevant to the subject. In conducting an evaluation that is based to a significant degree on the judgments of persons, something that is frequently sought is a way of anchoring those judgments by asking that the subject being judged be compared to another similar subject. In the evaluation instruments used in the Technassociates evaluation, only one question asked for such a comparison. It was a general assessment question that asked "Based on the documents you have read, has the National Center delivered research, development and dissemination products which as a whole, are significantly better in quality than products of the same type produced by other institutions?" Knowledge of the panel's responses to this question would have been useful in addressing this evaluation question since the panelists were being asked to assess the Center's work not against an ideal or theoretical standard but against a standard established in the existing work of other institutions. It is unfortunate that the responses to the question are not mentioned anywhere in the report.

Are they likely to improve
vocational education?

A panel of experts, representing different areas of vocational education should, in our opinion, be able to make judgments concerning whether a document would help improve vocational education. Therefore, this evaluation question is one that could be appropriately addressed through a study of the kind conducted by Technassociates.

The major finding cited in the report concerning the contribution of the Center's work toward improving vocational education is that ". . . NCRVE's written deliverables provide little basis in research for systematic improvement in the effectiveness or equity of vocational education services." We assume that this finding is based on the panel members' responses to the following general assessment question: "Based on the documents you have read, what is the probability that the National Center's work will improve significantly the quality of vocational education in the principal areas of concern to the Federal Government?" If our assumption regarding the origins of the finding is correct, and "effectiveness and equity of vocational services" are the principal areas of concern to the federal government and were so understood to be by the panel members, the finding would seem to be adequately supported with regard to the panelists' judgments. Again, however, it would have been informative for the report to have made clear how many panel members felt that the written deliverables provide little basis.

The report's second finding on the subject of "improvement" is that panelists "generally" responded affirmatively when asked if the Center's work points the way to solving the problems it addresses. Here again it would have been helpful for a reader to know what is met by "generally." By citing the number of panelists responding affirmatively, the report would have clarified the strength of the affirmative finding.

Regarding the questions of equity and access, the report cited the findings that "the panelists were particularly skeptical that NCRVE's written deliverables could help much in solving many of the equity and access problems which have been of major concern to the Congress." Apparently the basis for that finding was the panelists' responses to a series of questions to be answered concerning each document reviewed. Each of these questions asked for an assessment as to the probability that each document can assist significantly in expanding vocational education opportunities for a specific group. The groups are (a) girls or women, (b) the handicapped, (c) economically disadvantaged youth, (d) persons who have completed or discontinued their formal education, and (e) persons who are in the labor market but who need to upgrade their skills or learn new ones.

The report does not state what the panelists' responses were regarding any of the specific groups. Instead, it simply refers to these groups, except category "d," and states that panelists "most often" responded "poor" or "fair." It does not state what the panelists' responses were regarding any of the specific groups. It does not indicate whether generally the

response for girls or women, for example, was "good" or "poor," etc. In addition, it is not clear what "most often" means. A more precise reporting of the results of the analysis of the responses to these questions would seem to have been appropriate. Overall, the lack of clarity in reporting the evaluation results on which the findings in the "improvement" section are based makes the adequacy of support for those findings difficult to assess.

What do they indicate about the management of the NCRVE program?

A review of documents would be a useful component of any attempt to answer this question. We doubt strongly, however that a review of documents alone could be said to indicate much about the management of the Center's program. The management of any program involves coordinating numerous resources into appropriate processes for purposes of carrying out one or more activities. The production of documents is only one of the Center's activities. It is difficult to see what could be inferred about the management of the Center on the basis of a review of documents alone. Even if what was intended was an assessment of the management of the Center's document-producing activities, sources of information other than the documents themselves would be required, in our opinion.

On the subject of management, the report cites the findings that in routine administrative matters the National Center contract has been well managed both by the Center itself and by the Office of Vocational and Adult Education, but it has been less well managed at a policy level particularly with regard to resource allocation and product standards. It is not clear whether this finding resulted from the review of documents that served as the major element of the evaluation. Here, as in previously cited instances, the report is less clear than would have been desirable. It states that the finding is based on the panel's "reading of NCRVE progress reports and related materials." From the report's list of products reviewed by the panel, it appears that some might have been progress reports. Since the paragraph below the one in which the finding is stated discusses a completely different inference drawn by the panel and states that it originated in the panel's reading of the deliverables, it seems that the progress report and related materials referred to were in addition to the deliverables that were reviewed. In addition, we could find no questions in either of the two evaluation instruments used by the panel that directly related to the finding. Thus it seems that the finding was based on panel activities not specifically referred to in the report's description of the methodology employed in the

evaluation. We therefore were unable to reach a judgment regarding the adequacy of support for the finding.

A second finding, that ". . . the panel inferred from reading the Center's deliverables" is that the overall relationship between the Center and the Office of Vocational and Adult Education is too fraternal and not conducive to an aggressive, change-oriented program of research and development. The report states that one or two panel members dissented from the finding. It is not clear what part of the evaluation produced this finding. There is no question in either of the two evaluation instruments that directly relates to the finding. Therefore, as was the case with the report's other finding regarding management, it is not possible to assess the adequacy of support for the finding.

ASSESSMENT OF ADEQUACY OF SUPPORT FOR REPORTED RECOMMENDATIONS

The first recommendation contained in the report is that the Center's agenda be narrowed so as to concentrate on a limited number of in-depth activities within the functions mandated by the Congress. The degree to which this recommendation is a logical consequence of the evaluative process employed in the study depends upon what is meant by "activities." The Center engages in several activities other than producing documents, but the study was limited to a review of documents. It would seem that such a study would not support a recommendation that called for a limiting of those other activities. If what is intended by the recommendation is that the number of research efforts be reduced with a shift to efforts that are more in depth than is present research, the recommendation could be seen as a logical consequence of the study's findings.

The second recommendation is that the Center's agenda be focused on work "that builds the information base necessary to systematically improve the quality of vocational education." This recommendation, in our opinion, flows naturally from the study's finding regarding the extent to which the Center's work to date has contributed to such improvement. Again, however, an assumption has to be made that the recommendation is referring to only that portion of the Center's activities involved in producing documents.

The third recommendation is "Improve the quality of NCRVE's staff, particularly in cost centers responsible for supervising or performing the applied research, evaluation, and policy development functions." We believe that this recommendation is not a logical consequence of a review of documents. Although

the quality of staff would be reflected in the quality of documents produced, other factors would also be reflected in the quality of those documents. The report makes clear that the panel did not review the background of the Center's staff or interview any members of that staff. There are, however, indications in the report that the panel was aware of time constraints on the Center's work.

The fourth recommendation is that the Center be transformed into an institution that contracts for most of its work. We believe that, in this instance also, the recommendation is not a logical consequence of a review of documents produced by the Center. In our opinion, there are aspects of the Center's operations in addition to its written products that would require examination before a conclusion could be reached about the desirability of contracting out most of the Center's work.

The fifth recommendation is that steps be taken "to assure that the National Center has greater guidance and flexibility in carrying out its missions." Although this recommendation seems rather general, in the discussion that immediately follows the recommendation, two specific actions are suggested. The first is that Education's Office of Vocational and Adult Education should make it possible for the Center to concentrate on large multiyear tasks. The second is that policies that currently compel the Center to concentrate on work yielding short-run benefits should be eliminated. Both of these suggestions seem, in our opinion, to emphasize flexibility more than guidance. The suggestion that the Center should have greater flexibility in choosing the topics that it addresses in its work and the manner in which it carries out that work seems to be a logical extension of the study's findings concerning the extent to which the Center has met the larger purposes of the legislative intent in establishing the Center.

SUMMARY

The methodology employed in the Technassociates study was, in theory, a reasonable way of evaluating some aspects of the written work of the National Center for Research on Vocational Education. Three of the study's seven evaluation questions could, however, have been better addressed by other methods.

The implementation of the study's methodology and the reporting of study results had several shortcomings. In the description of the sampling procedures, the report does not state the size of the population from which the samples were drawn, nor does it maintain the distinction between the documents in the analysis and reporting of results. We found

two significant omissions in the description of the analysis of the study's data. The first is the absence of any reporting of the number of responses on which reported results that cite percentages of documents are based. The second is the absence of a description of the method by which a consensus rating was achieved or even whether a consensus rating was achieved in those instances in which a document was reviewed by more than one panel member. In addition, it appears that the majority of data presented in support of the study's findings were derived from responses to the general assessment questions in which panelists made overall judgments based upon all the documents they had reviewed. Data from these questions are subject to the overall bias of each panelist and, therefore, cannot be used to generalize to all of the Center's documents.

Results of the study are presented under seven headings that correspond to the seven evaluation questions. In all cases, because of instances in which the precise number of panelists responding to a question is not given and no description of the analysis procedure is given, it was difficult to assess the adequacy of the support for the findings being presented. Based upon the information that was presented in the report, however, we found that the general findings in three of the sections were supported by the data presented. In two other sections we found that adequate supporting data were not presented. The adequacy of support for findings concerning the quality of the Center's documents could not be determined because of the lack of data presented in conjunction with the findings. Regarding the adequacy of support for the report's findings in the area of management, we believe that a review of the Center's documents alone would not be sufficient to support conclusions about the management of the Center's program. In addition, because much of the information presented in support of the finding does not appear to come from a source described in the study's methodology, we are unable to judge the adequacy of support.

The report's description of the sample plan as well as its reporting of quantitative data resulting from the panel's review suggested, in our opinion, that vigorous evaluative procedures had been employed. In view of the shortcomings described above, however, we believe that the study should be viewed as a collection of the judgments of an expert panel regarding the quality and utility of the Center's documents, rather than as a methodologically vigorous examination of the Center's written work. The study's recommendations should, therefore, be viewed as emanating from the panel's judgments rather than from an examination of a representative sample of the Center's written products. Assessing the recommendations in that context, we

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