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ABSTRACT

This evaluation of the information dissemination program of the National Center for Research on Evaluation, Standards, and Student Testing (CRESST) uses a inclusive approach to gather, analyze, and report information to help decision makers. Results of three questionnaires, reviews and analyses of CRESST products, and Internet records were used to determine what is known about CRESST research and its products, how its research and products are used, and the perceived quality and usefulness of CRESST research and products overall and across user groups. Responses of 875 educators (43% of the total sample) were received for the CRESST descriptive questionnaire. Major findings are: (1) across 18 items measuring the quality of CRESST research and development, 73 to 91% of consumers rated CRESST in the top 3 categories of performance on an 8-point scale; (2) few significant differences exist between CRESST consumers, so that market segmentation of research does not seem appropriate; (3) the CRESST web site has more than tripled the number of CRESST products available; (4) impact from CRESST research is considerable, but changes in instruments could document that impact better; (5) comparative information from other research organizations would aid decision makers in measuring program quality; and (6) future CRESST dissemination planning should develop strategies for evaluation of major new CRESST programs. Five appendixes contain the questionnaires, descriptive statistics, and normality plots and descriptions of nonparametric tests. (Contains 22 tables, 22 figures, and 99 references.) (Author/SLD)

UNIVERSITY OF CALIFORNIA

Los Angeles

Evaluation of the Dissemination Program from an Education Research and Development Center

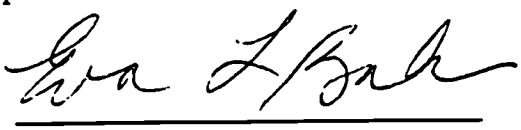
A dissertation submitted in partial satisfaction of the requirements for the degree Doctor of Education

by

Ronald James Dietel

1997

The dissertation of Ronald James Dietel is approved.



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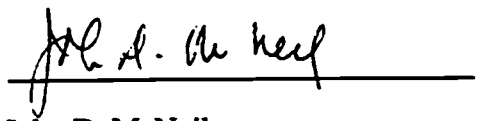

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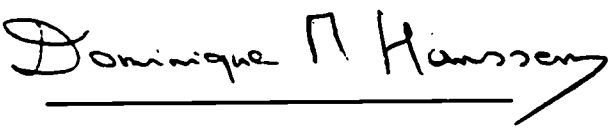

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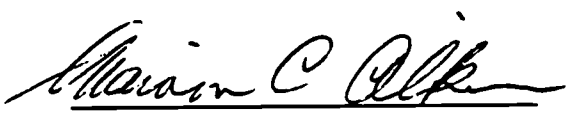

Marvin C. Alkin, Committee Chair

University of California, Los Angeles

1997

This dissertation is dedicated to the

memory of my mother, Carmel Marie Dietel

You are always with me Mom

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ABSTRACT OF THE DISSERTATION

Evaluation of the Dissemination Program

from an

Education Research and Development Center

by

Ronald James Dietel

Doctor of Education

University of California, Los Angeles, 1997

Professor Marvin C. Alkin, Chair

Since the first national education research centers were established in the mid-1960s, there has been frequent pressure, usually at a national level, to transfer the centers' best research findings into practice to improve teaching, learning, and student achievement. Lack of evidence that center research is reaching schools and having an impact has led to frequent criticism of center dissemination strategies. Unfortunately, evaluations of centers' dissemination methods for program improvement are scarce as are customer ratings of center research quality and usefulness. This evaluation of the dissemination program at the National Center for Research on Evaluation, Standards, and Student Testing (CRESST) uses an inclusive approach to gather, analyze, and report dependable and useful information to center decision makers. Three newly designed fast-back questionnaires combined with a comprehensive review and analysis

of center product and Internet records were used to answer the following evaluation questions: 1) what do we know about the existing use of CRESST research and its products; 2) how is CRESST research used and shared by research consumers and what impact results from its use; 3) what is the perceived quality and usefulness of CRESST research and dissemination; 4) what differences exist in perceived quality and usefulness across different consumer groups and different types of registration lists; and finally, 5) what else was learned about the quality and usefulness of CRESST research that would be helpful to program decision makers? The major findings of this study were: 1) across 18 items measuring the quality of CRESST research and development, 73% - 91% of consumers rated CRESST in the top three categories of performance on an eight-point scale; 2) few significant differences exist between CRESST consumers or between three different types of CRESST registration lists, thus market segmentation of products and research does not seem appropriate; 3) the CRESST web site has more than tripled the number of products now reaching consumers; 4) impact from CRESST research is considerable, but changes in instruments could better document that impact; 5) com-parative information from other research centers or similar organizations would aid decision makers in measuring program quality, usefulness, impact, and needed areas of improvement; and 6) future CRESST dissemination planning should develop strategies for evaluation of major new CRESST programs, including the CRESST/LAUSD collaboration (Assessment and Instruction Models), Quality Schools Portfolios, and the Quality Education Forum.

Chapter 1

INTRODUCTION TO THE PROBLEM

> Please keep me on [the] CRESST Line [mailing list] and make research available to those of us in the field. Political decisions are being made and we need the data.
>
> 5th/6th grade California teacher

Background.

Directors and communication directors at federally funded education research centers confront a complex environment. There is high demand for the research information and products they produce as suggested by the above quote from a frustrated California teacher. Her voice is shared by many. A director of state testing writes to CRESST that he needs more research on the impact of standards-based reform. A teacher reports that she has given the CRESST's assessment research information to her principal to read, but she sees no result on practice. A senior project director for the Los Angeles County Department of Education says she needs better access to CRESST researchers to give presentations across the county. Finally, a science teacher at the Florida School for the Deaf and Blind suggests that a useful CRESST product would be computer software for the management of grades, portfolios, and student self-evaluation programs. He adds that "ease of use is an essential component since teacher time is earmarked for many other tasks." Meanwhile, an official from the U.S. Department of Education needs documentation of impact from CRESST and other research centers to demonstrate to Congress that education research is making a difference in schools.

The demands for education research are diverse and overwhelming, but limited resources challenge center leadership to focus research and dissemination where it can make the greatest difference. Especially challenging are expectations for what dissemination can do that exceed researchers capabilities to deliver (Weiss, 1989). Policy makers become frustrated because research and its dissemination do not seem to have a strong enough impact on schools and student performance (Cross, 1990, 1991; Kaestle, 1993). Researchers, usually reliant on policy makers for funding, attempt to increase dissemination, but have very limited budgets with which to reach the large audiences envisioned (Price, 1984). Dissemination suffers, especially when it comes at the end of a rather long research cycle when funding may not be renewed and research staff must be let go. A self-deprecating cycle thus ensues with policy makers reluctant to increase research budgets because research, and its dissemination, hasn't made a difference. Never mind that the education center prevented the waste of millions of dollars because its research showed that a practice or a test should "not" be implemented. Or that its research has had transparent effect through hundreds of change agents who transfer research strands into practice every day and into almost every school. Research will make a difference when test scores go up. Tension between policy makers and researchers remains high.

Research and knowledge utilization: on definitions and paradigms.

Given the multitude of factors involved in educational reform and improvement, how do we know when research makes a difference? Little agreement exists, for example, on even a basic definition or paradigm of knowledge utilization in the classroom. Knowledge utilization may be very broad: "Knowledge utilization occurs when an exchange of purposely prepared information is communicated to a set of recipients" (Louis, et al., 1984). Or it may be much more complex such as Backer's

(1991; 1993) eight categories of knowledge utilization: technology transfer *(hard and soft)*; information dissemination and utilization, research utilization, innovative diffusion, sociology of knowledge, organizational change, policy research, interpersonal and mass communication. Knowledge in the form of consumer information (Komoski, 1989) used for decision making purposes is another variant. A complicating factor is that overlap exists between knowledge utilization categories, i.e., an Internet Web site is both a type of mass communication, a form of information dissemination, and possibly consumer information. Obviously the more specific one becomes in defining knowledge utilization or research use of any type, the more often a use will fall into multiple categories.

Dissemination definitions and categories are similarly slippery: one classification scheme (Buttram, Rosenblum, & Brigham 1992) uses just two categories: *passive,* knowledge transfer through quiescent means, such as publications; and *proactive,* knowledge transfer through operative methods, usually including direct human interaction, such as a workshop. The Dissemination and Analysis Group (DAG) promoted the definition of dissemination based on usage (Hutchins, 1989):

- Usage 1: Spread — the one-way casting out of knowledge in all its forms: Information, products, ideas and materials, "as though sowing seeds."

- Usage 2: Exchange — The two-way or multi-way flow of information, products, ideas, and materials as to needs, problems, and potential solutions.

- Usage 3: Choice — The facilitation of rational consideration and selection among those ideas, materials, outcomes research and development, effective educational practices and other knowledge that can be used for the improvement of education.

- Usage 4: Implementation — technical assistance, training or interpersonal activities to increase the use of knowledge or R&D to change attitudes or behavior.[1]

Finally, Paul Hood (1991) classified the various knowledge utilization concepts into the following two paradigms:

1) The Dissemination Paradigm, in which some form of knowledge, produced someplace, is broadly disseminated to many users, often at some distance, physically and sometimes culturally, from the point of knowledge production. Thus the knowledge is "external" to the user system. From the knowledge producer's standpoint, the challenge is to communicate with and achieve producer-intended forms of use of this knowledge among many potential users. Dissemination, marketing, mass media, on-line information systems, 800 numbers for information services become some of the vehicles for communication between producer and user.

2) The Systemic Change Process Paradigm, in which the main focus of knowledge use and production is in one location--whether that is a person's head or a large organization. The knowledge use process is local, complex and dynamic. And most of the knowledge production is "local." Externally produced knowledge (ideas, products, programs, technologies) may be stimulative or facilitative, but this use of external knowledge is often incidental or subordinate to achieving synergistic changes in group or organizational structures, policies, operating procedures, and perhaps even

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[1] Klein and Gwaltney (1990, April) add that most federal dissemination programs use more than one of these dissemination methods and that they are not linear or hierarchical.

the working environment of the organization and in the attitudes, skills, motives, values, and shared visions of those involved in this form of systemic change process. "Research-based" knowledge may be represented more by a process of local disciplined inquiry and reflection than by the products of externally produced research. But this is rarely an either-or situation, rather it is a melding of knowledge in many forms from many sources.

What should become apparent from these various definitions and two paradigms is the fragmentation that exists within the knowledge and research utilization fields, thereby confounding the dilemma of knowing when research is making a difference.

Research user as consumer.

Paradigm's notwithstanding, the need to evaluate and therefore somehow measure the impact of research, continues. Because our focus in this evaluation is primarily in Paul Hood's Dissemination paradigm, Komoski's (1989) evaluation approach from a customer or consumer's perspective has appeal. His focus on educational product use, mostly related to curriculum materials, might be applied to the use of educational research and its various dissemination products, including newsletters, videotapes, Internet-based information, CD ROMs, presentations, etc. Similar to recent business research promoting the idea of "relationship marketing" in consumer markets (Christy, Oliver, & Penn, 1996) educational research use shares similar characteristics including:

- customers need for information borne out of uncertainty and conflicting information;
- general psychological attractions to long term relationships;

- ability to pay a premium price if the product or service warrants it;

Other relationship marketing characteristics that seem to be gaining appeal in educational settings include:

- the potential for a high degree of customization to the consumer's needs;
- the customer's perceived need for training, not unlike a new piece of software;
- customer involvement in the design process.

Evaluation of such dissemination products and impact could adapt Scriven's consumer-based evaluation theory that focuses on consumers and their needs (1973a). Such an approach lends itself well to marketing research and a consumer-driven measurement methodology as suggested by Brown (1996):

- customers segmented according to their needs which are determined at least once a year;
- large samples of customers surveyed twice a year and a large percentage (50 percent or more) of the surveys are answered;
- customer satisfaction telephone and mail surveys evaluated and continually improved;
- hard data such as repeat business collected to supplement data on customers' opinions of the organization's products/services.

This dissertation, an evaluation of the dissemination program of the National Center for Research on Evaluation, Standards, and Student Testing (CRESST), follows along Brown's methodology. Funded since 1985 by the Office of Educational Research and Improvement, a branch of the U.S. Department of Education, CRESST conducts five-year research programs on national, state, and local issues of educational quality, addressing persistent problems in the design and use of assessment systems to serve multiple purposes. UCLA is the lead CRESST institution and has partners at the University of Colorado, at Boulder; Stanford University; RAND Corporation; the University of Pittsburgh; the Educational Testing Service; and the University of California, Santa Barbara. Co-directed by two of the leading K-12 educational assessment experts in the nation, UCLA Professor Eva L. Baker and University of Colorado Professor Robert L. Linn, CRESST has an established presence as an educational research center and maintains an active dissemination program. While in general we discuss the research centers and their research partners as the same entity, it may in fact be more accurate to give prominence to the research partners, in nearly all instances the director or co-directors, who form the collaborations and prepare the grant proposals which win funding for the center. Each of these is a well-known person or persons in their specific educational research field who typically represent the top research expertise in the country.

Evaluation Objectives.

CRESST uses a multitude of dissemination methods to communicate its findings and theories to a diverse community of education policy makers; state, county, district, and local educators; and the public. Presentations, conferences, meetings, and phone calls, supplement a widespread print, media, and technology-based communications program. The primary purpose of this evaluation was to collect and produce useful data

that would lead to important decisions about alternative courses of action (Cronbach, 1962; Alkin, 1969; 1990a; 1990b) for the CRESST dissemination program. Another goal was to develop and suggest methodology and data that will eventually help answer the question, "is research making a difference?" Formative in nature, this evaluation is integrated into the five-year CRESST research plan (1996-2001).

CHAPTER 2:

LITERATURE REVIEW

Purposes for Evaluating an Education R&D Dissemination Program

There are many purposes for evaluation of programs that have application to dissemination programs at national education R&D centers. Improving the management of program decisions is an oft-mentioned primary purpose for evaluation (Byrk & Light, 1981) and is closely related to several evaluation definitions (Alkin, 1969; Alkin & House, 1992; Cronbach, 1962; Patton, 1982; Stufflebeam, 1973) that emphasize data gathering for improved decision making. Generating periodic checks on the effectiveness of education programs and determining at which point improvements are necessary (Madaus & Stufflebeam, 1989) is another evaluation purpose as is the need to monitor expenditure of public funds (Alkin & Solmon, 1983; Worthen and Sanders, 1987) or for resource allocation purposes. Less often stated is the need to evaluate because: a) program requirements dictate an evaluation be conducted, or b) to respond to historical pressures to improve programs in some specific areas. It is to this very last purpose (b) that we first turn, because the pressure to improve education R&D dissemination has been long-standing and continues to exert great pressure on both researchers and disseminators.

Historical Need To Improve Education Research Dissemination Programs

Early years. Pressure to improve the dissemination of education research at the federally funded education research centers is not new. The Campbell Report (1975), for example, criticized dissemination efforts of the National Institute of

Education (NIE) and its associated research centers and regional educational laboratories for reasons that may sound as familiar today as they did 20 years ago.[2]

> We understand the political pressure for "dissemination" of the results of R&D, but we conclude that NIE has done little to attack the problem as a substantive matter or cluster of issues and competing conceptualizations. We do not think that work in the field can be halted until theory catches up, but we do believe an experimental attitude would be helpful even as action goes forward, and that diverse groups within NIE could be brought together more directly to consider paradigms for change and the various roles of "dissemination" within them. Research on knowledge-utilization could be more extensively funded as an essential basis for policy in this area.

The Campbell report expressed the belief that the centers and labs were suffering from "growing pains," while a second major report just four years later, *Research and Development Centers and Regional Educational Laboratories: Strengthening and Stabilizing A National Resource* saw these organizations as "maturing" (Salmon-Cox, 1981). The maturing centers and labs were still perceived as needing improved dissemination, especially in creating better links to practice, a theme that was to become commonplace in future years.

> We see too little attention to forms of dissemination that are firmly linked to the improvement of practice and too little integration among the efforts that

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[2]National education research centers were first established under the Cooperative Research Act in 1963-64 while the first regional laboratories were authorized under the Elementary and Secondary Act in 1965-1966. Twenty regional labs and 14 research centers were funded in the mid-1960's under institutional grants or contracts. (Source: Center for Leadership Development, Los Angeles, CA 1984)

exist...NIE should develop a comprehensive policy on its role in dissemination, should conduct programs that are consistent with that policy, and should implement effective procedures for the dissemination of the results of the R&D it supports.

Panel for the Review of Laboratory and Center Operations, 1979

During the same year an article in Educational Researcher (Sharp & Frankel, 1979) concluded that education research dissemination was the area of lowest emphasis for virtually all education research institutions except for state agencies and large public school systems. The inference was that university-based research placed little emphasis on getting research into the hands of practitioners.[3]

Not that centers or the educational laboratories were ignoring dissemination. In fact, there were more programs in the 1970s than at any other time in recent history attempting to link education research-to-practice or in a number of cases conducting research on dissemination itself. A few of the specific programs related to improved dissemination included the Educational Dissemination Studies Program (EDSP), the Research and Development Exchange (RDx), and the Regional Services Program (RSP).

Suggesting that research on dissemination itself was a vital activity, EDSP contained a special studies component to examine or conduct exploratory studies in dissemination. A second component of EDSP, *Dissemination and Utilization Studies,* was responsible for collecting, analyzing, and communicating information supporting

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[3] By 1989 the ERIC system had produced more than 6,000 documents related to knowledge or information use with at least a substantial amount dedicated to transferring research to practice. Source: Hood, 1989.

research dissemination and utilization, and the transmission of knowledge to practitioners (Hood, Cates, & McKibbin, 1980).

RDx had a research-to-practice focus emphasizing the "feed-forward" concept of R&D results to practice; coordination of dissemination/school improvement programs; information, assistance, and training to schools; and using client and response needs to affect future R&D programs. Almost the entire program existed within seven regional laboratories with one support service at a university center. RDx reflected the critical role that practitioners could play in the "production, synthesis and delivery of new knowledge" (Salmon-Cox, 1981).

The RSP program was quite diverse in its function, but was also housed at laboratories with the primary purpose to apply "short-term problems identified by the clients in the region served" (Lallmang, 1980).

Yet another program at about the same time was the *Research and Development Utilization Program* which provided schools with the type of in-person assistance advocated in much of the research-to-practice literature. This program assisted schools in identifying problem areas that could be improved and then matching the R&D resources necessary to implement change (Crandall, 1989). Two other programs worth noting were the *State Dissemination Capacity Building Program* and the *Local Problem Solving Program.* Both supported research-to-practice but with different methods. There was also a *Dissemination and Resources Group* at NIE during this period, providing further evidence that the government has had a fairly long history of attempting to transfer education research- to-practice.[4]

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[4] Several other programs worth mentioning are the National Diffusion Network (NDN) that was established in 1974 and funded until 1996. NDN uses state facilitators to directly assist schools in defining needs and assisting them with the implementation of educational programs that have been certified

Mid and late 1980s. Many of these programs were not to make it through the 1980s, not because there was less interest or need for dissemination, but at least substantially because of attacks on the federal budget. Even the *Nation at Risk* report in 1983 did not bring the resources necessary to create dissemination programs capable of creating lasting school reform (Crandall, 1989).

Countering the prevailing perception of failed federal R&D dissemination programs was a comprehensive ten-volume report series from Crandall & Associates (1983) that documented the various dissemination strategies during the previous 25 years. Their conclusion was that the previous dissemination efforts across many separate but cooperating organizations had successfully produced change (Hutchins, 1989). Nevertheless, a generally held negative opinion of federal R&D dissemination did not disappear.

A key report in the mid-80s once again heightened concerns about dissemination. *Creating and Disseminating Knowledge for Educational Reform: Policy Management of the National Institute of Education's Regional Educational Laboratories and National Research and Development Centers* (Price, 1984) revisited the effectiveness of existing dissemination programs at centers and labs. Based on the study results, dissemination was less than impressive. When a sample of California county and local school superintendents (N=93) were surveyed and asked how effectively centers and laboratories disseminated research, 41% reported that they "did not know," 34% said "ineffective" and only 25% said "effective." When the

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by the Department of Education's Program Effectiveness Panel. Another program sponsored by the Office of Education in the early 1970s was the Project Information Packages. Each package consisted of a detailed materials kit that could be implemented without on-site assistance. The program had only limited success. (Source: Crandall, 1989).

superintendents were asked if they had utilized any center or lab research, 64% said no or don't know, while 36% said that they utilized some research or research products.[5]

In another part of the study, 72 national education state policy makers and R&D specialists were interviewed about their perceptions of the effectiveness of centers and labs. When asked how successful the labs had been in accomplishing their objectives, 44% said "successful," 28% said "did not know" and 28% said "unsuccessful." Asked the same question of the research centers, two thirds (64%) said that they were "successful," 17% said "don't know" and 19% saw them as "unsuccessful."[6]

NIE didn't fare well either. Asked if NIE was successful in accomplishing its goals, 52% of the state policy makers and R&D specialists said "successful," 11% responded "don't know," and 37% said "unsuccessful." When questioned about the impact of R&D work from NIE, centers, and labs on local school districts, 64% said "some or no impact," 7% "didn't know," and 29% said "much or a great deal of impact." When asked about the impact of the National Council on Educational Research (NCER) on NIE's labs and centers, 55% answered "some or no impact," 27% said "didn't know," and only 18% said "much impact." Considering that national state policy makers and R&D providers should have been a prime audience for federal education research, the authors of the study concluded:

> In summary, these responses by knowledgeable, nationally recognized educational statesmen and R&D specialists do not represent a strong endorsement of the dissemination results of NCER, NIE, or its Labs or Centers.

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[5] The argument could be made that these results were indeed not as bad as they seem considering that small dissemination budgets were trying to reach large audiences.

[6] Again, these results could be interpreted as somewhat favorable when compared to other programs. Nevertheless, the statements by the writers of the report suggest a negative interpretation.

Finally, this same study reported results from NIE's own 11 public meetings across the United States prior to an upcoming recompetition of centers and labs. The results of oral and written testimony from 458 education stakeholders was not favorable about center and lab dissemination. The report found that:

> "dissemination activities of labs and centers were criticized by all special interests who testified. They [persons who testified] recommended that stakeholders be part of labs and centers governing bodies, which should be changed to carry out policy-making, instead of advisory functions, at all stages of the R&D cycle."

The concern about dissemination led to one of four major conclusions in the report:

> "NIE's lab and center research has not been effectively delivered and shared with local school teachers, administrators, policy-makers, and parents."

While critical of the overall center and lab impact and dissemination, the report acknowledged the huge mission facing the entire education R&D community, suggesting that dissemination might target narrow segments of high R&D users.

> Effective dissemination of R&D to potential stakeholders in our nation's decentralized system of education (over 15,500 local school districts and 3200 colleges and universities alone) represents an overwhelming challenge to the relatively small resource capacity of NIE's 17 Labs and Centers. This striking resource imbalance argues that even greater priority attention be given to targeting and disseminating strategies and more careful management of scarce federal resources if R&D is to have a cost effective impact on improving educational practices.

An article in Educational Researcher, *The Awful Reputation of Education Research* (Kaestle, 1993) pointed to the historical dilemma in trying to disseminate research findings, exemplified by the comments of a former OERI assistant secretary in the late 1980s.

> ...it isn't easy to reach the classroom. Chester Finn, former head of OERI and the chief author of the famous *What Works* pamphlet of 1986, questions the pamphlet's efficacy, even though it was widely heralded and a half million copies were distributed. Its 41 findings, Finn says, "were validated by quite a lot of research, peer reviewed, signed off on by senior people in the field...and written in English." It got "maximum White House hoopla." A year later, Finn had lunch with 18 high school principals in San Diego. He held up a copy of *What Works* and asked how many had seen it and used it. Four had heard of it, two had seen it, and one of those two had discussed it at a faculty meeting. "The conclusion I draw from this," says Finn, "is that the print and the dissemination media, no matter how skillfully done, won't work. Therefore, dissemination of educational research, if it's to be done, has to be done some other way...I'm almost in despair on this subject, absolutely stymied."

The late 1980s also saw a changing role for research dissemination at the centers. Because the original linear concept of labs utilizing and disseminating center research findings appeared to be ineffective, centers came under pressure to increase their own dissemination programs. The Subcommittee on Select Education of the Committee on Education and Labor (Owens, 1988) attempted to reclaim the original

vision of the federal government's responsibility for education research.[7] Their report, *Educational Research, Development, and Dissemination: Reclaiming a Vision of the Federal Role for the 1990's and Beyond,* was critical of center and lab programs, sounding a familiar note:

> What emerged from the extensive oral and written testimony of 21 witnesses was a picture of federal educational research and development in disarray.

The report criticized OERI for not meeting the perceived needs of the schools with its current research agenda and dissemination policies. One of the major recommendations was to implement formal evaluation of all federal research programs, including dissemination:

> OERI must require routine professional and independent evaluations of all funded research, development and dissemination activities and make them available to Congress in the form of a biannual report.

The 1990s. The Owens' report also called for an independent panel to develop a set of evaluation criteria to review education research including centers and labs. But funding was never provided for either the panel or for outside evaluations. Labs and centers instead were permitted to evaluate their own effectiveness in the next major recompetition of 1990.

It was also in 1990 that Assistant Secretary Christopher Cross, Office of Educational Research and Improvement, made it clear that dissemination of education

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[7] Not everyone was in complete agreement that dissemination of education research needed increased emphasis at this time. In 1987, the Government Accounting Office questioned the emphasis on dissemination vs. the production of information (Datta, 1989).

research was a top priority. Cross published a brief policy paper in April, 1990, *An Education Dissemination Policy.*

> Our dissemination goal is to ensure that the information needed to support education improvement is understandable, accessible, timely, relevant, and useful. We will better understand and meet the needs of those for whom our information and resources hold promise. Based on this understanding, we will provide the best information that can be constructively used to meet these needs. This is our responsibility to the American taxpayer, to those who make and implement public policy, to the professionals who must educate our children and to their parents...The nature of the problem dictates that we put this policy into effect immediately. Each day that we delay, the nation loses.

The recompetition of centers in 1990 resulted in stronger dissemination programs for centers and labs, but improving dissemination was still a concern. Cross (1991) emphasized dissemination of federal education research in a speech before the annual meeting of the American Association of Colleges for Teacher Education.

> I am equally critical perhaps more so, of the research community for failing to put key findings in clear language and get it into the hands of teachers in a timely fashion. Dissemination has been one of my top priorities. Inside my agency, we are going to great lengths to listen to what teachers say about the research and practice information they need and to supply it in a way they find usable. And we have translated this dissemination commitment into formal requirements for our research centers and our 10 regional laboratories.

Emphasizing the OERI commitment to research dissemination at this time were plans to create a research center dedicated to dissemination and the use of knowledge,

the Center for Research on Dissemination and Knowledge Utilization (Klein & Gwaltney, 1990). The center was never funded (Louis, 1992).

Nevertheless, dissemination of research continued to be an area of great concern, but specific direction and increased funding remained lacking. Research centers were largely allowed to develop and implement their own dissemination programs with little guidance from OERI and with the ERIC clearinghouses as the primary method of disseminating research at any centralized level.[8]

The need for better dissemination of education research had not escaped the ears of the research community. *New Models for Disseminating Education R&D,* a special issue of the journal, *Knowledge: Creation, Diffusion, Utilization,* (LaFollette, 1992) featured articles by many well-known researchers in the education dissemination field. Each author published their viewpoints and recommendations for improved dissemination methods.[9] One general emphasis seemed to be that more systematic

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[8] Even here, there are multiple ERIC Clearinghouses based on topics which must compete for funding every five years.

[9]Articles included: Foreword to Education 2005: The Role of Research and Development in an Overwhelming Campaign for Education in America, Major R. Owens; The Leadership Role of the U.S. Department of Education in Creating and Supporting a National Education Dissemination System, Matthew B. Miles and Charles F. Haughey; Prospectus for a Cooperative Extension System in Education, Everett M. Rogers; A Framework for Redesigning an R&D-Based National Education Dissemination System in the United States, Susan Shurberg Klein; Comparative Perspectives on Dissemination and Knowledge Use Policies: Supporting School Improvement, Karen Seashore Louis; Disseminating Research Information to Multiple Stakeholders: Lessons From the Experience of the National Institute on Disability and Rehabilitation Research, Ellen Liberti Blasiotti; The Distinct Education Extension Agent as "Strategic Broker": Toward a New Vision for Federally Sponsored Dissemination, Laurence Peters; Tilling Fertile Soil: Principles to Guide Transplants From Agriculture to Education Dissemination, Susan Shurberg Klein; Excerpts From In the National Interest: The Federal Government in the Reform of K-12 Math and Science Education, Carnegie Commission on Science, Technology, and Government;

dissemination across many organizations would lead to improved dissemination. Many of the recommendations would be addressed in the upcoming OERI reauthorization legislation (S. S. Klein, personal communication, June, 1995) and at least some of them would be reflected in the 1995 RFP for national education centers ("Application for a grant," 1995).

In 1992, a new report emerged that defined what would eventually become an integral part of the Goals 2000 legislation. *Research and Education Reforms: Roles for the Office of Educational Research and Improvement,* (Atkinson & Jackson, 1992) recommended the reorganization of OERI into directorates, recognizing that past reorganizations have had little effect. Dissemination would be more centralized under a new office, the Reform Assistance Directorate (RAD) providing reform assistance to parents, schools, districts, states, Congress, professional commercial publishers, and employers. RAD would assume responsibility for a multitude of programs including regional laboratories, OERI publications, electronic networking, and ERIC. Thus, RAD would be a central point for disseminating research to a wide variety of stakeholders with a renewed emphasis on research-to-practice.

The *Goals 2000 Educate America Act* (1994) mirrored much of the 1992 Atkinson/Jackson report by reflecting great emphasis on dissemination. The chapter of the legislation that reauthorized OERI, *Title IX--Educational Research and Improvement,* mentions dissemination no fewer than 72 times. The legislation created a new OERI department called the Office of Reform Assistance and Dissemination (ORAD) with duties very similar to that suggested for RAD. Even though ORAD is not responsible for the research centers, it is charged with coordinating dissemination of all directorates.

Summary of historical context. It becomes obvious that over the last thirty years, the majority of reports and studies addressing dissemination of education R&D have found dissemination programs lacking and have pressured the research community to improve. Researchers and disseminators continue to struggle against an overall impression that the dissemination system has failed. It is likely that pressures to improve will continue based on the Government Performance and Results Act (1993) that requires federal government agencies to set specific goals and develop indicators for achieving program results. As with all areas of the federal government, the impact on education R&D dissemination will be considerable in that the Act requires performance plans, goals, and measurable objectives by the fiscal year 1999. Each year thereafter, federal agencies must submit an annual report that reviews the success of achieving performance goals and plans.

Additional Context for Evaluating an R&D Center Dissemination Program

Regardless of the multiple purposes or historical pressures to evaluate dissemination programs, few published evaluations, either internal or external, are available of dissemination programs, especially with a focus on product effectiveness or impact. While there are innumerable studies on research utilization, these are nearly all studies related to the systemic change agent paradigm. In fact, only a few published studies have attempted to measure the usefulness of the types of products produced by most research centers, such as technical reports, newsletters, video programs, conference presentations by center staff, etc. Some centers and laboratories have used product information surveys enclosed in newsletters, feedback cards, or internal quality assurance systems.[10] But the first two of these do not represent random samples and

[10]Based on material received after a request to approximately 30 lab and center communicators.

thus are likely to produce biased results while the latter has a very different, albeit, important purpose, that is, to monitor the quality of research, not dissemination.

There are some tracer studies of education products from Research for Better Schools (Buttram, Rosenblum, & Brigham, 1992) and at WestEd[11] (Mills & Stephens, 1990; Mills, Tyler, Hood, & Barfield, 1992) that may be useful. In particular, the studies by Stephen Mills at WestEd are quite informative based on their comprehensive evaluation of printed materials created by the California Department of Education. But the material disseminated was largely to consumers who needed information at precise moments in time and who required implementation types of support, therefore, not necessarily a center research audience. Tracer studies were also conducted by House (1996) focusing on impact from several major CRESST authored publications.

Various research criteria and possible research designs related to dissemination exist, including those established for the Program Effectiveness Panel (Cook, Dwyer, & Stalford, 1991; Ralph & Dwyer, 1988) where the intention was to document the positive effects of innovative large-scale education programs. However, these criteria and many other dissemination research designs generally have relevance to very specific education curriculum programs meant for direct classroom implementation. Thus they are more appropriate to evaluating the implementation of research information to end-users such as practitioners than for the dissemination of knowledge development itself (Miles & Haughey, 1992).

The most useful study was referred by Susan Klein, a dissemination and evaluation specialist at the Office of Educational Research and Improvement. The report was from the National Center for Education Statistics (Stalford & Sterns, 1990) *Use of*

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[11] WestEd was formerly the Far West Laboratory for Education Research and Development.

Educational Research and Development Resources by Public Schools Districts. This study consisted of a fast-back survey sent to a sample of public school districts across the United States concerning their receipt and use of research and development resources produced by labs and centers. While the survey is limited to only one type of audience, school districts, it served as a starting point for instruments that will be discussed in greater detail under the research design section of this dissertation.

Why do so few evaluations of center (and laboratory) research dissemination programs exist, especially given tremendous interest in improving dissemination? It could be due to a variety of reasons including organizational factors, lack of resources, program diversity, lack of experience for those who might typically be expected to conduct such an evaluation, shortage of previous methodology that is time and cost-efficient, or any influence created by system interaction of any of the above.

Barriers to Evaluating Center Dissemination Programs[12]

Organizational Factors. Evaluation is a component of each OERI education R&D center's mandate and part of the OERI center's competition (Applications for grants, 1990; "Application for a grant," 1995). But evaluation of center research programs has not always been effective. A Review of the NIE Evaluation of Research and Development Centers and Educational Laboratories (Alkin, 1973) questioned the objectivity of the evaluation review panel personnel, implementation of the evaluation, outcomes, and criteria. More recently, Diane Ravitch, a former assistant secretary of OERI concluded that evaluation of the centers and laboratories was a futile experience (1995). Additionally, evaluation practices vary widely between centers and use of the

[12]The barriers discussed are based on four sources of information: a general literature review, two OERI center communicator meetings, general discussions with other center communicators, and personal insight

results by OERI for decision making appear to be minimal.[13] Although centers regularly report the results of their dissemination projects via quarterly reports to OERI, these internally developed documents usually provide updates of individual dissemination projects, rough estimates of the numbers and types of audiences reached, and anticipated next quarter activities. Other types of reports are occasionally required such as a layman's report, an impact, or accomplishments report. However, use of the results by OERI has been small in recent years.[14] The result of these combined effects is that evaluation may not be perceived as a necessary or useful tool.

Further, although not always the case, evaluation tends to occur towards the end of a center's funding cycle. By that time, the results are unlikely to inform stakeholders, especially in those cases where a center's funding will be discontinued. Instability in the research centers themselves has been common since the funding of the first centers in the mid-1960s. Either new centers have been created, changed as a result of recompetition, or simply unfunded and thereby, eliminated. Fewer than half of the 25 centers funded in 1992 exist in early-1997. Centers set to terminate may have little motivation to evaluate their research or dissemination efforts.

It is also possible that in the final year of a center's funding OERI may be in the midst of another reorganization or the OERI Assistant Secretary recently appointed or soon to be appointed with a new slant on dissemination. Thus centers may take a "wait and let's see" approach as opposed to using evaluation to influence their own decisions towards improved dissemination. Finally, the fifth year of a project is usually a time to

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as a center communicator.

[13] Based on a informal memo to many center disseminators in March, 1995 and previous use of material provided to OERI.

[14] From the same informal memo, it does appear that the Center for Research on Educational Accountability and Teacher Evaluation may be an exception.

look ahead towards future research needs or write a new proposal. The cumulative effect from the above discussion is that evaluation of dissemination does not appear to be a well integrated process either by OERI or across research centers.

Resource shortage. Another major barrier to evaluation of center dissemination programs is the same ailment that plagues nearly all education research programs: lack of human and/or financial resources. In the 1970s, for example, agricultural funding for dissemination in the cooperative extension service was 47 cents of each R&D dollar. Meanwhile only 10 cents of every dollar was being spent for dissemination of education R&D (Raizen, 1979). Even in the early 1990s funding of some R&D centers has been so low that some principal dissemination staff have had duties well outside their dissemination area, thereby cutting down their time devoted to dissemination, much less evaluation of dissemination programs. The current OERI legislation provides minimum funding of future centers at no less than $1.5 million per year, but even this amount may be inadequate to launch an effective evaluation of dissemination programs considering that dissemination and evaluation share small slices of a center's R&D program.

Program Diversity. Even if staffing was adequate and a more stringent evaluation required of dissemination programs, another barrier to effective evaluations is represented by the diversity of current dissemination programs supported by centers. For example, the Center for Research on the Education of Students Placed At Risk (CRESPAR) disseminates a specific education reform program, *Success For All,* to

schools across the United States.[15] Approved as a National Diffusion Network program, this is a systemic change process dissemination program lacking at most other centers. Such programs take years to develop and many centers may not view dissemination of complete learning programs as part of their research mission.[16] Instead most centers use more passive methods such as formal conference presentations and various media. For the latter, dissemination methods and emphases vary significantly. The National Research Center on the Gifted and Talented (University of Connecticut), for example, produces an annual satellite broadcast while other centers such as the National Center on Adult Literacy (University of Pennsylvania) and the National Research Center on Student Learning (University of Pittsburgh) devote significant resources to electronic dissemination. Some centers have placed importance on creating publications specific to their audiences, such as the annual Bibliography on School Restructuring produced by the former National Center on the Study of Organization and Restructuring Schools (University of Wisconsin). Several centers exhibit at major education conferences such as AERA. This diversity does not necessarily lend itself to evaluation methods that are easily transferred across centers.

Other barriers. While many of the forgoing reasons are barriers easily hurdled by an experienced evaluator, most center dissemination evaluations are likely to be conducted by center communicators with little, if any, evaluation expertise. They are not likely to have sophisticated knowledge of instrument design or understand the importance of instrument or test validity. An additional barrier is that many center

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[15] The Center is also involved in a large number of other dissemination methods.

[16] This is not to say that we might not draw on research-to-practice studies such as the Dissemination Efforts Supporting School Improvement (DESSI) study by Crandall & Associates, 1983 or research done by Paul Hood and others at WestEd.

communicators are relatively new to the field of education, or if they are experienced educators, may have limited communications experience.

Finally, centers have only sporadically shared the results of their dissemination programs and thus little is known about what works and what doesn't.[17] Evaluation of dissemination has barely been touched. Systematic methods or instruments supporting evaluation of typical center dissemination programs are lacking.

Brief Review of Marketing Research Literature

Marketing and the education community. As various for-profit corporations begin to manage schools or school districts, such as the Edison Schools Project or Education Alternatives Inc., integration of business and K-12 education comes closer to reality, albeit still on a small scale. Sophisticated marketing or advertising methods have come with them, such as Channel One, a predecessor of Edison Schools and a marketing strategy whereby schools receive free televisions and videotape equipment in exchange for a requirement that students view ten minutes of Channel One programming daily, complete with commercial advertising. Sophisticated marketing techniques have come to the research community also (Walsh, 1996). For example, researchers from the New Standards Project have used hand-held electronic polling devices to measure community responses to draft benchmarks for student learning, facilitating the evaluation of educational reform ideas on various audiences before they are implemented. The case is put forth here that there may be other areas of marketing research where the educational research use field might benefit from marketing research, especially as it relates to consumer satisfaction studies.

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[17]Many, but not all disseminators from the OERI-funded research centers met in 1993 and 1994. Only a small number attended a 1995 AERA communicators meeting.

Consumerism is not new to education. As mentioned earlier, criteria for the evaluation of educational products (Klein, 1976) and for educational programs as part of the National Diffusion Network (Ralph & Dwyer, 1988) have been long-established, and Blaine Worthen and James Sanders devote an entire chapter to consumer-oriented evaluation approaches in Educational Evaluation: Alternative Approaches and Practical Guidelines (1987). The Educational Products Information Exchange (EPIE) Institute operated for over twenty years as a consumers' union for education products and services, largely evaluating the value of curriculum-based materials (EPIE Institute, 1977). Scriven (1974) developed a comprehensive criteria for evaluating any educational product. But research centers don't oftentimes produce curriculum-based research products and therefore indicators for such products hold little relevancy for most center dissemination programs.

On the other hand, research centers produce technical reports and other media products that convey important research information and we should have methods for knowing to what extent those products are used, how they are used, and if consumers view them as of high quality. Therefore, we might well apply research on evaluations of service and product quality focusing on match or mismatch between consumer expectations and service or product performance (Rust & Oliver, 1994; Oliver, 1977, 1980, 1989; Parasuraman, Zeithaml, & Berry, 1985; Zeithaml, Berry, & Parasuraman, 1988; Berry & Parasuraman, 1991). Marketing research shows that when gaps occur between customer expectations and service performance, evaluations of customer satisfaction are low while if perceived performance exceeds expectations, the customer is satisfied (Spreng, MacKenzie, & Olshavsky, 1996). Customers have two levels of expectations, adequate service and desired service separated by a zone of tolerance and they are oftentimes willing to pay a premium price for high quality service (Bartram & Bartram, 1993). Marketing research has also shown a high correlation between

executives ratings of whether or not their organizations have reached customer-oriented performance outcomes and outstanding financial performance (Whitely, 1991). Other marketing studies show that true customers, customers who establish long-term relationships with service companies, produce the highest profit margins for the company (Berry & Parasuraman, 1991; Zeithaml, et al., 1996). Educational research customers may not produce much profit for a research center, but they fit the pattern as true customers, that is, they tend to form long term and deep associations and may provide an important base of support for grant proposals or when center funding comes under attack.

True customers and the bottom line. The importance of developing deep customer relationships is underscored by Louis Gerstner, IBM Chairman and Chief Executive Officer. The secret to IBM's recent soaring stock price according to Gerstner and others, is that IBM went back to their original success methods, talking to customers, learning their needs, and figuring out how to satisfy them. In the past quarter alone, IBM won four of five business contracts it went after and brought in over $11 billion in new computer business (Sager, 1996). James Goodnight's SAS Institute, well known to the educational measurement community, is the largest privately owned software company with 4,000 employees, 600 million in annual revenues, and a 95% lease renewal rate (Lane, 1996). Goodnight, who own two-thirds of SAS, attributes the company's astounding success to its customer service, where Goodnight requires employees to write down any suggestion or complaint and SAS on-line group discussions are regularly monitored to detect any gripes or kudos from SAS users. Goodnight says of customers service: "It's an amazingly effective business practice, listening to your customers."

Customer satisfaction standards. While standards are not uniform for educational research quality or customer satisfaction, there are numerous other ways in

which standards might be adapted from customer satisfaction theory and methods. Standards may be based on history, i.e., what was last year's customer satisfaction level; engineered, i.e., what should be acceptable satisfaction or performance; market-based, i.e., how the competition is doing; planned, i.e., degree to which specific objectives are met; subjective, i.e., based on experience, customer comments, and management instincts; or any combination of the above methods (Juran, 1995). Many organizations set a goal to have the two highest performance categories or customer satisfaction levels from a quality indicator system reach a theoretical 70% "top box" mark (Rodeghier, 1996). Results may be displayed on a Pareto chart, named after Vilfredo Pareto, an important nineteenth century economist credited as the founder of the new welfare economic theory (Tarascio, 1968).

Methods to measure customer satisfaction. For specific tools to measure customer satisfaction, education researchers might borrow from the business community's use of a customer satisfaction index (CSI) to provide a best estimate on how well an organization is satisfying a specific group of customers (Whitely, 1991). A CSI can be composed of multiple measures with 50-60 percent hard measures of customer buying behavior and 40-50 percent customer opinions and surveys (Brown, 1996b). Individual indicators are typically weighted based on organizational goals and expectations. Similarly, the recently introduced American Customer Satisfaction Index (Fornell, et al., 1996) may provide education researchers some ideas for measuring customer satisfaction and their own performance as they soon grapple with the 1993 Government Performance and Results Act. Not only does the ACSI index present a theoretical model of customer satisfaction, but specific methodology that might be adapted and applied by the education research community to measure its own performance.

Using databases for profit. Finally, marketing research may have crossover lessons for educational researchers in the field of high technology marketing. Databases can now be analyzed with sophisticated software to match products to specific, even individual prior consumer purchases (Brynes, 1996; Lewington, et al., 1996). Direct mail advertising can then be quickly designed and sent to individual consumers. Education research centers could code their product sales databases and notify potential consumers efficiently, even via automated e-mail.

The foregoing represent only a few ideas that the education research community might adapt from marketing and consumer research to measure consumer satisfaction and the impact of their research. Others are limited only by vision and the desire to get educational research to the right people at the time when they most need it (Rothman, 1980).

Context for Present Evaluation Need

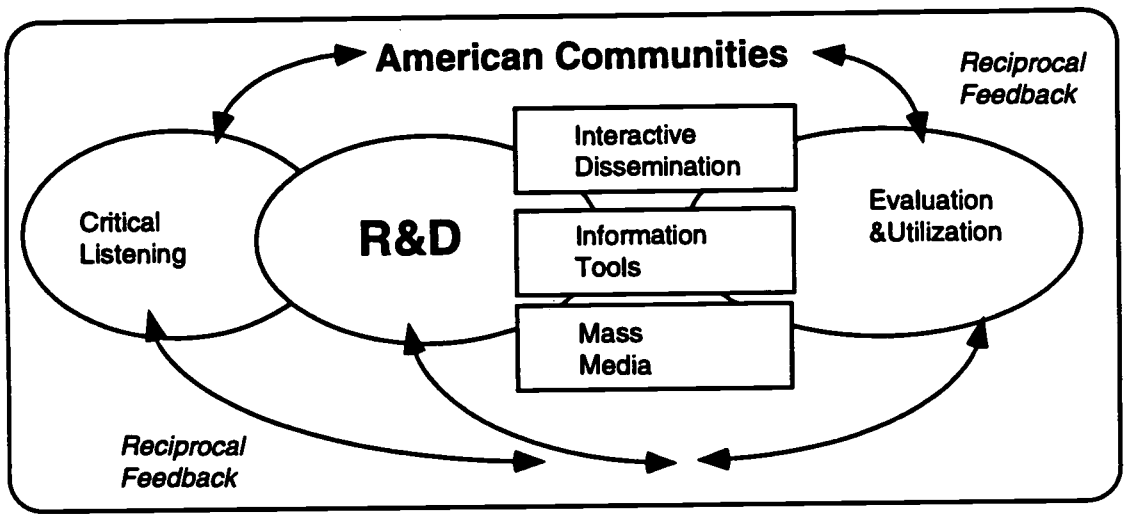
The historical dissatisfaction with the dissemination of education research led in 1990 to unprecedented pressure on the OERI funded research centers to increase their dissemination programs. CRESST, the center that is the focus of this evaluation is a case in point. Although the original 1990 proposal outlined significantly increased dissemination activities, the proposal was returned to the center containing seven negotiation questions. Of those seven, four were related to improved dissemination programs, one was related to the evaluation of the program, and one was related to how the budget would change to meet the changes in priorities. Therefore only one question was completely research related. In response, the Center responded vigorously and created an entire program specific to improved dissemination and interagency coordination activities. The Center proposed a greater role for its National Advisory Board in the evaluation of products which would include practitioner evaluations and

feedback cards on all products. A series of impact studies would trace the influence of specific research products on practitioners and others.

This strong response from the Center is indicative of the continued pressure to improve dissemination and the benefit that might be derived from better evaluation. The importance of dissemination and evaluation is continued in the 1995 CRESST proposal for an OERI funded R&D assessment center. Once again, an entire program (one of four) is dedicated to dissemination in accordance with the following model (Figure 1).

Figure 1

CRESST Dissemination Model



- **Critical Listening** to the needs and expectations of American communities including policy makers, parents, researchers and teachers to inform R&D and the CRESST dissemination program.

- **Research and Development** that unfolds to the multiple requirements of American communities including policy makers, researchers, practitioners, and parents.

- **Interactive Dissemination:** Technical assistance, training, or interpersonal activities between potential R&D users and providers that oftentimes influences beliefs, decision making, and practice.

- **Information Tools:** the development or formulation of R&D information into a specific tool, product, or presentation that is likely to cause specific action on the part of the user.

- **Mass Media:** Usually the one-way diffusion or distribution of important R&D information via a specific product, i.e. a newsletter, journal article, or book. Audiences are large and the intended outcomes are to increase knowledge, promote awareness of issues, affect beliefs or attitudes, or encourage "next-steps."

- **Evaluation & Utilization:** The evaluation purpose applied to dissemination is to collect data that leads to cost-effective allocation of resources and program improvement. For utilization we measure the impact of the overall dissemination program or from specific dissemination methods.

- **Reciprocal Feedback** is the communication link between each element of the model. Thus, Evaluation & Utilization inform all other parts of the system. Likewise, Critical Listening is an ongoing process, continually informing R&D and various dissemination strategies.

The forthcoming evaluation questions derive from the preceding model.

Evaluation Questions

Dissemination cannot be "all things to all people (Weiss, 1989)." Nor can dissemination mean everything that happens after research is done (Hollifield, 1991). Evaluation too has its limitations in terms of scope, purpose, and resources (Worthen & Sanders, 1987). Recognizing that significant portions of CRESST dissemination strategies continue to fall into the "dissemination" paradigm category, the need to limit the scope of an evaluation, and to supplement, rather than overlap the 1996 "Impact of CRESST R&D" evaluation, this study focused on the evaluation of mass media strategies at a national education R&D center although there is crossover and coverage of interactive and information tool strategies. This study sought answers to the following evaluation questions:

1. What do we know about the existing use of CRESST research and its dissemination products? For example, what products are used, by whom, and how often? What, if any, patterns seem to emerge? Who are the primary users?

2. How is CRESST research used? What do customers do with the research? To what extent does it spread to other users?

3. What is the perceived quality and usefulness of CRESST research and products? How satisfied are CRESST customers?

4. Are there important differences across audiences between perceived quality and usefulness of CRESST research and dissemination products?

5. What else have we learned about the quality and usefulness of CRESST research and products?

Why these are important questions. First, while CRESST has anecdotal evidence about overall dissemination program effect, little information has been analyzed in a systematic way that would lead to valid inferences about use or effects from CRESST products. Little is known about product users and use levels, whether or not users tend to return for more information (and why or why not) and what might be done to encourage increased use. Similarly, knowledge utilization research (Hood, 1972, 1989) points to the effectiveness of informal, interpersonal channels of communication as being just as effective as more formal means of communication. Thus, product effect may potentially be two or three times the original anticipated effect if products or information from those products is spread from one user to another. Program planners and funding agencies have interest in knowing the extent of such secondary and tertiary use.

Second, acquiring the information aligns with planned evaluation activities as discussed in the 1995 CRESST proposal. In fact, these evaluation questions are at least partially integrated into the 1995 proposal for years 1996-2001. Thus, answers to the above questions help to meet program mandates for evaluation.

Third, answering these proposed research questions may suggest the type of products most useful to specific users and lead to important dissemination program decisions. The Educational Information Market Study (Hood, et al., 1972) provided strong evidence that education research users could be categorized by subgroups and 20 years later, it remains the most comprehensive review of information use across the field of education. Thus, evaluation question 4 attempted to answer whether or not important subgroups exist for CRESST research and dissemination products.

Finally, answers to the proposed research questions may help to inform future research needs. Data collection may suggest that self-assessment or assessment for special needs students is a vital topic, yet little research has been conducted in this area

under earlier CRESST grants. This information may be helpful in subsequent research and development years.

CHAPTER 3

METHODOLOGY

General Discussion.

As earlier discussed, very few research designs or instruments have attempted to measure the usefulness of the types of products produced by most research centers, including technical reports, newsletters, video programs, conference presentations by research center staff, electronic dissemination, etc. The Internet, for example, has exploded so quickly onto the scene that most research has been descriptive and unsystematic (Berthon, Pitt, & Watson, 1996a). Nor has Internet research produced evaluations that might provide possible instruments (Berthon, Pitt, & Watson, 1996a; Berthon, Pitt, & Watson, 1996b; Lawrence Rudner, personal communication, September, 1995). Fortunately, even though specific instruments are generally unavailable, the evaluation questions in this study are by no means beyond common evaluation methodology, both quantitative and qualitative. Marketing methods have suggested that customer satisfaction surveys can be extremely simple and take up as little customer time as possible (Brown, 1996b).

Product Use Data

Evaluation Question 1, what do we know about the existing use of CRESST dissemination products, was analyzed through a review and synthesis of existing CRESST product records including sales records and a center mailing list of over 14,000 users. Review of existing records frequently provides credible data if existing records are reasonably accurate (King, Lyon Morris, & Fitz-Gibbon, 1987). Records of product sales at CRESST had been carefully maintained since January, 1992 and thus provided a reliable source of data regarding product use and classification of primary

users. A small pilot study from this data was conducted during the summer, 1996 and results reported at the annual California Educational Research Association meeting (Dietel, 1996). To supplement existing product orders and better identify audiences, a random sample of the entire CRESST mailing list was taken (n=543) using Filemaker Pro software.

Records were also available for CRESST Internet usage and used to provide additional insight into program impact and effect. Through their World Wide Web, CRESST had developed an interactive registration service (N>800) that provided baseline usage data for multiple categories of users including K-12 teachers, principals, researchers, parents, principals, etc. Other registration information included how users discovered the CRESST Web, i.e. chance, CRESST dissemination, colleague, etc. Special software was used to code and produce basic statistical usage rates from the CRESST web site between the summer of 1995 to the end of 1996. Finally, a new CRESST Web Questionnaire (Appendix C), based on the general design of the CRESST Descriptive Questionnaire was used to help answer evaluation questions 2-5.

Anecdotal evidence suggested that CRESST product sales decrease significantly in the summer, however, data had not been previously analyzed to confirm this belief nor was specific information related to causes for changes in product orders. Records were reviewed across specific periods to detect such seasonal trends. Another question related to the life cycle of individual products. Once introduced, products oftentimes have an expected high number of sales that trail off after a short period of time. But some products appear to have much longer life cycles than others without clear explanations. Analysis of sales records helped to answer this question.

CRESST Descriptive Questionnaire

Descriptive surveys are useful for gathering a wide variety of evaluation information (Alreck & Settle, 1995), especially when the required data cannot be obtained as a routine part of program activities or when the size of the target group is large and it is more economical and efficient to undertake a sample survey than to obtain data on all of the participants (Rossi & Freeman, 1989). A descriptive questionnaire was used as the primary instrument for evaluating product use, impact, quality, and effectiveness (evaluation questions 2-5). A new fastback questionnaire (Appendix A: CRESST Descriptive Questionnaire) was adapted from a similar instrument used by the National Center for Education Statistics. *Use of Educational Research and Development Resources by Public Schools Districts* (Stalford & Sterns, 1990) was a study sent to a specified sample of public school districts across the United States concerning their receipt and use of research and development resources produced by research laboratories and centers. While the NCES survey was limited to only one type of audience, school districts, it was a useful starting point for this evaluation of CRESST quality and usefulness.

As adapted to the purposes of this evaluation, the CRESST Descriptive Questionnaire covered both major products produced at CRESST, i.e., newsletters, media products, technical reports; or by CRESST researchers who authored books or made presentations. Because we were interested in discovering significant differences between specific users of CRESST research, a number of demographic questions were included in addition to several variables thought to influence the ratings. The independent variables were:

1. gender
2. race
3. size of school district (for school districts and schools only)
4. elementary, middle, or secondary school (for schools only)
5. urban, rural, and suburban schools (for school districts and schools only)

6. degree of personal contact with any CRESST staff
7. receipt of CRESST newsletters
8. ordering of CRESST products
9. use of the CRESST World Wide Web
10. downloading of documents from the CRESST web
11. sharing of CRESST research or products with others

The dependent variables were two sets of nine items each (Table 1). The first set was intended to measure the overall construct of quality and the second set was intended to measure the overall construct of usefulness of CRESST research and products. In order to obtain a broad rating of quality and usefulness, a 1-8 rating scale was used, with 1-2 representing poor quality or seldom useful, to 7-8 representing excellent quality or very useful (Fink, 1995).

Table 1[18]

Dependent Variables

Quality Construct-9 Items	Usefulness Construct-9 Items
7. quality of CRESST newsletters	16. usefulness of presentations
8. quality of CRESST media products	17. usefulness of technical reports
9. quality of CRESST technical reports	18. usefulness of journal articles or books
10. quality of journal articles or books	19. usefulness of newsletters
11. quality of presentations	20. usefulness of Internet services
12. quality of CRESST Internet services	21. usefulness of media products
13. overall quality of CRESST research	22. usefulness of ideas by CRESST
14. overall quality of CRESST products	23. overall extent CRESST provided you useful information
15. overall coverage of important topics	24. overall extent useful to the education community.

[18] Items are numbered in the same order as on the questionnaire. The order in which the items were presented on the questionnaire was rearranged between each construct to reduce item recognition.

Because one of the purposes of the evaluation was to determine if CRESST research and products were perceived to have different ratings of quality and usefulness from different audiences, the questionnaire was mailed to three specific subgroups, users who had ordered products (Product List), Internet registrants (Web List), and the full CRESST rolodex (Mailing List). Random samples from each of these subgroups (Table 2) were taken from the three appropriate databases. Filemaker Pro software was used to generate random lists of names for each subgroup and care was taken to avoid duplicate questionnaires to the same person. Further, each subgroup was categorized according to three principle audiences who were thought to have different needs and who might therefore have different ratings of CRESST research and products. Those subgroups were: 1) states and school districts, 2) schools, 3) researchers, and a diverse category, 4) others. Because a fair number of parents had registered on the CRESST web, they comprised a fifth group for the web only, 5) parents.

Group 1, state and school district users, were primarily assessment, evaluation, or curriculum specialists from school districts and state departments of education. Group 2, the schools category, was generally comprised of K-12 teachers, principals, assistant principals, and school counselors. It should be noted that a considerable number, perhaps as high as 50% from the schools group appeared to also be graduate students using CRESST research for master's theses or doctoral work. Group 3, researchers, included college or university research professors or instructors who taught teachers. However, researchers from agencies such as Westat, Educational Testing Service, or the regional educational laboratories were included in this subgroup when appropriate. Group 4, others, was comprised of many non-profit or for-profit agencies involved in educational work or from agencies such as AFT, NEA, National Forum on Assessment,

etc., with a strong interest in educational reform and improvement. Media, test publishers, and corporate audiences were also in group 4.

Table 2

Registration Type and Audience Groups

Registration Group	Product List	Web List	Mailing List
Group 1	States/Districts	States/Districts	States/Districts
Group 2	Schools	Schools	Schools
Group 3	Researchers	Researchers	Researchers
Group 4	Others	Others	Others
Group 5	Parents		

Pilot and full study. The CRESST Descriptive Questionnaire was pilot tested in late Spring and Summer, 1996 prior to full scale distribution in the Fall, 1996, with no significant problems encountered. The final Descriptive Questionnaire was identical to the pilot questionnaire but mailed to new stratified random samples from the same lists; therefore, results from both the pilot and final study were combined. In the pilot study, 392 questionnaires were sent out and 216 returned for a response rate of 53%. Two follow-up letters were sent out in order to produce the final return rate. For the final study, 2051 questionnaires were mailed out with one follow-up letter and 875 questionnaires returned producing a total response rate of 43%. Across the three different registration types, response from the product list was 290 of 655 (44% returned), from the web list, 277 of 608 (44% returned), and from the center rolodex

mailing list 308 of 788 (39% returned). Approximately 5% of the questionnaires were returned unopened with bad addresses or individuals who had retired or moved.

Robust sample size. T-tests of the means for each item between the pilot study and the full study did not reveal any significant differences between responses, suggesting that the somewhat lower response rate for the full study did not create serious bias and did not require the expense or time of a third follow-up mailing for the final study. It also supported combining the data from the pilot and full study to: 1) produce robust data analysis and accurate inferences; 2) to account for missing responses to individual items on the questionnaire; and 3) to anticipate complete deletion of those questionnaires with so few items completed as to create questions as to the dependability of the questionnaire. Approximately 150 questionnaires were dropped as a result of incomplete data returned. The final sample size for analysis was 751; however, this is the total number of valid questionnaires, total responses for individual items are generally lower.

In order to achieve a maximum response rate, the CRESST Descriptive Questionnaire was limited to two pages, plus a cover letter, similar to the NCES survey earlier discussed. The total number of questionnaires mailed was based on the results of the pilot test, slightly oversampling the groups and subgroups with lower response rates from the pilot study.

CRESST Product Questionnaire.

Telephone interviewing can provide data relatively free from bias and offers advantages of economy and time versus in-person interview techniques (Babbie, 1992). Therefore, to help answer other research questions and provide more in-depth data, a telephone protocol was developed and pilot tested in late Spring, 1996. The instrument contained items on how CRESST products and research were used (Evaluation Question

2), items related to customer satisfaction levels (Evaluation Question 3), and several general questions about CRESST research and products (Evaluation Question 5). Throughout the pilot, a problem surfaced in reaching customers. Also, information too closely overlapped the CRESST Descriptive Questionnaire and was producing similar responses; consequently, questions were modified to answer additional questions about the use of CRESST products, including how users found out about products, purpose of order, timeliness in product arrival, best way to receive notification and receive products, likeliness to order products again and recommend to others, and time of year that was best to order products. Each of these questions could provide information useful to the future marketing of CRESST research and products.

A revised telephone interview protocol was used for the full study and 16 telephone interviews conducted. However, because it continued to be time-consuming, and therefore, expensive to contact at least 30 participants by telephone, the interview protocol was converted into a descriptive product questionnaire and mailed to a random sample of product users (n=147). No follow-up mailing reminders were sent. Fifty-two product questionnaires were returned for a 35% return rate and coded into SPSS. For identical items between instruments, responses were combined into a single sample, creating a final response sample size of 68. The questionnaire was again limited to a single page, front and back, in order to ensure a high return rate.

CRESST Web Questionnaire

A telephone questionnaire was also conducted of CRESST Internet users and went through a similar transformation process as the Product Questionnaire. We were most interested in how Internet users found out about the CRESST World Wide Web, the types of information that they utilized from the site, how frequently they visited the site, how many major products they downloaded, i.e., technical reports and newsletters,

what type of information was sought on the CRESST web site and to what degree they found what they needed, extent and type of use of the information, what additional information was needed, and likeliness to use the site and recommend it to others. These questions were related to all five evaluation questions. Again response to these questions via telephone format produced a smaller number of responses than desired (n=16) and a CRESST Web Questionnaire was developed (Appendix C) and mailed to a new random sample of web registrants (N=158). Thirty-eight questionnaires were returned for a return rate of 24% and again, where items from both questionnaires were identical, responses were combined resulting in a total sample size of 54. Parents did not respond in adequate numbers and were coded as "other." Using the CRESST web site as a possible source for questionnaire response was considered but not implemented because the sample would not meet requirements for randomness and because of concern for detrimental impact on the existing web survey that provides basic demographic data on CRESST web registrants.

Data from the CRESST World Wide Web server was logged across specific time periods focusing on usage rates and also the download of CRESST portable document format (PDF) reports and newsletters.

Short Response Items

Although re-designed to provide mostly quantitative data, both telephone questionnaires, CRESST Product/Resources and CRESST Web Site, contained short answer, qualitative data that was transcribed, coded, and analyzed in accordance with appropriate qualitative analysis methods (Erickson, 1986; Miles & Huberman, 1984; Smith, et al., 1994; Strauss, 1993). The unit of analysis was defined as a product user for the CRESST Product Questionnaire and a CRESST Internet Web registrant for the CRESST Web Questionnaire. Because nearly all of the qualitative entries were less than

255 characters, SPSS 6.1 was used for data entry with responses simultaneously coded quantitatively. The same procedure was followed for qualitative sections of the CRESST Descriptive Questionnaire and CRESST Web Site Questionnaire.

Validity of the CRESST Descriptive Questionnaire

One of the purposes of this evaluation was to begin to develop evaluation instruments that could be used across the current five years of CRESST research and beyond. The instruments could also be useful to other education research centers and laboratories. In order to establish a measure of instrument reliability, statistical tests were performed to measure internal consistency of items measuring each construct, that is, quality and usefulness. A factor analysis was run to determine if the items appeared to be measuring the intended constructs.

Chapter 4

FINDINGS

Evaluation Question 1. What do we know about the existing use of CRESST research and dissemination products?

General Discussion.

To narrow down this very broad question, we subdivided it into several other questions as follows: who typically uses CRESST research and products and where are consumers distributed geographically; how do consumers "find" CRESST research; what research do consumers use and approximately how much; and finally, what does the life cycle of a CRESST product look like?

Who uses CRESST research and dissemination products?

To answer this question an analysis of product records was completed from three sources: the full CRESST mailing list of over 14,000 CRESST customers, CRESST product orders from 1992-1996, and CRESST web registration digests. Additionally, records from the CRESST web site were collected and analyzed to determine usage rates, types of products used, and types of users.

CRESST Consumers by Gender. A random sample of 543 names from the CRESST mailing list of 14,323 names produced the gender results found in Table 3. Gender showed a slightly higher female representation, 53.5% to 46.6%. Missing gender data from the mailing list resulted because 52 of the 543 cases had only last names on the CRESST mailing list, a last name with only an initial for a first name, or

first names that could not be identified on a gender basis, i.e., Pat Smith, Sang Kim, etc.

Table 3

Gender of CRESST Users from Center Mailing List

Source	Gender	Frequency	Percent	Cum Percent
Mailing List	Female	262	53.4	53.4
n=491	Male	229	46.6	100.0
Web List	Female	66	54.1	54.1
n=122	Male	56	45.9	100.0
Product List	Female	90	64.7	64.7
n=139	Male	49	35.3	100.0

Similar demographic information was collected from a random sample of the CRESST web list (n=122). For gender, females (54.1%) were slightly higher than males (45.9%). Product user information was derived from 1992-1996 product orders. Females (64.7%) ordered more CRESST products than males (35.3%), however it must be noted that over 50% of CRESST products are bought through a purchase order and many of these are ordered by administrative staff who may be female to an unbalanced degree and thus not a good indicator of the gender for the real consumer.

CRESST Research Consumers by Occupation. Occupations for CRESST users were coded according to the categorization scheme in Table 4. It is possible that individuals could belong to two or more audience groups. While care was

taken to code every person consistently, some bias was likely to occur and results should be interpreted accordingly.

Consumers from the local government category, 16.4%, 11.7%, and 31.7% across registration lists, were primarily test, research, and evaluation specialists at the school district level, members of local schools boards or county boards of education. The University category, 14.5% for the Mail List, 23.4% for the Web List, and 22.8% for the Product List, usually included education research professors or professors who taught teachers. State government employees, 13.7%, 6.3%, and 2.7% respectively across the three lists were usually members of government departments of education or state education legislative analysts. Researchers, 7.7% for the product list, were generally R&D specialists from the national educational laboratories or from organizations such as the American Institutes for Research that specialized in education research. The K-12 Other group, 7.4% for the CRESST mailing list, were principals, school counselors, or other K-12 school specialists. The non-profit education category included organizations such as the American Association of School Administrators, NEA, AFT, etc. Unknown organizations, 17.7% for the CRESST mailing list and 11.7% for the product list, primarily occurred because names were listed without any organizational affiliation.

For organizational affiliations from the CRESST web site, universities were the highest of any group (23.4%), perhaps reflecting their excellent Internet access, followed by K-12 teachers (18.7%) and local government employees (11.7%). If both K-12 teachers and K-12 Other groups were combined, K-12 employees would surpass any other group (24.2%). Local government employees were by far the most frequent CRESST product users (31.7%) followed by university employees (22.8%). No other users exceeded 10%. The high rate of purchase from school districts is substantiated by

physical review of purchase orders and other anecdotal evidence provided by the administrative assistant who handles CRESST product sales.

Table 4

Organizational Affiliation of CRESST Research and Product Consumers

Occupation	Mail List Frq	Mail List Percent	Web List Frq	Web List Percent	Prod List Frq	Prod List Percent
Local Gov.	89	16.4	15	11.7	46	31.7
University	79	14.5	30	23.4	33	22.8
State Gov.	74	13.7	8	6.3	4	2.7
Nonprofit ed	49	9.1	4	3.1	0	0
K-12 Other	40	7.4	7	5.5	6	4.1
Media	24	4.4	0	0	0	0
Corporate	23	4.2	11	8.5	5	3.4
Fed Gov.	18	3.3	0	0	0	0
Research	17	3.1	7	5.5	11	7.7
Test Pub	10	1.8	0	0	0	0
Library	10	1.8	5	4.0	5	3.5
K-12 teacher	7	1.3	24	18.7	6	4.1
Other	7	1.3	8	6.3	12	8.3
Parent	0	0	9	7.0	0	0
Unknown	96	17.7	0	0	17	11.7
Total	543	100	128	100	145	100

Geographic locations of consumers. Geographic categories of CRESST research users from the center mailing list (Table 5) were based on the basic distribution of states within the regions of the 10 national educational laboratories. Our finding was that the largest concentrations of individuals on the CRESST mailing list reflect similar populations as those of the regional laboratories with large concentrations in the Far-West including California (24.3%), mid-Atlantic states (18.4%) including New York, and the North Central (15.1%) area, including Illinois.

Table 5

Geographic Location of CRESST Users from Center Mailing List

Region	Frequency	Percent
Far West	132	24.3
Mid-Atlantic	100	18.4
North Central	82	15.1
Southeast	62	11.4
Northeast	46	8.5
Mid-Continent	46	8.5
South-central	30	5.5
Northwest	27	5.0
Appalachia	9	1.7
Pacific Islands	7	1.3
Unknown	2	.4
Total	543	100.0

Web and Product Registration Lists. The CRESST Web site registrant list showed the highest use rate from Mid-Atlantic (18.4%) and North Central (15.2%) regions followed by the Far West (13.6%), Foreign (12.8%) and Mid-Continent regions (8.0%). Missing geographic locations (2.3%) were a result of inadequate state or country origins that CRESST web registrants failed to complete on the CRESST web registration list. Geographic location for product users followed similar trends as the web registration list and the CRESST mailing list with the Mid-Atlantic region accounting for 14.5% of product usage, North Central, 20.7%, Far West, 16.6%, and Mid Continent, 13.8%. Our conclusion is that CRESST research usage is fairly evenly distributed across the United States.

How do customers discover CRESST research and products?

Item 6 from both the CRESST Product Questionnaire and the CRESST Web Questionnaire queried consumers on how they discovered CRESST products or the CRESST web site. While this is not an indicator of how all CRESST research is discovered, it does provide an indicator for a substantial number of customers (Figures 2 and 3).

Product Order Discoveries. CRESST product registrants most often found products through CRESST publications (40.3%). Printed mention in non-CRESST publications accounted for 13.4% of discoveries, colleague or professor, 11.8%, and more than one source, 11.8%.

Web Site Discoveries. CRESST web registrants found CRESST most often through a general Internet web search on education topics (28.8%) and general Internet web search on testing topics (21.2%). Middle level categories for finding the CRESST web site were from other web site providers (13.5%) and from printed mention in a CRESST publication (11.5%). Several respondents on the CRESST web questionnaire

said they found out about CRESST research and products from presentations by one of the CRESST co-directors or the CRESST associate director.

Figure 2

How CRESST Product Customers Discovered CRESST Products

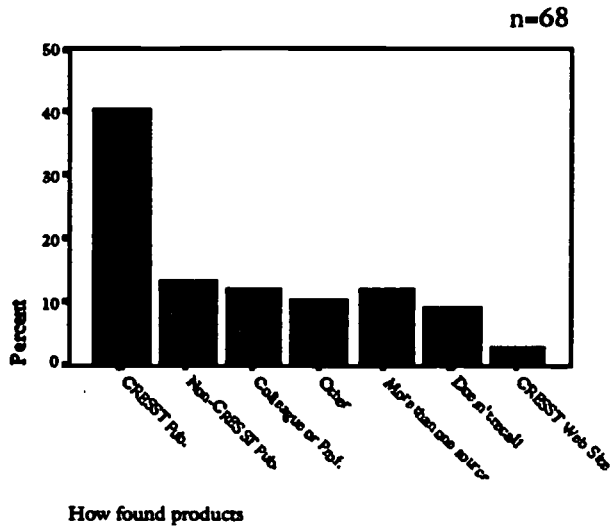
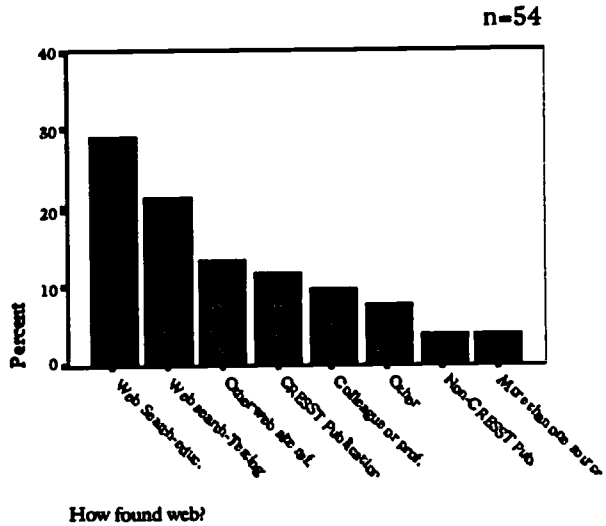


Figure 3

How Web Registrants Discovered the CRESST Web Site



How many research products do CRESST customers use?

Products Sales. To help answer this question, overall CRESST product sales were tracked from 1992-1996 and are reported in Table 6 and Figure 4. CRESST product sales underwent a period of growth in 1992 and 1993, peaking in 1994 and decreasing slightly in 1995, and in 1996, sales dropped to 1992 levels. In 1995, CRESST made approximately 70 technical reports of its most recent research available from their Internet site in a portable document format (PDF) and at no cost to users. A PDF document prints out identical to a fully formatted CRESST technical report including charts, tables, and figures. Additionally, CRESST produced a CD ROM in early 1996 that contained over 75 CRESST technical reports, a number of assessment guidebooks, test items, and two videos. These two dissemination efforts have clearly contributed to the observed reductions in CRESST product sales, as evidenced by e-mail

messages from CRESST web users requesting CRESST products over the Internet vs. purchasing them. However, total CRESST dissemination has increased (see Internet usage to follow). Average CRESST product sales are based on a 30-day month. The daily average product sale across all five years is 5.2 products/day based on a 365 day year.

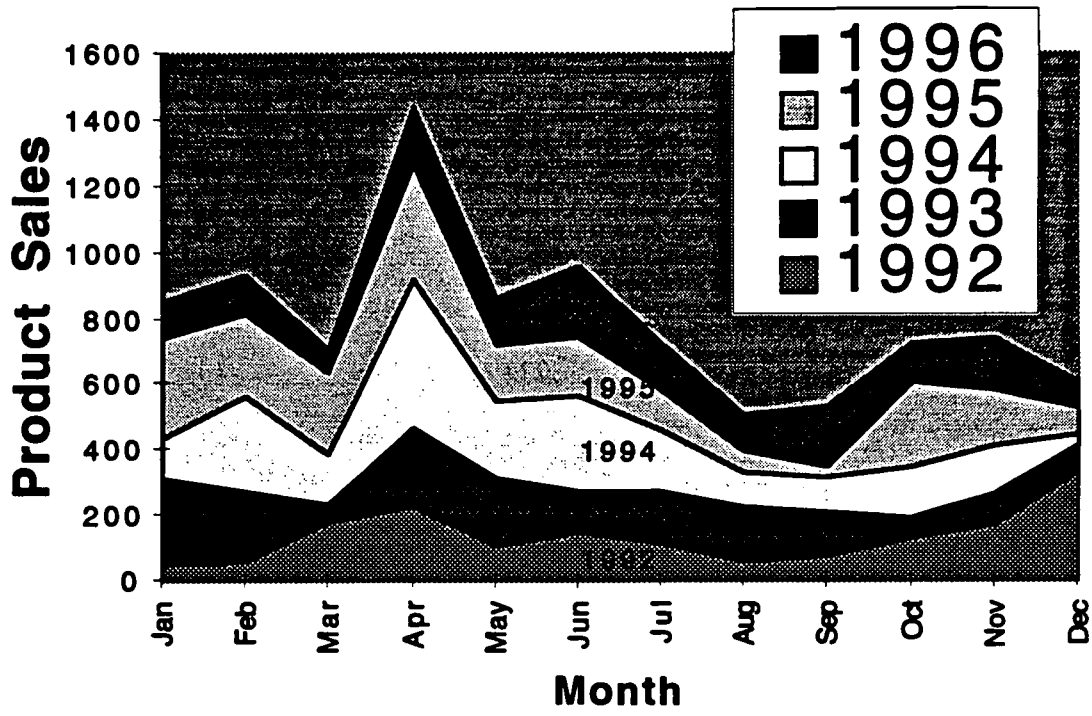
Table 6

CRESST Product Sales, 1992-1996

Month	1992	1993	1994	1995	1996	Mean
Jan.	45	270	120	306	113	171
Feb.	59	212	291	254	117	187
Mar.	176	56	155	248	73	142
Apr.	225	242	451	341	177	287
May	107	210	232	169	145	173
Jun.	141	132	286	180	219	192
Jul.	110	166	184	121	145	145
Aug.	58	164	105	68	110	101
Sep.	72	141	100	31	186	106
Oct.	127	64	151	258	126	145
Nov.	171	92	149	163	79	129
Dec.	332	80	28	83	70	121
Mean	135	152	188	185	130	158
Total	1623	1829	2252	2222	1560	

Figure 4

CRESST Product Sales 1992-96



Note from Table 6 and Figure 4 the high variance in products purchased between months with a persistent peak for product purchases in April of each year and slower sales in August, September, and December. These trends were further investigated in the CRESST Product Questionnaire (See findings from Evaluation Question 5).

CRESST Web Usage. CRESST Web usage was tracked from the late summer, 1995 to the end of December, 1996. Results are reported (Table 7) in terms of much more conservative web site "visits" instead of the more commonly used "hits." A hit is any connection to an Internet site, including inline image requests and errors, thus, an inaccurate estimate of true web usage. Visits on the other hand, are a series of consecutive requests from a user to an Internet site. Tracking CRESST hits vs. visits

indicates that, in general, visits are approximately 1/6 the number of hits, thus 100 daily visits could be approximately 600 daily hits. Only visits are reported here and the results from internal visits, that is, usage by internal CRESST web managers, are excluded. There are some overlaps between periods based on when logs were analyzed. The accuracy of any web usage is at best an approximate estimate; however, the data collected suggest a relatively stable usage rate with fairly small changes over all periods reported.

Table 7

Average Daily Visits to CRESST Web

Period	Dates	Average Daily Visits
1	8/10/95-12/18/95	115
2	12/18/1995-2/26/96	99
3	2/26/96-5/5/96	125
4	5/5/96-6/14/96	97
5[19]	6/7/96-12/11/96	122
6	10/22/96-12/31/96	109
Mean[20]		111

Within the last year, CRESST switched to new statistical software that includes a summary of average duration of a visit. An analysis of three periods for which data were available suggests that visitors may be connecting for longer periods of time. In the fall

[19] Note that there was overlap between periods 5 and 6, a result of the tracking system on the CRESST web site.

[20] Although a mean is computed for the average of CRESST web site usage, the periods are unequal and thus the mean is, at best, a rough approximation.

of 1995, visitors averaged 2.29 minutes connected to the CRESST web while from June, 1996-December, 1996, the average time connected was 6:01 minutes.

PDF Documents. Since early, 1995, CRESST has provided their research reports in a downloadable format with perfectly formatted tables and graphics via the portable document format (PDF). Table 8 shows the number of PDF documents downloaded from the CRESST web site for Periods 1, 2, 3, 4, and 5. Approximately 75% of the CRESST web PDF files are CRESST technical reports while other PDF documents are newsletters, handbooks and guidebooks, overheads from major presentations, or other types of CRESST research. All are major size documents and may take anywhere from a few seconds to download to a few minutes depending on the users' type of connection.

Table 8

Average Daily PDF Files Downloaded from CRESST Web

Period	Dates	Average Daily Downloads
1	8/10/95-12/18/95	18.7
2	12/18/1995-2/26/96	16.2
3	2/26/96-5/5/96	17.2
4	5/5/96-6/14/96	15.0
5	10/22/96-12/31/96	32.4[21]
Mean[22]		19.9

[21] 32.4 was a very conservative estimate based on both technical reports downloaded and newsletters.

[22] Although a mean is computed for the average of CRESST PDF documents, the periods are unequal and thus the mean is at best an approximation.

Because CRESST sells an average of 5.2 products per day in a 365 day year, the downloading of CRESST reports and other products more than triples total products distributed, based on an average of 20 PDF documents downloaded per day. As mentioned before however, CRESST product sales have decreased over the last year, approximately 2 fewer reports are sold per day. A sample downloading log of PDF documents is found in Table 9.

Table 9

Sample of PDF Files Downloaded

from CRESST Web (10/22/96-12/31/96)

Product	Title	Download
416	Assessing the Validity of the NAEP: The White Paper	209
415	Performance Puzzles: Issues in Measuring Capabilities...	182
410	Issues in Portfolio Assessment: Scorability of Narrative...	166
414	Evidence and Inference in Educational Assessment	150
371	Can Portfolios Assess Student Performance and Influence...	134
402	Monitoring and Improving a Portfolio Assessment System	103
391	A First Look: Are Claims for Alternative Assessment...	91
397	An Analysis of Parent Opinions and Changes in Opinions...	86
362	Performance-Based Assessment and What Teachers Need	86
348	Accountability and Alternative Assessment	82

The preceding table shows not only the popularity of the CRESST web site for downloading documents, but indicates that consumers are willing to search in order to find the reports they are interested in. Technical reports 362 and 348, for example, are from 1993 and 1992 respectively, yet they are still being downloaded at a rate of one per day. This table, combined with the product sales logs and other web PDF logs show that alternative assessment (also called performance-based assessment) and portfolios remain very popular topics.

CRESST Product Life Cycle

In order to review the life cycle of a CRESST product, quarterly product sales were tracked for four different products (Table 10): a handbook, the CRESST Performance Assessment Models, Content Area Explanations; one videotape, Portfolio Assessment and High Technology; and two CRESST technical reports, 334, Effects of Standardized Testing on Teachers and Learning: Another Look, and report 355, The Reliability of Scores from the 1992 Vermont Portfolio Assessment Program.

The products were relatively diverse in both content and price. The handbook features a well-known CRESST model for developing performance assessments and was the top selling product for nearly three years, while the videotape is an overview of a CRESST portfolio assessment research project at an elementary school. The technical report titles are self-explanatory. The most expensive product was the videotape, $15.00 including a guidebook on portfolios, and the least expensive was the Vermont portfolios technical report at $3.00. In general, price does not appear to be a major detriment to product purchase due to low price and product uniqueness.

Table 10

Average Quarterly Sales of Four CRESST Products

Prod #	Product Title	Avg. Qtr. Sales
Hand	CRESST Performance Assessment Models...	37.6
V2	Portfolio Assessment and High Technology	21.6
TR 334	Effects of Standardized Tests on Teachers and...	11.1
TR 355	Reliability of Scores from the 1992 Vermont...	8.3

While all four CRESST products showed similar sales trends, that is, a steep initial peak in sales usually followed by quick decline, there are some obvious differences (Figures 5-8). Both the CRESST Models handbook and the portfolio assessment videotape have higher mean sales and a longer active life-span. It seems reasonable to surmise that the reason for these differences are that the CRESST handbook and videotape are relatively unique products compared to the two technical reports, and have relevancy or potential use for an extended period of time. Only one CRESST assessment models handbook exists and only two CRESST videotapes, while dozens of other technical reports are available. In particular, report 355 had to compete with as many as five other reports on the same general topic, the Vermont portfolio assessment program, first-authored by the same researcher in each report. A review of the product sales records, however, indicated that when one Vermont report was purchased, others were oftentimes purchased simultaneously.

Figure 5

Life Cycle: CRESST Performance Assessment Models, Content Area Explanations

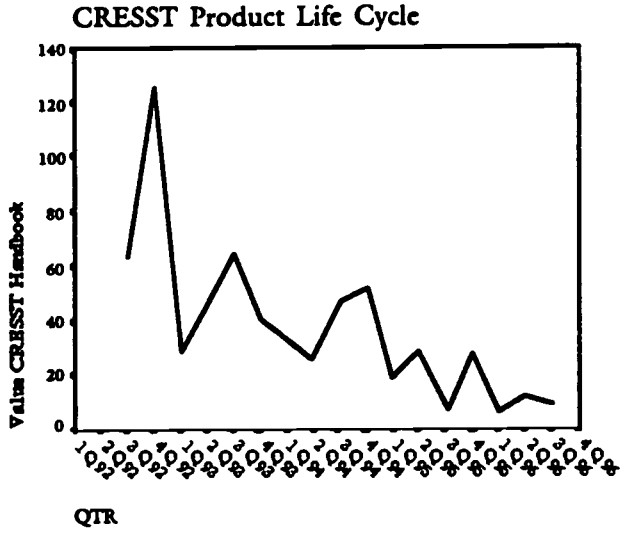


Figure 6

Life Cycle: Portfolio Assessment and High Technology Videotape

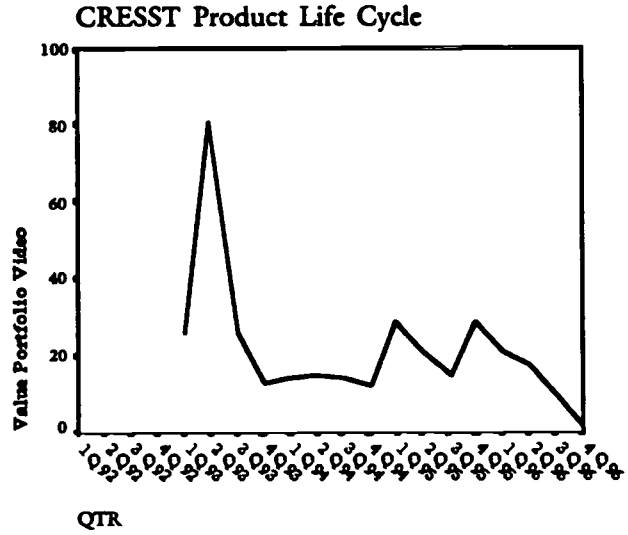


Figure 7

Life Cycle: CRESST Technical Report 334

Effects of Standardized Testing on Teachers and Learning: Another Look

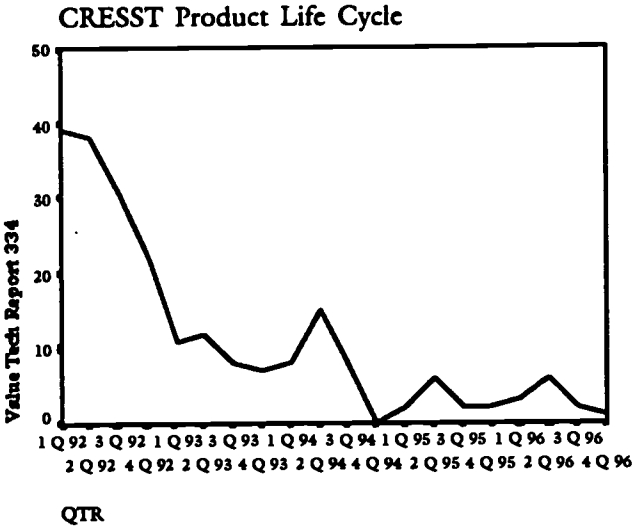
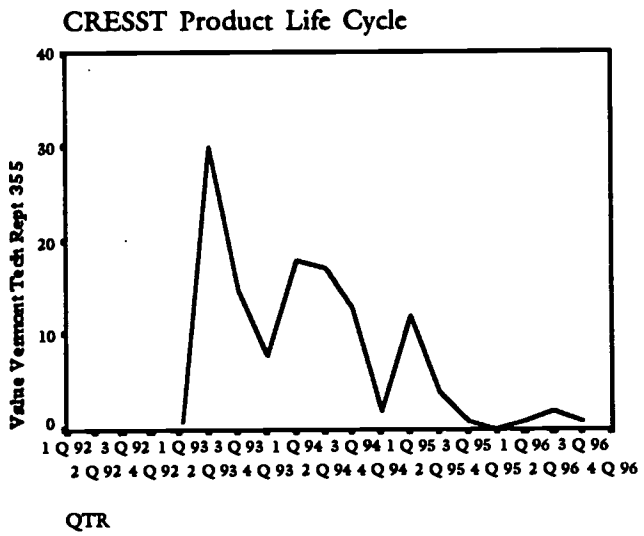


Figure 8

Life Cycle: CRESST Technical Report 355

The Reliability of Scores from the 1992 Vermont Portfolio Assessment Program



Evaluation Question 2. How are CRESST research and products used?

General Discussion.

To answer this question, we analyzed to what extent CRESST customers read and reviewed CRESST materials purchased or downloaded from the CRESST web, what customers reported that they did with the research, to what extent the research appeared to spread to secondary users, and finally, what appeared to be the impact from its use.

Findings from extent read and reviewed.

Question 8 from the CRESST Product Questionnaire and question 13 from the CRESST Web Questionnaire asked the question "to what extent did you use any materials viewed or retrieved?" Use was defined as the extent that materials were read and reviewed. Because significance differences were not found between the CRESST Product Order or Web Questionnaires [t(48)=.20, p=.844], data were combined (n=122) for Table 11.

Table 11

Extent CRESST Research Was Read or Reviewed

Read or Reviewed	Frequency	Percent	Valid Percent	Cum Percent
< 10%	13	10.7	11.3	11.3
about 10-50%	37	30.3	32.2	43.5
about 50-75%	32	26.2	27.8	71.3
over 75%	31	25.4	27.0	98.3
Don't recall	2	1.6	1.7	100
Missing	7	5.7	Missing	
Total	122	100.0	100.0	

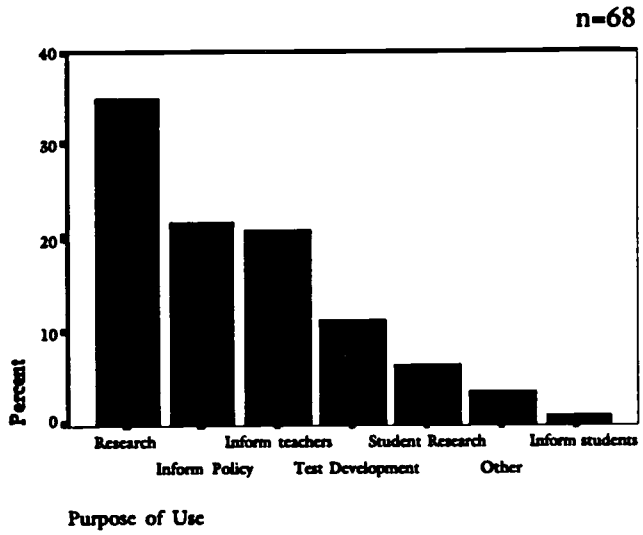
Just over 32% of respondents answered that they read or reviewed the research between 10-50% with nearly 55% reporting that they read or reviewed over 50% of the research material. While comparison figures are not available from other education research centers, this appears to be a fairly high level of reading or reviewing of products.

Findings from how CRESST products and research are used.

Purpose of Product Order. Question 7 from the CRESST Product Questionnaire asked customers "what was the primary purpose of your [product] order?" Respondents (n=68) said that the purpose (Figure 9) was for research (34.9%), to inform policy (21.7%), or to inform teachers (12.8%). Test development (11.3%) and student research (6.6%) were the other primary purposes mentioned. Note that respondents were given the opportunity to list two primary purposes. Answers were combined into a single variable, purpose of use, and 38 of 68 respondents listed more than one purpose for their product order.

Figure 9

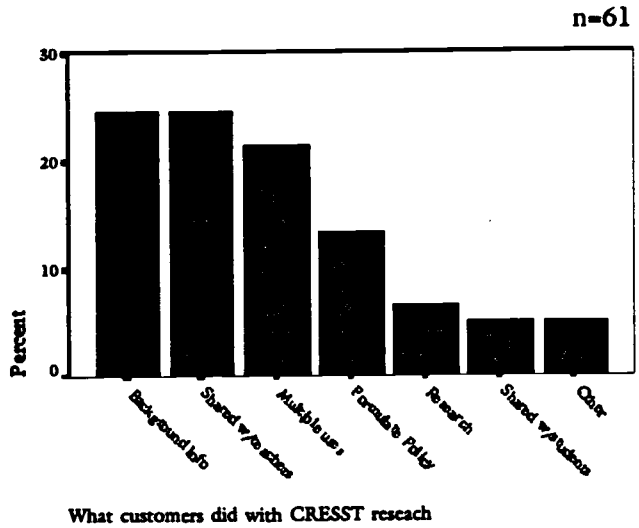
Purpose for Ordering CRESST Products



Use of CRESST research. Use of research from the CRESST Product Questionnaire is reported in Figure 10, based on answers from the question "what did you actually do with the information viewed or retrieved." Although this item was open ended, it was coded based on the "...purpose of your [product] order" question. Results showed equal percentages of sharing with teachers (24.6%) and for background information (24.6%), followed by formulating policy (13.1%). Just over 21% of respondents used CRESST research for more than one purpose.

Figure 10

What Customers Did with CRESST Research



Findings on use from open-ended questions. Results from open-ended questions on the CRESST Web and Product Questionnaires provide more specific insight into the uses of CRESST research. The following responses are from the open ended question "What did you do with the information you reviewed or retrieved?" from the CRESST Product Questionnaire:

- Coordinator at National Center on Educational Outcomes shared CRESST materials with staff and added them to their center database.

- A senior research scientist at Harcourt, Brace Educational Measurement shared CRESST materials as a sample of how to effectively present materials.

- Director of Special Projects at CUNY used CRESST research for a doctoral dissertation and development of published material on whole language for adults.

- A researcher used CRESST materials for general information, for research, and as policy information for policy makers.

- Director of English learning center used CRESST research to compare ways others are assessing language students, especially writing. *

- A Florida state university professor used CRESST research to teach an assessment course and in his own professional writing. *

- President of Cooperative Ventures used CRESST research for training a charter school in alternative assessment strategies. *

- Director of assessment for a school district used CRESST research during facilitation of secondary assessment task force in school district. *

- A school principal incorporated CRESST research into assessment planning for his school. *

* represents second-level use.

The following are examples from the open-ended question on the CRESST Web Questionnaire: What did you do with the information you viewed or retrieved [from the CRESST web]?

- West Ed researcher used CRESST information to provide background for a case study involving leveraging the curriculum through testing.

- A high school teacher used CRESST (web) materials to share with fellow staff members at West Hawaii Explorations Academy/Konawaena High School.
- A reference librarian at the University of Texas bookmarked CRESST web site for use in helping students find curriculum standards.
- A teacher used CRESST research for state accreditation purposes. *
- Assistant principal at a high school shared CRESST research with teachers and used it in his curriculum development efforts. *
- Assessment director for school district used CRESST research to shape local [assessment] decisions and distributed to others. *
- A psychologist integrated CRESST research into practice and disseminated to other professionals. *
- The director of evaluation and assessment at the Tennessee Department of Education used CRESST research to inform development of the [Tennessee] state assessment program. *

* represents second-level use.

While many diverse uses were reported on the open-ended questions, a pattern seemed to appear. CRESST research was used as a general information tool, i.e., shared with others, or used as both an information tool and also taken to a higher level, that is, integrated into policy or practice. Based on this pattern, the open-ended items from both the CRESST Product and Web Questionnaires were coded into information or integrated uses. An asterisk (*) at the end of each preceding example illustrates the types

of cases that were coded as strictly informational use vs. an integrated use. Coding from all questionnaire responses resulted in 23 of 66 examples of CRESST research (35%) that were integrated into policy or practice. All items were coded as informational at minimum.

To what extent does CRESST research and its products spread to secondary users?

All three instruments in this evaluation contained questions related to sharing of CRESST products and research with others. Table 12 represents the percentage of customers and the level they reported of sharing CRESST research from all three questionnaires. In order to account for the much higher number of respondents to the CRESST Descriptive Questionnaire, a weighted average in the final column averages sharing CRESST research across all three questionnaires but with the descriptive questionnaire receiving four times the weight of each of the other questionnaires separately.

Table 12

Percent of CRESST Customers Who Shared CRESST Research: Results From Three Questionnaires

Shared Research	Web Quest.	Product Quest.	Desc. Quest.	Weighted Avg.
Never	21.0	2.0	12.0	12.0
Once	18.5	19.0	14.0	15.3
2-3 times	39.5	46.0	43.0	43.0
4 or more times	18.5	29.0	30.0	28.0
Unsure	2.5	4.0	1.0	1.7
	100.0	100.0	100.0	100.0

The weighted averages indicate that only about 12% of CRESST audiences did not share CRESST research at least once within the last two years. About 15% shared once, 43% shared 2-3 times, and 28% shared 4 times or more. Again, while comparative data is not available, this seems to represent a very high degree of sharing.

Another question related to the sharing of CRESST research was the question on both the CRESST Product and Web Questionnaires "How likely are you to recommend CRESST to others?" discussed in the findings of Evaluation Question 3.

What is the impact from the use of CRESST research and its dissemination products?

Data to answer the question of CRESST impact came from a combination of sources including comments from the CRESST Web Registration Digests, telephone interviews, e-mail inquiries via the CRESST Web "Ask-Us Service," review of a 1996 evaluation report "The Impact of CRESST R&D" (House, 1996), open-ended items from all three CRESST questionnaires, and various CRESST memos and documents including the 1995 CRESST Impact Report to the Office of Educational Research and Improvement. Data was coded in accordance with acceptable qualitative procedures. The range of CRESST impact was found to be enormously diverse and is perhaps best categorized at specific ranges of influence, from simple information at the individual level to broad state and national level impact. Much of CRESST's impact is transparent since it is usually filtered by various change agents, i.e., researchers, professors instructing new teachers, measurement experts, testing professionals, school district and state test directors, and policy makers. The patterns for impact that emerge from an overview of CRESST records can be categorized into the following: impact on practice, impact on measurement theory and research, impact on policy with implications for practice.

The following examples, representing interactive dissemination, information tools, or mass media strategies from the CRESST dissemination model, were selected as appropriate representations for each major category of CRESST impact.

Impact on practice.

- Long time, no talk, but I didn't forget you. I took your advice, and over the last several months we have focused on changes in teacher behavior that performance based learning and assessment can provoke. We did an extremely well received workshop with Mike Hibbard from Connecticut and four of his teachers. Our staff has gotten so excited that we've had two follow-up meetings, each with new tasks, assessments lists, and student work, and we're having a third in a couple of weeks where they're each bringing two friends. It's catching on because teachers see the utility, alignment with their own efforts, and empowerment for themselves and their kids.

E-mail message

School District Assistant Superintendent, California

- I enjoyed talking with you and getting your view of the [assessment] issues we are exploring. Thanks you very much for sending copies of CRESST's "Final Report: Perceived Effects of the Maryland School Performance Assessment Program" and for calling me with Joan Herman's information. Your responses will be extremely helpful to us in the work we are doing on assessment.

Letter from the

Assistant Director, American Federation of Teachers

Impact on measurement theory and research.

- In an examination of 35 [ERIC] articles, CRESST research was cited 90 times in CRESST authored publications and 42 times in 26 non-CRESST articles. Most CRESST articles were in the highest status journals. All in all, the evidence is

extensive that CRESST has had a major impact on the measurement research community.

Ernest House

The Impact of CRESST R&D (1996)

Impact on policy with indirect impact on practice.

- I'm using it [seven CRESST research products] for a school reform committee, I'm chairman of the goals and testing committee for the state. I also use the materials when I consult with districts and often copy the materials and give them to others. We are working on performance assessments statewide in 9-12, a series of tasks, and wanted to find out what was going on in Arizona [CSE Reports 373, 380, 381]. We wanted to avoid those types of problems. Our program will be voluntary, not mandatory. [23]

Telephone Interview

Professor, University of Idaho

- Last spring I contacted you about our district's Certificate of Initial Mastery Tests. Our school board recently rescinded its previous policy making these exit exams a graduation requirement and I thank you for providing me the information necessary to keep us from a potentially serious lawsuit.

E-mail message from English high school teacher in Maine

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[23]This response went well beyond the question suggesting significant impact from CRESST research based on products. The same respondent said that CRESST is the only place he gets useful [assessment] information and that CRESST funding needs to continue. When asked of improvements, he said he would just love to have CRESST closer so he could come see them. As a result of the telephone interview, he said he wanted to attend the next CRESST conference.

It should be noted that each of these cases exemplify the important role of change agents in the dissemination process and that most CRESST impact seems to occurs through intermediaries, oftentimes reinforcing existing opinions or in some cases, providing evidence to support a specific point of view.

Broad impact on policy at national, state, and local levels with major implications for practice.

We found significant instances of impact on national, state, and local education agencies that at times could be attributed to CRESST as an organization, or in other cases, more directly linked to individual CRESST researchers. As stated during our discussion of the CRESST dissemination model, we focused on CRESST as an organization, with a clear understanding of the important leadership role played by center directors and other influential researchers that comprise the CRESST partners.

National Impact. An example of the influence exerted by CRESST leadership was the appointment in 1991 of CRESST co-director Eva Baker to the National Council on Education Standards and Testing. The Council had been convened to advise Congress on the "desirability and feasibility of national standards and tests, and [on] recommendations for long-term policies, structures, and mechanisms for setting voluntary education standards and planning an appropriate system of tests (National Council... 1992)." As chair of the Assessment Task Force, Baker successfully advocated for many of the council's final recommendations, including continued use of the NAEP to monitor student progress to national standards and that results from any national assessment system only be used for instructional purposes until validity issues were resolved. Of added note was that the Council's report helped to dampen the impetus towards the development of a new national test, and refocused standards and

assessment requirements at state and district levels which became imbedded into Goals 2000 and the 1994 Improving America's Schools Act (IASA).

While the impact of the Council is difficult, if not impossible to measure and attribute even indirectly to CRESST, we do note that CRESST Co-directors Linn and Baker and other CRESST researchers are still consulted on a regular basis to advise the Department of Education on various aspects of Goals 2000, Title I of the Improving America's Schools Act, and other aspects of legislation and policy related to standards and assessments. In 1995, CRESST staff participated in the rule making for IASA, particular to the use of assessments. In 1996, CRESST leadership participated in presentations across the country to provide information to public agencies about Title I standards and assessment requirements. Perceived as unbiased experts who are valued for their expertise and ideas, the influence of CRESST researchers appears to be considerable, with apparent impact on the standards and assessments of all fifty states and over 15,000 school districts nationally.

Another example of CRESST impact at the national level is represented in their work for the U.S. Department of Education's National Center for Education Statistics (NCES). Over the past five years NCES funded CRESST to convene a technical review panel to conduct validity studies of the National Assessment of Educational Progress (NAEP), oftentimes referred to as the nation's report card. Scores from the NAEP are reported across the country as an indicator of whether or not student achievement is increasing, decreasing, or staying the same. CRESST partners conducted technical reviews of NAEP plans and documents, provided technical and policy advice to the National Assessment Governing Board which sets NAEP priorities, and conducted a series of independent studies of NAEP test design, administration, analysis, and reporting procedures. The results from the studies have been used to strengthen or improve the NAEP or in other cases, such as the setting of achievement levels, to

question the technical adequacy of certain procedures (Linn, Koretz, Baker, 1996). In addition, the National Academy of Education was commissioned to conduct an analysis of the NAEP trial state assessment. Leadership roles in this work were taken by CRESST researchers Robert Linn, Robert Glaser, and Lorrie Shepard. In addition, in their section on the redesign of NAEP, CRESST researchers Richard Shavelson and Eva Baker contributed chapters.

Representative of the significant impact on the national measurement community was the appointment of CRESST staff to the Joint Committee on Revising the Standards for Educational and Psychological Testing. Co-sponsored by the American Psychological Association, the American Educational Research Association, and the National Council on Measurement in Education, the committee is in the midst of a comprehensive review and revision of the 1985 Standards. While the impact can only be estimated at this time, the revisions will almost certainly incorporate some of the new conceptual ideas related to validity and fairness as developed during the past 11 years of CRESST funding. Additionally, the revisions will reflect much of the CRESST agenda on appropriate uses of test results. CRESST researchers serve on the Board of Testing and Assessment of the National Research Council including Richard Shavelson, Richard Durán and Robert Linn. This group also sponsors workshops and reports on testing and assessment topics and numerous CRESST researchers including Robert Glaser, Daniel Koretz, Lorraine McDonnell, and Harold O'Neil, Jr., have contributed to the work of this organization.

State Impact. As evidence of a state level impact basis, we cite the 1995 report, "Review of the Measurement Quality of the Kentucky Instructional Results Information System, 1991-1994." Although not a CRESST study, CRESST researchers Daniel Koretz and Robert Linn were co-authors of this report evaluating the technical quality of what was probably the most widely publicized implementation of a high-

stakes state performance assessment system in the United States. In the report, the researchers recommended that results from the Kentucky "portfolios not be used at this time for accountability purposes; that validation work be expanded; that the performance standards be re-established and full documentation of the process provided; that public reports be clear about limits of generalizability of findings to a new set of tasks; that multiple choice items be added to increase content validity and scoring reliability, and that the state reconsider its shift toward instructional process at the expense of curriculum content (McDonnell, in press). According to McDonnell, the Kentucky State Department of Education accepted a majority of the report findings and have since taken steps to implement many of the report's recommendations. The impact of the report is considerable, in that the case can be made that the results from the study not only caused Kentucky to significantly change their assessment system, but that other states made major decisions about their own state assessment programs based on this highly publicized example.

Other cases for CRESST-funded impact on state-level assessment programs could be made for Vermont, Arizona, Oregon, Washington, New York, Hawaii, North Carolina, Michigan, and Missouri, where CRESST has either conducted research or served as a consultant to state departments of education. In each state, CRESST research appears to have influenced major directions for state testing programs, frequently in terms of not pursuing certain strategies based on technical considerations or considering more dependable alternatives that were still aligned with instructional improvement.

Another indicator of CRESST state level impact as well as school district impact from CRESST research comes from the House evaluation (1996) "The Impact of CRESST R&D." One element of the evaluation was to survey CRESST impact on state and local test directors, focusing on whether CRESST had influenced test director

decisions or their thinking about the use of alternative assessments. Based on a survey of more than 100 test directors, the evaluators concluded:

> When test directors were asked how useful CRESST was in building awareness of alternative assessments for testing directors, the majority (84%) thought that CRESST has been "useful" in generating awareness about these assessments. The majority (83%) of test directors also believed that CRESST was "useful" in disseminating information about their function. Test directors also thought that CRESST was useful in influencing their thinking about alternative assessments (76%). Most (62%) believed that CRESST was useful in helping them make decisions about testing materials.

In the same survey, verbal comments from the test directors generally praised both the quality of CRESST research and its dissemination:

> The literature published by CRESST influenced my thinking about alternative assessment which undoubtedly affected my decisions.

> Materials produced by CRESST have a sound research base and are objectively presented, unlike a lot of alternative assessment resources...The credibility of CRESST personnel and the widespread dissemination of CRESST publications have been useful.

> CRESST has been a major teacher in awareness; CRESST has been the leader nationally in practical research on alternative assessment. The quality of their work is outstanding.

CRESST has consistently been on the "cutting edge" and is especially proficient in working with practitioners about what is going on in the "real world" of schools.

It lets me know I'm not along out here. It's evidence I can use with the power brokers.

...The materials available through CRESST have been very helpful in helping us identify and think about the issues.

In a tracer study from the same evaluation, the evaluators measured the impact of CRESST products, one of them a book by CRESST researchers Joan Herman, Pam Aschbacher, and Lynn Winters.[24] Published by the Association for Supervision and Curriculum Development, "A Practical Guide to Alternative Assessment" was published in 1992 and distributed free to 90,000 ASCD members in addition to 43,650 sales in its first two and half years. Approximately 6600 copies were purchased by the Illinois Department State Board of Education for use in its regional training centers and 23,000 copies were distributed to Chicago Public Schools. The House evaluation noted:

Illinois public school administrators found the book "quite helpful" in the state's school improvement planning process and use the book in training workshops given every six weeks for school staff. This individual recommends the book for workshops and uses its checklists for overheads and presentations. All of the state directors and school improvement people have received copies of the book,

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[24] Winters is now with the Long Beach Unified School District.

and it is referenced in the state's publications. It has served as a "perfect fit" for the assessment component of the state's school improvement plan, said a Chicago official because it helps teachers focus on the assessment of outcomes as something students can do or know, rather than as activities.

While the preceding example represents perhaps the strongest impact on a state or school district program from this product, it was indicative, according to the evaluators, of "A Practical Guide to Alternative Assessment's" wide acceptance and its ability to reach teachers.

Local. CRESST influence at national and state levels subsequently impacts local school districts and indirectly, individual schools, oftentimes as a result of national legislation tied to funding such as Goals 2000 or Title I or at individual state levels where CRESST has had direct input. CRESST is also involved in the development of a new assessment system for the Los Angeles Unified School District, the second largest school district in the nation, which if successful, could lead to much wider implementation in other districts and states.

Evaluation Question 3. What is the perceived quality and usefulness of CRESST research and products? How satisfied are CRESST customers?

General Discussion.

Information across all three CRESST questionnaires was used to measure customer perceptions of CRESST quality, usefulness, and satisfaction. We present results on quality and usefulness from the CRESST Descriptive Questionnaire, focusing on the more global items therein, then present a composite picture of CRESST customer satisfaction from several items related to customers' likeliness to use CRESST resources again, likeliness to recommend to CRESST to others, and the types of problems typically reported, or not reported.

Findings on Quality of CRESST Research and Dissemination Products.

As discussed in the methods chapter, nine items from the CRESST Descriptive Questionnaire (Appendix A) were used to measure customer perceptions of quality of both CRESST research and dissemination products. Table 13 provides a summary of means, trimmed means, medians, and standard errors for all nine items. The means, trimmed means, and median all appear to represent relatively high levels of perceived quality, although again, comparisons to other research institutions are not available. Trimmed means are a more robust estimator of central tendency than medians (Norusis, 1994). Ratings are from an eight-point scale.

Table 13

Means and Trimmed Means for Ratings of Quality of CRESST Research

Variable	Mean	Trimmed Mean	SD	n
Overall R&D	6.66	6.71	1.03	694
Products	6.59	6.64	1.03	645
Journals/Books	6.69	6.74	1.03	545
Tech Reports	6.57	6.63	1.07	577
Presentations	6.49	6.55	1.13	312
WWW	6.39	6.46	1.20	427
Topics	6.34	6.41	1.22	712
Newsletters	6.29	6.35	1.14	680
Media Products	6.20	6.27	1.31	241

For this dissertation, we focus on findings from two of the nine items that are broader measures of perceived quality, "overall quality of CRESST research" and "overall quality of CRESST products." Appendix D has comprehensive tables and figures for all nine items.

The distribution observed in Figures 11 and 12 are typical of responses to each item measuring both quality of CRESST research and quality of CRESST products. When responding to the question "how would you rate the overall quality of CRESST research," 87.6% of all respondents rated the overall quality of CRESST research in the top three categories." A similar percent (87.8%) rated CRESST products in the top three categories for the question "how would you rate the overall quality of CRESST products."

Figure 11

Ratings of Overall Quality of CRESST Research

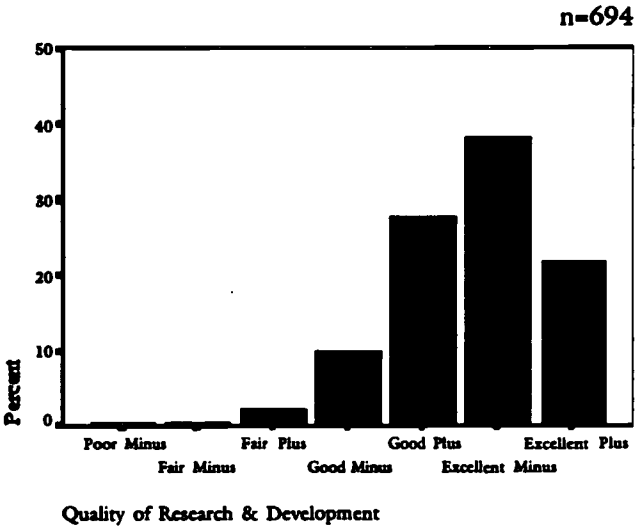
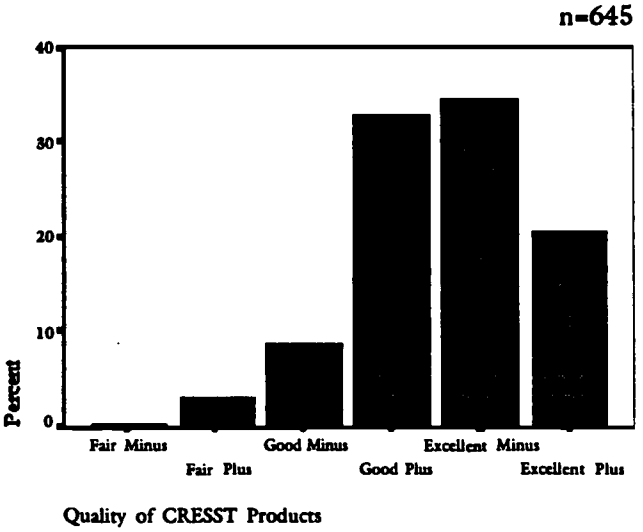


Figure 12

Bar Chart for Ratings of Overall Quality of CRESST Products



The findings are very consistent throughout the other seven items as presented in Appendix D. The bar charts are skewed to the right (negatively skewed) and suggest substantial satisfaction with CRESST research and its specific products including journal articles and books by CRESST researchers, newsletters, Internet services, media products, coverage of important topics, technical reports, and presentations. A number of problems; however, tended to bring down ratings for both the CRESST media products (M=6.20) and Internet services (M=6.29). As many as 10% of Internet users reported difficulties downloading CRESST products from its Web site. These had previously been identified in occasional e-mail messages from customers and a few phone calls. However, in every case investigated, the problem was linked directly to the user, especially to the America On-Line browser. Fortunately, as the portable document format (PDF) has become more standardized throughout the Internet industry and Internet suppliers improve their browsers, problems are abating. The somewhat low rating for CRESST media products (M=6.20), appears related to some dissatisfaction with the Alternative Assessment in Practice database, a HyperCard and Internet resource list of providers of alternative assessments. Half a dozen written comments from the CRESST descriptive questionnaire said that the CRESST Alternative Assessments in Practice database contains many out of date sources. The database needs either quick attention or a link to the one of the regional laboratories with a current assessment database.

Usefulness of CRESST Research and Dissemination Products

An equal number of items (9) from the CRESST descriptive questionnaire were used to measure the perception of usefulness of CRESST research and dissemination products (See Appendix D for full results.) As with responses to the items on quality,

the means, medians, and trimmed means on the usefulness of CRESST research and dissemination products appear to be consistently high. Seventy-seven percent of all respondents (n=739) answered in the top three categories to the question "overall, to what extent has CRESST provided you useful information" and 82.8% answered in the top three categories to the question "overall to what extent do you believe that CRESST has been useful to the education community (n=751)." Table 14 provides a summary of means, trimmed means, medians, and standard deviations for all nine items measuring usefulness of CRESST research and dissemination products. Complete results are reported in Appendix D. Ratings are on an eight-point scale.

Table 14

Means and Trimmed Means for Ratings of Usefulness of CRESST Research

Variable	Mean	Trimmed Mean	SD	n
Community	6.54	6.65	1.30	708
Useful Inf.	6.25	6.36	1.42	739
Journals/Books	6.39	6.48	1.30	547
Tech Reports	6.20	6.27	1.36	577
Presentations	6.17	6.24	1.35	269
WWW	6.39	6.52	1.48	426
CRESST Ideas	6.48	6.58	1.31	657
Newsletters	6.09	6.17	1.41	670
Media Products	6.08	6.17	1.52	217

Because they are broader questions related to usefulness, we present only the charts from the questions "overall, to what extent has CRESST provided you useful information?" (Figure 13) and "overall, to what extent do you believe that CRESST has been useful to the education community?" (Figure 14). Seventy-seven percent of respondents rated "extent CRESST provided them useful information" in one of the top three categories while 82.8% rated CRESST usefulness to the education community in the top three categories.

Figure 13

Bar Chart for Ratings of Extent CRESST Has Provided You Useful Information

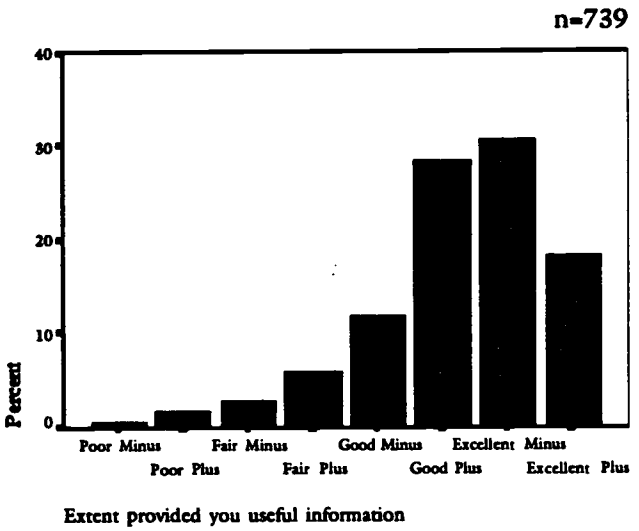
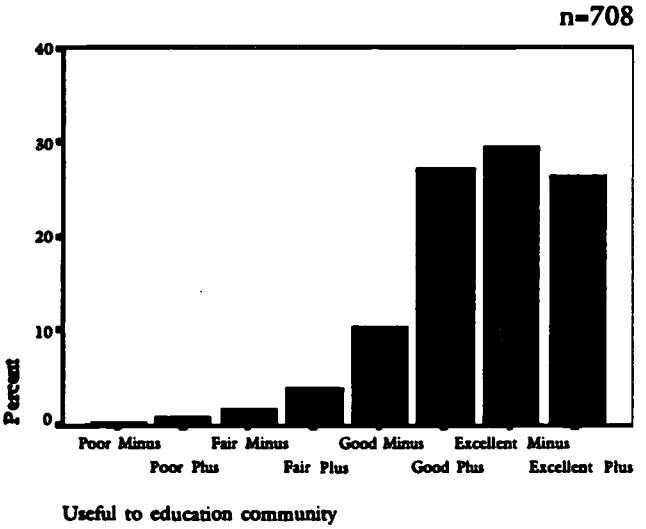


Figure 14

Bar Chart for Ratings of Beliefs that

CRESST has been Useful to the Education Community



Findings on CRESST Customer Satisfaction.

Both the CRESST Product Questionnaire and CRESST Web Questionnaire included items that provided a measure of customer satisfaction levels. They are based on: 1) likeliness to use CRESST research in the future, and 2) likeliness to recommend CRESST to others.

CRESST Product Questionnaire. Over 86% of respondents to the CRESST Product Questionnaire (Table 15) replied that they were either likely or very likely to order CRESST products in the future and 95.5% said that they were either likely, very likely, or already had recommended CRESST to others (Table 16). Twenty-seven percent (27.3%) of all respondents had already recommended CRESST to others. Only one respondent said that they were "very unlikely" to order CRESST products in the future but a review of that record did not reveal any reason for their unlikeness to

order in the future and they indicated that they were "very likely" to recommend CRESST to others. Of the five respondents who answered that they were "somewhat unlikely" to order CRESST products in the future, four said they were either "likely" or "very likely" to recommend CRESST to others.

Table 15

How Likely to Order CRESST Products Again

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Very unlikely	1	1.5	1.5	1.5
Somewhat unlikely	8	11.8	12.3	13.8
Likely	30	44.1	46.2	60.0
Very likely	26	38.2	40.0	100.0
Missing	3	4.4	Missing	
Total	68	100.0	100.0	

Table 16

How Likely to Recommend CRESST to Others

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Very unlikely	0	0	0	0
Somewhat unlikely	3	4.4	4.5	4.5
Likely	20	29.4	30.3	34.8
Very likely	25	36.8	37.9	72.7
Already recomm.	18	26.5	27.3	100.0
Missing	2	2.9	Missing	
Total	68	100.0	100.0	

CRESST Web Questionnaire. Similarly for the CRESST web, 88.5% of respondents said that they were either "likely" or "very likely" to use the CRESST web site in the future (Table 17) and 92.2% said that they were likely, very likely, or already had recommended the CRESST web to others (Table 18). No respondents said that they were unlikely to use the CRESST web again. Forty-four percent (44.2%) had already recommended the CRESST web site to others.

Table 17

Likeliness to Use CRESST Web Site in the Future

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Very unlikely	2	3.7	3.8	3.8
Somew unlikely	4	7.4	7.7	11.5
Likely	17	31.5	32.7	44.2
Very likely	29	53.7	55.8	100.0
Missing	2	3.7	Missing	
Total	54	100.0	100.0	

Table 18

How Likely to Recommend CRESST Web Site to Others

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Very unlikely	1	1.9	1.9	1.9
Somew unlikely	3	5.6	5.8	7.7
Likely	15	27.8	28.8	36.5
Very likely	10	18.5	19.2	55.8
Already rec.	23	42.6	44.2	100.0
Missing	2	3.7	Missing	
Total	52	100.0	100.0	

A review of the questionnaire from the single web user who said they were "very unlikely" to recommend the CRESST web to others revealed that the respondent

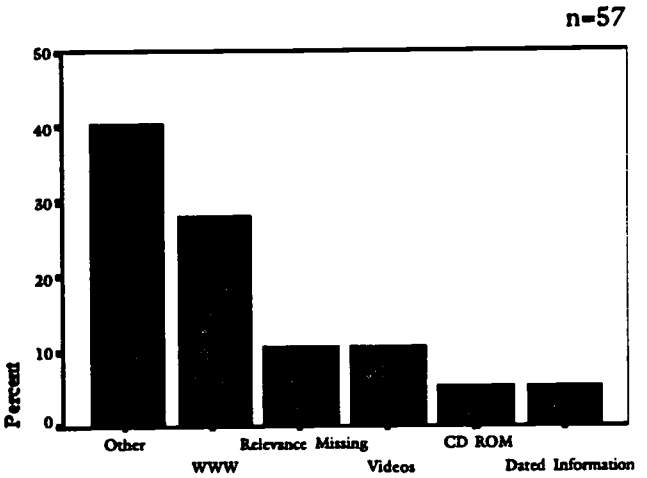
was a parent associated with her school PTA who realized that CRESST did not provide the type of information she was interested in, that is, comparisons of student achievement in all school districts, public or private. She had also answered that she was "very unlikely" to use the CRESST web again. A review of the questionnaire from the second person who said that they were "very unlikely" to use the CRESST web again, showed that their primary interest was in evaluation methods and not K-12 assessment which is the focus of CRESST research.

Data to answer the question of customer satisfaction was also reviewed from an earlier 1995 pilot study (Dietel, 1995) which asked ten randomly selected telephone interview respondents "how likely" they were to order CRESST products in the future. Respondents were given four possible answers: very unlikely, somewhat likely, likely, and very likely to place future orders. Eight respondents said that they were "very likely" to order future products, one said "likely" and one said that "it depended on where their current project leads them." While only a low number of interviews were conducted, it does provide additional evidence to support the finding that a high percentage of users were satisfied customers.

CRESST customer satisfaction was also measured by the number of problems reported with CRESST products or services based on open-ended question 25 from the CRESST Descriptive Questionnaire, "what CRESST research was especially useful or problematic?" Problems were coded into appropriate categories and reported in Figure 15.

Figure 15

Problems Reported with CRESST Research and Products



Of 751 CRESST Descriptive Questionnaires returned, 57, or 7.6% reported something problematic while 230 of 751 respondents, 30. 6%, reported especially useful research or products. Of the problematic items, the largest group besides "Other," was the CRESST web (28.1%), with nearly all of these problems having trouble downloading portable document files which, as mentioned earlier, are seldom problems at the CRESST web site, but rather from the browser being used or the customers connection. By far the largest percentage of problems reported fell into the miscellaneous "other" category (40.4%), which was frequently inconsistent, oftentimes focusing on a single, very specific item that was not generalizable to other cases. A few examples follow on the next page:

- The AAIP database didn't have anything related to physics. I would like research on forming viable scientific models, overcoming misconceptions, strategies that contribute to the application of concepts.

High school physics teacher

- The PDF (acrobat) format is a pain in the neck. Much too slow to read or print. Most people use PCs not Macs.[25]

School district senior evaluator

- The video was problematic due to poor sound quality.[26]

Assistant Principal

- AAIP database had dated items like CLAS. Item banks for performance assessments would be useful as well as regional workshops.

Manager of Evaluation and Research

On the other hand, over 30% of all CRESST descriptive questionnaires returned indicated high levels of customer satisfaction with both CRESST research and dissemination products as shown in the examples that follow. Each of these also demonstrates some of the impact from CRESST research.

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[25] The Acrobat Reader has always been available in both PC and Macintosh versions.

[26] Although this may not have been the same case, the one reported audio problem on a videotape was checked out and could not be found on a sample of other videotapes. The customer was offered a new videotape to replace the one with the reported problem.

- "Tracking Your School's Success" and "A Practical Guide to Alternative Assessment" were very useful to us in working with schools and evaluation issues.

  Director of Evaluation, Wake City (NC) Public Schools

- Title I information was especially useful.

  School District Test Director

- The [CRESST] research on opportunity to learn was especially useful. The population I teach fits that category.

  Assistant Professor, Dade (Fla.) Community College

- The newsletters keep me acquainted with current [assessment] undertakings. The technical reports have been especially useful for my research grants and portfolios, etc.

  Assistant Director of Office of Instructional Resources, Univ. of Florida.

- I have particularly benefited from the timely discussion of important current issues in CRESST Line and Eval[uation] Comment.

  Director of Assessment, Washington Commission on Student Learning

- I used the CRESST web site to gather data for presentations to the Assistant Superintendent of Curriculum. I value the availability of technical reports/results of [CRESST] research projects.

  School district research assistant, Stockton (CA) Unified School District

- Five years of CRESST research on CD ROM [was especially useful].

  Secondary school English teacher, Assonet, Massachusetts

- Assessing the Whole Child video [was especially useful]--provoked interesting and timely discussion about assessment issues.

  Co-director, Continuous Science Assessment Project (the Network, Inc.)

- I read the newsletter because I admire the work of Eva Baker. I often share it with [the] Dean...

  Assistant to Dean at Peabody College and former teacher

- The reports on analytic scales and narrative writing by Gearhart, et al. were fabulous.

  Teacher from Spokane, Washington

Summary of findings on CRESST customer satisfaction.

Overall, the short answer responses support other evidence presented in this section that CRESST is perceived as a valuable resource by a large majority of its customers and that the impact has been considerable in some cases. From the CRESST Descriptive Questionnaire, over 70% of customers rated CRESST research and dissemination products in the top three categories of quality and usefulness on an eight-point scale. Customers indicate that they will use CRESST research in the future and many have already referred others to CRESST or report that they are likely or very likely to do so in the future.

Evaluation Question 4. Are there important differences across audiences between perceived quality and usefulness of CRESST research and dissemination products?

General Discussion.

For the CRESST Descriptive Questionnaire, it was hypothesized that market segments might exist between various independent variables, especially different registration lists, i.e., full mailing list, web list, or product order list; or different types of groups, i.e., school districts, K-12 schools, researchers, or others. CRESST products, for example, are not typically written for a practitioner audience, yet CRESST publications are sent to a substantial number of K-12 school practitioners (8.7%). It was surmised that ratings from K-12 audiences on the quality, or at minimum, the usefulness, of CRESST research, would be significantly lower than state or school district test directors or university researchers. Similarly, quality of the CRESST World Wide Web might be rated higher by those who had registered on the CRESST web vs. those who had ordered products or who were on the general CRESST mailing list. In order to detect important differences between means for the various groups discussed, Analysis of Variance was selected as the appropriate statistical procedure. However, because there was violation of some ANOVA assumptions, such as nonnormality, nonparametric tests were used to determine the impact of violation of assumptions for the ANOVA results and QQ Plots were used to assess normality of the distributions (Appendix E). We discuss assumptions of normal vs. non-normal distributions, findings of differences in ratings of the quality and usefulness of CRESST and dissemination products across independent variables, both demographic and use-related, and the validity of the instrumentation used.

Assumption of Normal vs. Nonnormal distributions. The results from the QQ Plots indicated that the distribution for this study did not show significant departure from normality (Appendix E). The Levene test, used to analyze differences in population variances, provided evidence that except for a few cases the ANOVA assumption of equal variances was not violated. As discussed in the methods section, samples were all randomly generated using Filemaker Pro software, confirming the independence assumption necessary for ANOVA. The Bonferroni multiple comparison test was used to examine significant differences between key audiences, registration lists, and other independent variables, and the Scheffé test, a more conservative estimate for pairwise comparisons (Norusis, 1994) was used for confirmation purposes. We discuss findings from the quality ratings first.

Findings about the differences in ratings of the quality of CRESST research and dissemination products.

Gender. Of the nine items intended to measure quality of CRESST research and products, the only significant difference detected for the variable of gender was for the variable "quality of topics covered" [$F(1, 703)=4.0355$, $p=.0449$]. Therefore it seems safe to conclude that both males and females had similar perceptions regarding the quality of CRESST research and products.

Race. The only significant difference found across race was for the dependent variable "overall coverage of important topics" with Caucasian ($M=6.41$) and Asian ($M=5.63$) samples showing a significant difference [$F(5, 673)=4.8735$, $p<.01$]. and Black ($M=6.72$) and Asian ($M=5.63$) samples also significantly different. While the more restrictive Scheffé test supported the findings from the Bonferroni, the Asian ($n=30$) and Black ($n=23$) sample sizes are so small as to prevent any strong inference from this finding. This interpretation is further supported because "overall coverage of

important topics" was the only dependent variable where race showed any significant difference.

Group Audiences. For group audiences, the quality of journal articles/books was rated significantly different [$F(3, 541)=4.17$, $p<.01$] between group 1 (districts/states, M=6.80) and group 4 (others, M=6.45); and group 3 (researchers, M=6.83) and group 4 (others, M=6.45), although the more conservative Scheffé test showed significance difference only between groups 3 and 4. There was a significant difference [$F(3, 423)=2.81$, $p=.039$] between group 1 (districts/states, M=6.54) and group 4 (others, M=6.07) for the dependent variable of quality of the CRESST World Wide Web although the Scheffé test did not support this finding. Because the "Other" group is rather undefined, this probably is not a very important finding.

Registrations. Across types of registrants, that is across the three different mailing lists, significant differences were detected between group 1 (product list, M=6.53) and group 2 (web list, M=6.21) for the dependent variable "overall coverage of important topics" [$F(2, 709)=4.85$, $p<.01$]. The Scheffé test confirmed the significant difference. Only one other dependent variable from all nine quality dependent variables, "overall quality of CRESST research," produced a significant difference across registration type [$F(2, 691)=4.21$, $p=.015$], in this case, between group 1, product list customers (M=6.81) and group 3, the CRESST mailing list (M=6.54). However, because the significance is between two different lists, groups 1 and 3, compared to groups 1 and 2 for the previous dependent variable, "quality of CRESST products," any substantial inference of differences between registration types cannot be supported.

Schools and Districts. The only significant difference detected between any schools or district independent variables was "type of school," urban, rural, or suburban, for "quality of presentations..." [$F(2, 46)=3.73$, $p=.03$]. The significant

difference was found between urban (M=5.76) and suburban schools (M=6.68) and detected by both the Bonferroni and Scheffé tests.

When reviewed as a composite picture of CRESST users, the results suggest that at least for items measuring quality of CRESST research and products, CRESST customers are fairly homogeneous and market segmentation of products to specific groups of users would not be a cost-effective strategy.

Other independent variables. Significant differences were found between responses to various quality dependent variables and many of the other independent variables including downloading PDF documents, ordered CRESST products, used the CRESST web, contact with CRESST staff, shared CRESST with others, and received newsletters. A summary table for one of the independent variables with the most significant differences, "shared CRESST with others," is provided in Table 19.

Table 19

Significant Differences Between

"Shared CRESST with Others" and Dependent Variables of Quality

DV	Never (0)	Once (1)	2-3 times (2)	4 or more (3)	df	F	p
Overall Products	6.13	6.31	6.56* (0)	6.95* (0-2)	3/629	15.83	<.01
Presenta-tions	6.50	6.40	6.29	6.81* (2)	3/304	4.62	<.01
Important Topics	5.89	6.00	6.32* (0)	6.72* (0-2)	3/696	14.44	<.01
WWW	5.77	6.06	6.36* (0)	6.75* (0-2)	3/417	10.15	<.01
Jrnl/bks	6.27	6.29	6.60	7.07* (0-2)	3/531	15.94	<.01
Overall Research	6.19	6.36	6.62* (0)	7.05* (0-2)	3/680	20.37	<.01
News-letters	6.01	5.86	6.29	6.65* (0-2)	3/661	16.13	<.01
Media Products	6.00	5.70	6.07	6.50* (1)	3/233	6.46	<.01
Technical Reports	6.15	6.19	6.47	6.97* (0-2)	3/560	16.99	<.01

* Indicates significant difference. Numbers in parentheses show subgroups that are significantly different to this category.

The pattern that emerged from the foregoing table is that a greater degree of usage across the independent variables of downloading PDF documents, ordering CRESST products, using the CRESST web, contact with CRESST staff, sharing CRESST with others, and to a lesser degree, receiving newsletters, leads to higher ratings of perceived quality. This is probably not a very surprising finding because increased levels of use probably reflect a better match between customer needs and CRESST as a research provider. What may be more important is that it does provide evidence that the CRESST Descriptive Questionnaire is sensitive to detecting different levels of use and corresponding ratings of quality.

Findings about the differences in ratings of the usefulness of CRESST research and dissemination products.

Gender, race, schools, districts, and audiences. In general, ratings for usefulness of CRESST research and dissemination products followed very similar trends as those for quality, that is, significant differences were detected only across a few demographic independent variables. No significant findings were detected across gender, race, schools, or districts. Group audiences had only one significant difference [$F(3, 543)=3.09$, $p=.027$] and that was for journal articles between group 3 (researcher, $M=6.52$) and group 4 (other, $M=6.04$). Because it was hypothesized that group audiences would respond differently to the "overall, to what extent has CRESST provided you useful information" item, an independent samples t-test was performed to look at each sub-group, but none were significantly different.

Registrations. Two significant differences were detected across mailing lists, group 1 (product order, $M=6.26$) and group 2 (web registrant, $M=5.92$) for usefulness of newsletters [$F(2, 667)=3.63$, $p=.027$], and between group 1 (product order, $M=6.39$) and group 3 (mailing list, $M=5.97$) for usefulness of technical reports [$F(2,$

574)=4.31, p=.014]. These few examples of significant differences between the three different mailing lists again suggest that the CRESST populations are fairly homogenous in their ratings of CRESST quality and usefulness.

Other independent variables. As with ratings of quality, significant differences were found between many of the dependent ratings of usefulness and nearly all independent variables, nearly matching many of the observations from the quality ratings. For example, significant differences were found between "downloaded documents from the CRESST web" and seven of nine usefulness ratings (Table 20). Such a finding is not particularly surprising, although it does suggest that the CRESST Descriptive Questionnaire is effectively differentiating between levels of use, i.e. never downloaded PDF documents vs. downloaded PDF documents 4 times or more, and customer perceptions of usefulness.

Table 20

Differences Between

"Downloaded Documents from the CRESST Web"" and

Dependent Variables of Usefulness

DV	Never (0)	Once (1)	2-3 times (2)	4 or more (3)	df	F	p
Educ. Commun.	6.43	5.96	6.57* (1)	7.10* (0-2)	3/690	12.83	<.01
Ideas from CRESST	6.33	6.13	6.48	6.95* (0-2)	3/636	7.48	<.01
WWW	5.54	5.73	6.54 (0)	7.23* (0-2)	3/414	34.48	<.01
Jrnl/bks	6.35	6.02	6.30	6.74* (0-1)	3/531	3.98	<.01
Useful Information	6.02	5.84	6.32 (0)	7.02* (0-2)	3/715	18.11	<.01
Media Products	5.87	5.67	5.93	6.61* (0)	3/207	3.57	.015
Technical Reports	6.08	5.85	6.10	6.67* (0-2)	3/563	6.75	<.01

* Indicates significant difference. Numbers in parentheses show subgroups that are significantly different to this category.

Differences between similar items across constructs. What may be of greater interest was the finding that significant differences were found between the means of the quality and usefulness ratings for similar types of research or similar types of products including newsletters, technical reports, journal articles/books, and

presentations (Table 21). Note that for each of these instances, the quality rating is always higher, suggesting that some CRESST products and research may be perceived as having high quality, but having a lower usefulness level.

Differences between quality and usefulness ratings for CRESST Internet services were not significant (M_q=6.39, M_u=6.43, p=.463) nor were they significantly different between quality and usefulness ratings for media products (M_q=6.21, M_u=6.10, p=.165). (See upcoming discussion on Factor Analysis.)

Table 21

Differences Between Dependent Variables Across Quality and Usefulness Constructs

Value	Mean	SD	df	t	p
Newsl Quality	6.31	1.13	660	4.87	<.01
Newsl Useful	6.10	1.40			
TecRep Quality	6.61	1.06	544	8.43	<.01
TecRep Useful	6.22	1.37			
Jrnl/Bks Quality	6.73	1.03	501	6.36	<.01
Jrnl/Bks Useful	6.10	1.40			
Present Quality	6.53	1.13	254	4.87	<.01
Present Useful	6.18	1.36			
WWW Quality	6.39	1.20	414	-.73	.463
WWW Useful	6.43	1.45			
Media Quality	6.21	1.33	204	1.39	.165
Media Useful	6.10	1.51			

Significant differences between dissimilar dependent variables. Significant differences were found between dependent variables rating different items. For example, ratings of the quality of CRESST Internet services were significantly different than ratings of quality of CRESST journal articles [$t(317)=5.15$, $p<.01$], and ratings for the quality of CRESST media products were significantly different than ratings for quality of CRESST technical reports [$t(206)=6.11$, $p<.01$].

The above findings suggest that there are clear differences between ratings of different types of CRESST dissemination products and provides additional evidence that the CRESST Descriptive Questionnaire can detect important differences when they exist.

Validity of the CRESST Descriptive Questionnaire.

Reliability. As earlier stated, one of the purposes of this evaluation was to develop instrumentation that could dependably be used over the course of the current CRESST five-year grant and to potentially be shared with other research centers. Thus, validity of the CRESST Descriptive Questionnaire is important if dependable inferences are to be made from it. As a starting point, a variety of reliability tests were conducted across the nine items for each construct of the CRESST Descriptive Questionnaire. For items measuring quality, Cronbach's alpha = .9370, Gutman split-half reliability coefficient = .9520, parallel maximum-likelihood reliability estimate =.9370 and strict parallel maximum-likelihood reliability estimate = .9295. For the usefulness items, Cronbach's alpha = .8294, Gutman split-half reliability coefficient = .8650, parallel maximum-likelihood reliability estimate = .8924, strict parallel maximum-likelihood reliability estimate = .8774. These findings provide strong support for item reliability across the two constructs of quality and usefulness.

Validity. As discussed earlier, the CRESST descriptive questionnaire did differentiate between ratings across a number of independent variables, including

sharing CRESST with others, personal contact with CRESST staff, use of the CRESST web, etc. We also found that the instrument detected significant differences between items measuring similar dissemination types across both quality and usefulness and found significant differences in all cases except media and Internet services. Finally, the instrument detected differences in ratings across different items and different constructs, supporting the overall validity of the instrument.

Factor Analysis: Factor analysis was used to further analyze if the quality and usefulness items were measuring overall constructs of quality and usefulness. With all nine quality dependent variables entered into the analysis, only one factor was produced which provides additional evidence to support the ability of the items to appropriately measure the quality construct. For the usefulness construct, two factors were produced through the Varimax rotation (Table 22). Interestingly, the second factor contained the two items related primarily to technology, usefulness of the world wide web and usefulness of CRESST media products, with factor loading values of .82068 and .78991 respectively. Thus, it appears that the second usefulness construct could be called CRESST technology products. The other Factor 1 loadings from .69320 for newsletters to .86962 for journal articles/books seem to substantiate that these variables are measuring an overall construct of usefulness.

Table 22

Factor Analysis of Usefulness Items

Varimax Rotated Factor Matrix

Dependent Variable	Factor 1	Factor 2
WWW usefulness	.11662	.82068
Community usefulness	.80139	.28087
Ideas usefulness	.80567	.06289
Information to you useful	.73864	.42406
Jrnl/Bks usefulness	.86962	.12928
Media usefulness	.25732	.78891
Newsletter usefulness	.69320	.12811
Presentation usefulness	.77074	.29214
TecRep usefulness	.82245	.32418

Evaluation Question 5. What else have we learned about the quality and usefulness of CRESST research and products?

General Discussion.

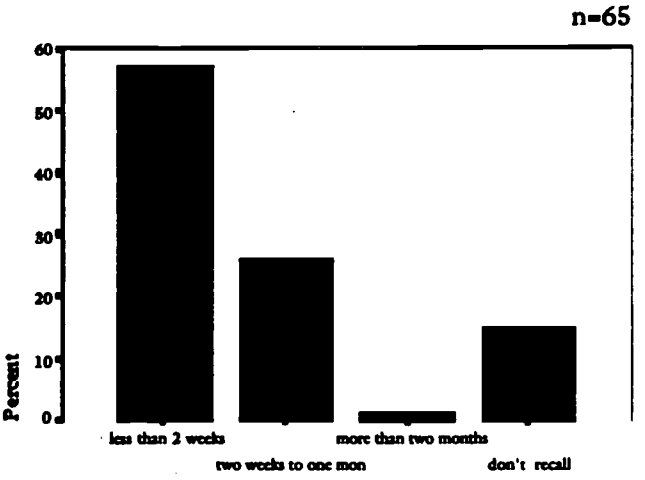
A number of other questions arose during the course of this evaluation that seemed important to measure for customer satisfaction purposes and program improvement. These questions were: how timely were CRESST products in reaching customers, what were the best methods to notify and deliver CRESST research products to customers, what time of year is the best or worst for notifying customers about the availability of CRESST products, and what type of information is sought and found on the CRESST web site?

How timely were CRESST products in reaching customers?

Specific data regarding the efficiency of CRESST product handling and shipment had not been investigated in recent years. Therefore, question 10 from the CRESST Product Questionnaire asked product recipients "How timely were the [CRESST] products in reaching you? Results are provided in Figure 16 (n=65). Almost 57% (56.9%) said they received their products in two weeks or less, 83.1% of respondents said that they received products within one month of their order, 15.4% didn't recall, and only one person reported having to wait more than two months for a product. No one reported that products took between 1-2 months to arrive. A review of the questionnaire from the person whose products took over two months to arrive did not provide additional information, however the customer said that they "were very likely to order CRESST products in the future."

Figure 16

Timeliness In Delivering CRESST Products



How fast products reached customers

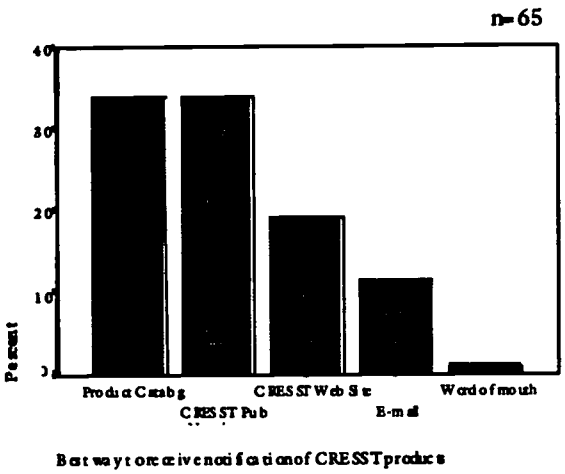
A review of the short answer responses to the more than 700 CRESST Descriptive Questionnaires returned revealed two comments where product orders were not promptly completed and CRESST has since implemented a procedure to notify customers if products will take more than one month to complete. The overall finding however, is that CRESST appears to fill orders promptly in nearly all circumstances.

Best notification and receipt of CRESST products. CRESST dissemination has used a fairly broad approach to notifying customers of products including two newsletters, an annual product catalog, e-mail over a CRESST web registrant list, and the CRESST web site. The CRESST product questionnaire sought to determine if resources might be better segmented into just one or two types of notification methods or if there was a preference for how products were delivered. Questions 11 and 12 on the CRESST Product Questionnaire, "what is the best way for you to receive notification of CRESST products?" and "what is the best way for you to

receive CRESST products?" investigated this issue. The results (Figure 17) suggest that CRESST needs to continue its present notification strategies because newsletters (34.0%), the product catalog (34.0%), and the CRESST web site (19.4%), all account for substantial levels of notification.[27]

Figure 17

Best way for customers to receive notification of CRESST Products



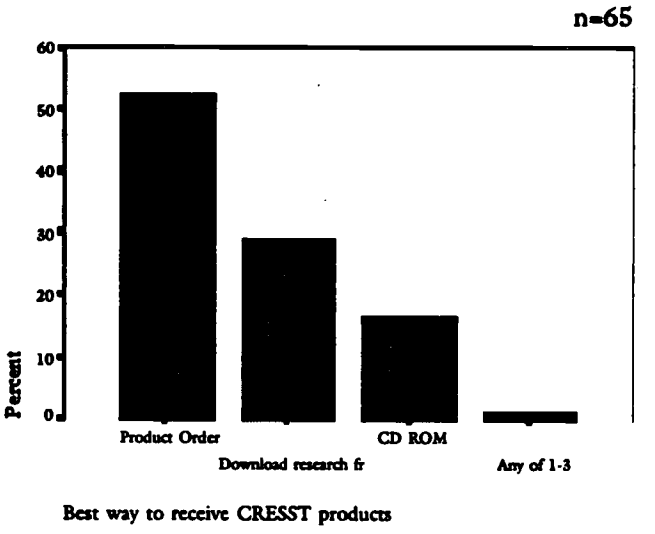
Product Delivery. Findings also suggest that CRESST continue using multiple methods for product delivery. The best way for customers to receive products (Figure 18) still appears to be product orders (52.3%), followed by downloading CRESST research from the Internet (29.2%) and CD ROM (16.9%). Interestingly, while the Internet has greatly expanded CRESST dissemination, the preferred choice for product receipt is still via a product order. This may be due to lack of Internet access by

[27] Because question 11 from the CRESST Product Questionnaire allowed two best ways for notification, the total number of responses coded was 103, although the sample size was 65.

many school districts who are the most frequent consumers of CRESST products. Similarly, while the CD ROM is a popular product, it has not replaced CRESST product orders as the preferred choice for product delivery. We should note that this was a sample from CRESST product orders only and therefore, may be biased towards that particular group. While many consumers ordering CRESST products have also accessed the CRESST Web (58.2%), any future studies should add a similar item to the CRESST Web questionnaire, or alternately, a single item could be added to the CRESST Descriptive Questionnaire.

Figure 18

Best way for customers to receive CRESST Products



Best and worst time of year to order products. As mentioned earlier, anecdotal evidence and recent product sales data suggested that different times of the year are better for ordering CRESST products than others. Questions 15 and 16 on the CRESST product questionnaire asked "when is the time of year you are most likely to

order CRESST products" and "when is the time of year you are least likely to order CRESST products?" Our findings did not show preferences from CRESST product order customers (Figures 19 and 20). Almost eighty-six percent (85.9%) of respondents said that they did not have a "least likely" time of the year to order products confirmed by 87.7% who did not have a preference for "most likely" time of year to order products. (n=65 for both items.) The main concern was that newsletters or catalogs might be being mailed out at the wrong times of the year, or at minimum, that there might be optimum times for mailings. But this does not appear to be substantiated by the responses to the product questionnaire despite product sales records that show slow periods of orders during mid-late summer and December.

Figure 19

Least Likely Time of Year to Order CRESST Products

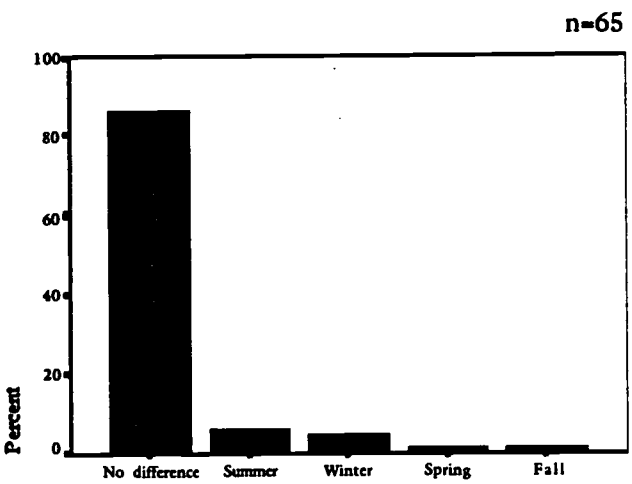
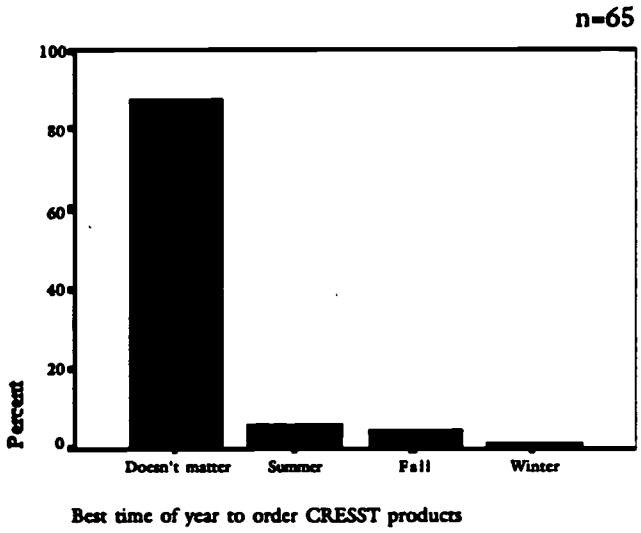


Figure 20

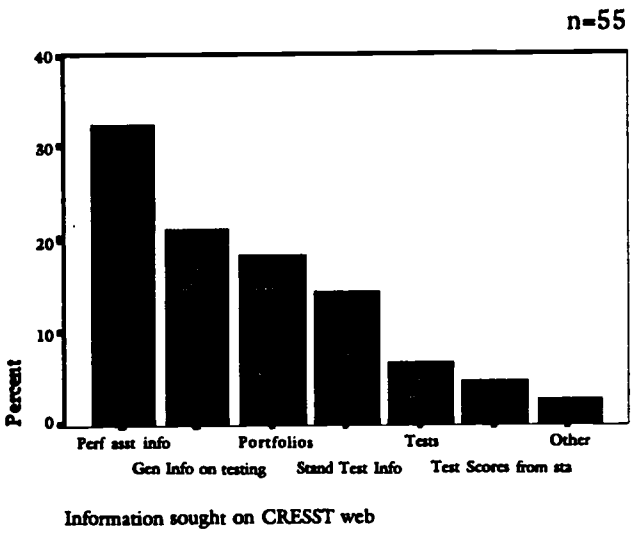
Most Likely Time of Year to Order CRESST Products



Additional questions related to the CRESST web site. Effective allocation of CRESST dissemination resources strongly suggests that CRESST direct the content of its world wide web to topics of greatest need, within the boundaries of the CRESST research program. Item 10 from the CRESST Web Questionnaire asked "what type of information have you looked for on the CRESST web?" Over 80% of respondents (n=55) marked more than one response, and many marked more than three or four responses. The results suggest that customers are looking for many different types of test related information on the CRESST web; however, when analyzed by individual counts, performance assessment information remained the most frequently sought out information (32.4%) followed by general information on testing (21%) and then portfolios (18.1%). (Figure 21.)

Figure 21

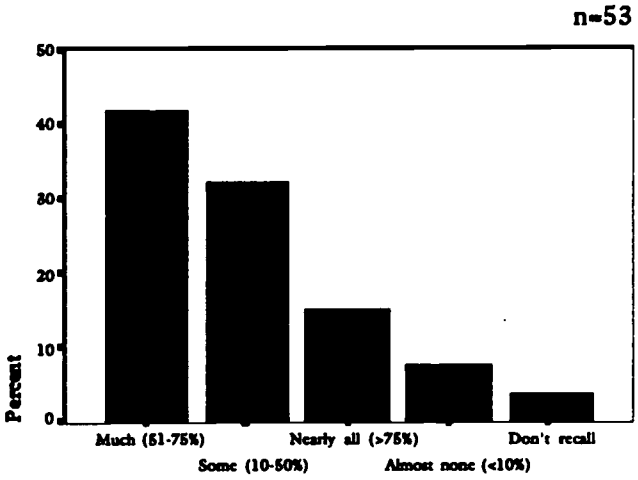
Information Sought on the CRESST Web



Regarding the degree to which information sought is found on the CRESST web site, 15% of CRESST web registrants reported that they found nearly all (more than 75%) of the information they sought, 41.5% reported that they found much (between 51-75%) of the information sought, 32.1% reported that they found some of the information sought (between 10-50%) and 7.5% reported that they found almost none of the information sought (less than 10%). (Figure 22.) While comparative information is not available, this seems to suggest that CRESST web users are finding a significant amount of the information they seek on the CRESST web site.

Figure 22

Success in Finding Desired Information on the CRESST Web Site



Success finding information sought on CRESST web

Chapter 5

DISCUSSION AND RECOMMENDATIONS

Chapter Introduction.

In this chapter, we discuss the findings from each evaluation question, limitations of this evaluation, and suggested areas for further research or evaluation. In general, our discussion emphasizes those particular questions where results have important implications for the present and future CRESST dissemination program. As stated earlier, our focus was primarily to evaluate the mass media strategies of the CRESST Dissemination Model (Figure 1) emphasizing one-way diffusion of important R&D information but with some crossover to information tools of the model and to a lesser degree, interactive dissemination. The results from this evaluation show that CRESST is most often an information provider to change agents who are likely to synthesize CRESST research with other available information and existing belief structures to induce reform of assessment and classroom instruction.

Evaluation Question 1. What did we learn about the existing use of CRESST research and dissemination products?

Audiences. The data from this section indicate that CRESST research use and mass media dissemination is fairly evenly spread across gender, targeted occupations, and geographic regions. Gender usage tends to be evenly split, with a slight edge to females (53.4%) over males (46.6%) based on data from the CRESST mailing list. The race of CRESST consumers (Appendix D), measured by the Descriptive Survey, is heavily Caucasian (85%) followed by Asian/Pacific Islander (4.2%), Latino (3.8%), black (3.4%), and Native American (.7%). That the CRESST research audience

appears to be primarily Caucasian is reflective of the educational research field in general.

The CRESST mailing list shows more occupational variation than either the web registrant list or product order list, most likely reflecting the differences between a self-selection process for the latter two, and a list selectively chosen by CRESST management from various conference and mailing lists of perceived important assessment audiences. Interestingly, the web registrant list reflected a substantial K-12 audience, about 23%, which is likely to grow as schools gain better Internet access. That state government employees, mostly state departments of education, represent only a small percentage of product orders (2.7%) seems a bit surprising, but it is possible that they receive assessment information from CRESST in other ways, perhaps personal contact with CRESST researchers, or that they receive assessment information from other sources such as the Council of Chief State School Officers.

Discovery. CRESST research on its web is typically discovered through a general Internet search on education topics (28.8%) or a general Internet search on the topic of testing (21.2%). This findings suggests that at least 50% of CRESST web registrants have not previously heard of CRESST, and thus these customers represent a new outreach opportunity. Combined with other data, such as the downloading of CRESST PDF files, it is obvious that the CRESST web site is an integral and essential mass media for disseminating CRESST research, especially to new customers.

Product Usage. That CRESST product sales have not fallen off more steeply as a result of making the same products available over the Internet and via CD ROM may be a result of limited Internet access by many primary customers, generally school districts, or it may be a result of a continued preference for traditional ordering systems. We speculate that CRESST product sales will remain flat, or more likely, gradually decrease, dependent on how many new products are made available to users. Less

administrative time is likely to be necessary for filling product orders, time which may be better transferred to other functions, especially maintenance or enhancement of the CRESST web site.

A monthly statistical analysis capability to better track CRESST web statistics, should be a top priority for the CRESST dissemination program. Of particular interest would be possible trends suggested in this evaluation of longer connection times to the CRESST web site and a substantial increase in downloading of PDF files noted during the final period of 1996.

Product Life Cycle: The analysis of life cycles across four CRESST products confirms that long-term demand exists for certain types of mass media products, especially those that have broad content appeal, such as an assessment model handbook or videotape. Nevertheless, the low number of overall individual product sales, for any CRESST product, suggests that CRESST products have very specific audience appeal to somewhat small audiences, or that some improvements in marketing might increase usage. We have not discussed results from satellite broadcasts for CRESST videotapes nor have we considered that CRESST oftentimes provides free copies of reports to substantial numbers of researchers or consumers who are close collaborative partners or in jobs, such as media, where CRESST wishes to build and establish long-lasting relationships. Nor do these comments include book sales or journal articles that are outside of CRESST distribution. Finally, we have not compared CRESST product sales to those from similar research centers which might show that CRESST sales are quite high in comparison.

Evaluation Question 2. How are CRESST research and products used?

Extent read, reviewed, and shared. Because of the limited time that many education consumers typically have to spend on research reading, our hypothesis was

that consumers who order CRESST products, regardless of good intentions, might only scan them, or not even look at them once in hand. Considering also the density of CRESST research and in many cases, their technical nature, it was somewhat surprising to find that nearly 90% of CRESST customers read or reviewed between 10-100% of the CRESST materials downloaded or purchased. As in nearly all parts of this study, comparative information would be extremely helpful.

Equally surprising was the sharing of CRESST research with others with only 12% of total audiences never sharing CRESST information. Probably reflective of the ways in which CRESST research becomes transparent as it filters from one source to another, this finding at minimum confirms the hypothesis that CRESST research is shared on a broad basis. More importantly, this finding suggests that there are still substantial numbers of consumers who are not receiving CRESST research materials but who may be finding the information useful. How those consumers might be identified is not clear but we think that some marketing techniques might be useful if management considers this an important expansion opportunity.

Use and impact of CRESST research. Although our question from the CRESST Product Questionnaire provided some insight into actual use of CRESST research, that is, about 25% being shared with teachers or used as background information, and 13% to inform policy, the open-ended questions were much more specific and revealing. What seemed interesting was the diversity of responses, from CRESST research added to an informational database at the National Center on Educational Outcomes, to information from the CRESST web site being used by the Tennessee Department of Education director of evaluation and assessment to inform the development of the Tennessee state assessment program. We suggest that the next generation CRESST Descriptive Survey include an item or items directly related to impact, i.e., what was the impact of CRESST research? (See upcoming suggestions for

future study.) A model for research impact might well provide further categories beyond those presented in our findings: 1) impact on practice, 2) impact on policy with implications for practice, and 3) impact on measurement theory and research. At minimum, a comprehensive model would have categories for audiences, methods of impact, and multiple levels of impact.

Evaluation Question 3. What is the perceived quality and usefulness of CRESST research and products?

Our findings support the conclusion that, in general, CRESST research and mass media products are perceived as high quality and very useful (Tables 13 and 14). The major surprises in the ratings on quality and usefulness were the very high ratings for journal articles and books published by CRESST researchers, M=6.69 for quality and M=6.39 for usefulness. We were concerned in particular that some audiences would find books and journal articles by CRESST researchers a bit too academic and while perhaps of high quality, not quite so useful. But for both quality and usefulness, journals and books authored by CRESST researchers had the third highest mean rating of any dependent variable.

The somewhat low means for both quality and usefulness of CRESST newsletters, M=6.29 for quality and M=6.09 for usefulness, placed them second to last on both constructs measured. This finding somewhat contradicts much anecdotal evidence that newsletters were very well received in the field, but the relatively large sample sizes, n=680 for quality of newsletters and n=670 for usefulness of newsletters, is strong evidence of consistency and suggests some strategies for improvement. Comments from the questionnaires were not especially revealing as to what might improve the newsletters, but we think, as with most research, that content is extremely important as well regular delivery which has not always been the case with the CRESST

newsletters. There were positive comments about the newsletters too, and we should be careful not to misinterpret what could be audience sentiments that, in general, newsletters are an overused media, lack specific substance or data, or focus too closely on news or individual achievements that have little relevancy for research consumers.

CRESST Customer Satisfaction: Customer satisfaction ratings were constructed based on two questions, likeliness to use CRESST research in the future and likeliness to recommend CRESST to others. In retrospect, a more direct question, i.e., how satisfied are you as a CRESST research consumer, might be a more effective measure of customer satisfaction. Nevertheless, customer satisfaction appears to be substantial with well over 80% of respondents intending to "use CRESST research in the future" and similar percentages for "likeliness to recommend CRESST to others" or having already done so. Again, comparative information would be very helpful. There are a few specific product problems that need resolution, in particular, the Alternative Assessment in Practice database. CRESST must weigh the fact that the database is one of its most highly used products, based on web statistical usage data, against the resources and time it will take to produce an update. One possible alternative is to link the AAIP database to a similar one maintained by one of the regional educational laboratories.

Evaluation Question 4. Are there important differences across audiences between perceived quality and usefulness of CRESST research and dissemination products?

Our findings from the CRESST Descriptive Questionnaire provided good evidence that the populations as they presently exist on the three CRESST mailings lists and across various subgroups, are quite homogenous. Even if differences were not detected on ratings of CRESST research and mass media product quality, we at least

expected to detect more differences than found in the ratings of usefulness. As a research provider with limited resources for either research or dissemination, the results may be a pleasant surprise, as needs to segment markets appear unwarranted. Future evaluations of CRESST dissemination may use the results from this study to argue against large sample sizes as long as random samples stratify well across CRESST audiences.

How important significant differences are across various CRESST mass media products, that is, newsletters, web site, journal articles/books, etc., is really a CRESST management decision. It seems that as long as quality and usefulness ratings do not drop significantly from existing levels, that no specific action is required, except as earlier discussed about newsletters and the AAIP database.

5. What else have we learned about the quality and usefulness of CRESST research and products?

The questions contained in this section, 1) timeliness of CRESST products in reaching customers, 2) best notification and receipt of CRESST products, 3) best and worst time of year to order CRESST products, and 4) most often sought information on the web site and to what degree found, are well presented in the Chapter 4, Findings. Our comments are therefore brief.

Overall, CRESST products were delivered to customers in a timely manner with only a few instances of delay. It seems relatively unlikely that CRESST could do much to improve their product delivery system although they may want to add the convenience of credit cards for payment. CRESST is advised to keep their existing notification and delivery methods for CRESST mass media products since customers are using them in significant numbers and express a desire to continue doing so in the future. Since customers generally expressed no seasonal preference for ordering products, CRESST

need not adjust their notification media to anticipate specific good or bad ordering periods, although they may wish to avoid mid- to-late summer and December when possible. It seems likely that most CRESST product order requests are not urgent since approximately one-third or more products are ordered via a purchase order which is typically not a quick method for obtaining a product. Of course the CRESST web is an excellent media for immediate access to the latest CRESST research and we can only envision its increasingly important role in the future.

Our results confirm the continued popularity of performance assessments as the type of information most frequently sought on the CRESST web site. The fact that CRESST has conducted more recent research on this topic than anyone else in the country and makes it downloadable at no cost from its web site, may help to account for what seems to be a relatively high success rate in customers finding the research sought.

We conclude this section by mentioning a single comment from an open-ended questionnaire item. A customer complained about the slippery nature of the CRESST technical report covers and while it may seem to be a small issue, the covers have also been noted by CRESST personnel to slip around on the shelves in the CRESST publications room. New covers in development should try to avoid similar problems that result from high gloss finishes on publications.

Limitations of this evaluation.

This evaluation was limited by the lack of comparative information from similar research institutions or from previous evaluations where baseline data was available; by the lack of reliable and valid instrumentation from other studies that could be adapted to this evaluation, and by the relatively low sample sizes produced for both the product and web questionnaires.

Comparative Information: While the purpose of this evaluation was formative, the results would have much greater impact and utility if comparisons to other organizations were available. Summative evaluation, for example, strongly emphasizes the idea of comparing the value or worth of something in comparison to something else (Scriven 1967; 1973b). Sharing the instruments from this evaluation with other research centers or any of the ten regional educational laboratories may provide the type of comparative information that would be helpful. A presentation made at the October, 1996 CEDaR communicators group resulted in at least one laboratory expressing an interest in using the CRESST instruments. Regardless of the outcome, the results from this evaluation will provide baseline data and instrumentation that should be useful over the course of the five-year CRESST research center evaluation and beyond.

Instrumentation and records. The creation of new instruments for any research study or evaluation leads quickly to issues of reliability and validity. Although initial evidence of reliability and validity for the CRESST Descriptive Questionnaire has been presented, similar information was not collected for the CRESST Product or Web Questionnaires. Also, the statistical tracking software used to analyze the CRESST web usage, although state of the art, may still lead to inaccurate estimates given that web usage is estimated from the number of connections made to a server. CRESST product records, although carefully tracked, are sold in such low numbers as to decrease their relevancy unless reviewed over a minimum three-four month period of sales. Despite these limitations, the overall consistency of the results suggests that instrumentation and records were dependable and the inferences made from data collected should be quite trustworthy.

Suggestions for further study

Although this study focused on the quality and usefulness of CRESST research and its mass media products, it did produce evidence of significant impact that was occurring in the field. Nevertheless, the accurate measurement of impact from educational research remains elusive. On a macro level, one possible next step is the convening of a small focus group of dissemination specialists and center directors or associate directors from other research centers, together with representatives from their funding institution, the Office of Educational Research and Improvement, to discuss: 1) reasonable expectations for what impact research centers and laboratories should be able to accomplish in the course of their five-year programs, 2) specific methods across all research centers to measure many diverse forms and levels of impact, and 3) realistic possibilities for sharing comparative information in a non-competitive environment.

On a micro level, reasonable next steps at CRESST could be the adaptation of the CRESST Descriptive Questionnaire to focus on measuring and reporting research impact. Such an instrument should include situations where research has prevented possible misuse of assessment as well as those cases where research has been integrated into practice, policy, or other research. A revised CRESST Descriptive Questionnaire could reduce the total number of questions asked if it was not essential to differentiate between products. CRESST might also want to consider the design of an instrument that could be used across all CRESST research projects as ongoing measurement of impact.

Summary of important findings and implications for CRESST research and dissemination.

We briefly summarize the major findings from this study of the dissemination program of the National Center for Research on Evaluation, Standards, and Students Testing (CRESST):

1) The quality and usefulness of CRESST research appears to be high. Between 70%-90% of consumers rated the quality and usefulness of CRESST research in the top three categories of performance on an eight-point scale. Some rethinking may be recommended for the content of CRESST newsletters with the goal of increased ratings of quality and usefulness. A fast-back survey soliciting preferred newsletter topics might be helpful.

2) Based on the finding that, in general, different demographic categories of CRESST consumers gave similar ratings to the quality and usefulness of CRESST research, we conclude that CRESST audiences are relatively homogeneous and that market segmentation of products and research does not seem appropriate at this time. Overall customer satisfaction appeared to be high and most consumers perceived CRESST as a valuable and trusted resource.

3) The CRESST web site has more than tripled the number of products now reaching consumers and has become an essential part of the CRESST dissemination program. Because of its relatively low operating cost, 24-hour a day availability, ability to deliver comprehensive research almost immediately, and no cost to consumers, we expect usage to increase. Improved monitoring of usage rates would be useful and administrative resources might eventually be shifted from hard copy product orders to the web site. With increased Internet access to schools and other educational organizations, the Internet probably represents the best opportunity, and perhaps the only cost-effective opportunity, for CRESST research to reach a vast and mostly untapped market.

4) Impact from CRESST research is considerable in all current CRESST dissemination strategies, that is, mass media, interactive dissemination, and

information tools. Especially impressive has been the impact on national, state, and local policy makers which either has had, or has the potential for, significant impact on practice. Because of limited resources, CRESST might better focus on products with wide dissemination opportunities such as the book, "A Practical Guide to Alternative Assessment," which has had widespread impact, especially on practice. Current strategies that attempt to edit and market every possible product, might be more efficiently focused on fewer, selective products. Performance assessment, portfolios, and assessment models or assessments themselves, remain popular topics.

5) Comparative information from other research centers or similar organizations would aid decision makers in measuring program quality, usefulness, impact, and needed areas of improvement. Refinement of instruments from this study could be adapted to: 1) better document CRESST impact; 2) answer new questions in place of those that may not need to be revisited, i.e. best/worst time of year to purchase CRESST products; and 3) for sharing with other centers and laboratories.

6) Although the purpose of this evaluation was to focus on the mass media strategies of the CRESST dissemination model, a comprehensive evaluation must focus on all dissemination strategies in the model, especially interactive. We think that it is not too early to plan interactive dissemination strategies and evaluation of major new CRESST programs, including the CRESST/LAUSD collaboration (Assessment and Instruction Models), Quality Schools Portfolios, and Quality Education Forum, among others.

APPENDIX A:

CRESST Descriptive Questionnaire

CRESST DESCRIPTIVE QUESTIONNAIRE

Name _____

Organization _____

Job Title (please be specific) _____

Address _____

Phone (business) _____

If at school district, approximately how many students are in your district? _____

If at school, approximately how many students are at the school? _____

Is the school ❑elementary, ❑ middle, or ❑ secondary? ❑ not applicable

Is the district or school primarily ❑ urban, ❑ rural, or ❑ suburban? ❑ not applicable

Access to CRESST Resources and Products

	Within the past two years, how often have you...	Unsure	Never	Once	2-3 times	4 or more times
1.	...had personal contact with any CRESST Staff?[1]	[ ]	[ ]	[ ]	[ ]	[ ]
2.	...received any CRESST newsletters? *(CRESST Line/Evaluation Comment)*	[ ]	[ ]	[ ]	[ ]	[ ]
3.	...ordered CRESST products? *(technical reports, videotapes, CD ROMs)*	[ ]	[ ]	[ ]	[ ]	[ ]
4.	...used the CRESST Web *(www.cse.ucla.edu)?*	[ ]	[ ]	[ ]	[ ]	[ ]
5.	...downloaded documents from the CRESST Web?	[ ]	[ ]	[ ]	[ ]	[ ]
6.	...shared CRESST research or products with others?	[ ]	[ ]	[ ]	[ ]	[ ]

Quality of CRESST Resources and Products

Quality *includes the professional nature of the research and appearance of the product compared to others.*

	How would you rate the...	***Never used***	**Poor**		**Fair**		**Good**		**Excellent**	
7.	quality of CRESST newsletters?	*[ ]*	1	2	3	4	5	6	7	8

[1] **CRESST Staff includes research and administrative staff.** CRESST sponsored researchers are: Eva Baker, Robert Linn, Jamal Abedi, Pamela Aschbacher, Hilda Borko, R. Darrell Bock, Lee J. Cronbach, Richard Durán, Robert Glaser, Edmund W. Gordon, Joan Herman, Daniel Koretz, Karen Mitchell, Lorraine McDonnell, Robert Mislevy, Bengt Muthén, Harold O'Neil, Jr., Lauren Resnick, Richard Shavelson, Lorrie Shepard, Richard Snow, Ronald Stevens, and Noreen Webb.

8. quality of CRESST media products? *(videos, CD ROMs, Alternative Assessment In Practice database)*	[ ]	1	2	3	4	5	6	7	8
9. quality of CRESST technical reports?	[ ]	1	2	3	4	5	6	7	8
10. quality of journal articles or books written by CRESST researchers?[1]	[ ]	1	2	3	4	5	6	7	8
11. quality of presentations by CRESST researchers?	[ ]	1	2	3	4	5	6	7	8

Questionnaire Number_____

CONTINUED ON BACK

Quality of CRESST Resources and Products (continued)

How would you rate the...	***Never used***	**Poor**		**Fair**		**Good**		**Excellent**	
12. quality of CRESST Internet services? *(CRESST Web site: www.cse.ucla.edu)*	[ ]	1	2	3	4	5	6	7	8
13. overall quality of CRESST research? (content, researchers, methods)	[ ]	1	2	3	4	5	6	7	8
14. overall quality of CRESST products? (content, appearance, professionalism)	[ ]	1	2	3	4	5	6	7	8
15. overall coverage of important topics?	[ ]	1	2	3	4	5	6	7	8

Usefulness of CRESST Resources

***Usefulness** includes the application of a CRESST product or service to meet your or your organization's needs.*

How useful are...	***Never used***	Seldom Useful		Sometimes Useful		Fairly Useful		Very Useful	
16. Presentations by CRESST researchers?	[ ]	1	2	3	4	5	6	7	8
17. CRESST technical reports?	[ ]	1	2	3	4	5	6	7	8
18. journal articles or books written by CRESST researchers?[1]	[ ]	1	2	3	4	5	6	7	8
19. CRESST newsletters?	[ ]	1	2	3	4	5	6	7	8
20. CRESST Internet services? *(CRESST Web site: www.cse.ucla.edu)*	[ ]	1	2	3	4	5	6	7	8
21. CRESST media products? *(videos, CD ROM, Alternative Assessment in Practice Database)*	[ ]	1	2	3	4	5	6	7	8

22. Ideas generated by CRESST? (Validity criteria, technical issues of portfolios and performance assessments, Title I guidance) [ ] 1 2 3 4 5 6 7 8

23. Overall, to what extent has CRESST provided you useful information? [ ] 1 2 3 4 5 6 7 8

24. Overall, to what extent do you believe that CRESST has been useful to the education community? [ ] 1 2 3 4 5 6 7 8

25. What CRESST research or product was especially useful or problematic? Why?_____

_____

_____

26. What new CRESST research, product, or service would be useful to you?_____

_____

_____

Background Questions

Race: ❑ Black; ❑ Caucasian; ❑ Latino; ❑ Asian/Pacific Islander; ❑ Native American; ❑ Other

Gender: ❑ Female ❑ Male

May we call you for a few additional questions? ❑ Yes ❑ No

APPENDIX B:

CRESST Product Questionnaire

CRESST Product Questionnaire

Name _____

Organization _____

Job Title (please be specific) _____

Access to CRESST Resources and Products

Within the past two years, how often have you...	Unsure	Never	Once	2-3 times	4 or more times
1. ...had personal contact with any CRESST Staff?[1]	[ ]	[ ]	[ ]	[ ]	[ ]
2. ...ordered CRESST products? *(technical reports, videotapes, CD ROMs)*	[ ]	[ ]	[ ]	[ ]	[ ]
3. ...used the CRESST Web *(www.cse.ucla.edu)?*	[ ]	[ ]	[ ]	[ ]	[ ]
4. ...shared CRESST research or products with others?	[ ]	[ ]	[ ]	[ ]	[ ]

Questions

5. Your **interest** in CRESST is primarily as a _____.

6. How did you **find out** about the CRESST products you ordered?

   ❑ CRESST Publication (❑ CRESST Line; ❑ Evaluation Comment; ❑ Product Catalog)

   ❑ Printed mention in non-CRESST publication_____

   ❑ Colleague or Professor

   ❑ Other _____

   ❑ Don't recall

---

[1] **CRESST Staff includes research and administrative staff.** CRESST affiliated researchers include: Eva Baker, Robert Linn, Jamal Abedi, Pamela Aschbacher, Richard Durán, Robert Glaser, Edmund W. Gordon, Joan Herman, Daniel Koretz, Karen Mitchell, Lorraine McDonnell, Robert Mislevy, Bengt Muthén, Harold O'Neil, Jr., Lauren Resnick, Richard Shavelson, Lorrie Shepard, Richard Snow, Ronald Stevens, and Noreen Webb.

7. What was the primary purpose of your order? (Mark top one or two purposes only.)

- ❑ Research
- ❑ Student Research
- ❑ Test Development
- ❑ Inform Policy
- ❑ Inform Teachers
- ❑ Inform Students
- ❑ Other _____

8. To what extent did you **use** the products you ordered?

- ❑ Read, reviewed, or used less than 10% of the materials
- ❑ Read, reviewed, or used about 10-50% of the materials
- ❑ Read, reviewed, or used about 50-75% of the materials
- ❑ Read, reviewed, or used over 75% of the materials

9. What did you **do** with the information you viewed or retrieved? _____

_____

10. How timely were the products in reaching you?

- ❑ Received products less than two weeks after placing order
- ❑ Received products between two weeks and one month after placing order
- ❑ Received between one and two months after placing order
- ❑ Received more than two months after placing order
- ❑ Don't recall

11. What is the **best way** for you to receive **notification** of CRESST products? (Number the two best.)

- ❑ Word of mouth (CRESST researchers or colleagues)
- ❑ Direct Mailing of Product Catalog
- ❑ CRESST Newsletters (CRESST Line or Evaluation Comment)
- ❑ E-mail
- ❑ The CRESST Web site
- ❑ Other _____

12. What is the **best way** for you to **receive** CRESST products? (Select one only.)

- ❑ Product Order
- ❑ Annual CD ROM with CRESST products from previous year
- ❑ Downloadable research from the CRESST Web
- ❑ Other _____

13. How likely are you to **order** CRESST products in the future?

Very unlikely	Somewhat unlikely	Likely	Very likely
[ ]	[ ]	[ ]	[ ]

14. How likely are you to **recommend** CRESST to others?

Very unlikely	Somewhat unlikely	Likely	Very likely	Already recommended to others
[ ]	[ ]	[ ]	[ ]	[ ]

15. When is the time of year you are **most likely to order** CRESST products?

Fall	Winter	Spring	Summer	No difference
[ ]	[ ]	[ ]	[ ]	[ ]

16. When is the time of year you are **least likely** to order CRESST products?

Fall	Winter	Spring	Summer	No difference
[ ]	[ ]	[ ]	[ ]	[ ]

17. What can we do to **improve our products** or our **ability to inform** you of their availability?_____

_____

APPENDIX C:

CRESST Web Questionnaire

CRESST Web Questionnaire (www.cse.ucla.edu)

Name _____

Organization _____

Job Title (please be specific) _____

Access to CRESST Resources and Products

	Within the past two years, how often have you...	Unsure	Never	Once	2-3 times	4 or more times
1.	...had personal contact with any CRESST Staff?[1]	[ ]	[ ]	[ ]	[ ]	[ ]
2.	...ordered CRESST products? *(technical reports, videotapes, CD ROMs)*	[ ]	[ ]	[ ]	[ ]	[ ]
3.	...used the CRESST Web *(www.cse.ucla.edu)?*	[ ]	[ ]	[ ]	[ ]	[ ]
4.	...shared CRESST research or products with others?	[ ]	[ ]	[ ]	[ ]	[ ]

5. Your **interest** in CRESST is primarily as a _____.

6. How did you **find out** about the CRESST Web Server?

   ❑ Colleague or Professor recommendation

   ❑ Printed Mention in CRESST Publication (❑ CRESST Line, ❑ Evaluation Comment, ❑ Product Catalog)

   ❑ Printed Mention in non-CRESST Publication: (name of publication)_____

   ❑ Mention or reference from other Web Site

   ❑ General Internet Search for Education Topics

   ❑ General Internet Search for Assessment or Testing Topics

   ❑ Other_____

[1] **CRESST Staff includes research and administrative staff.** CRESST affiliated researchers include: Eva Baker, Robert Linn, Jamal Abedi, Pamela Aschbacher, Richard Durán, Robert Glaser, Edmund W. Gordon, Joan Herman, Daniel Koretz, Karen Mitchell, Lorraine McDonnell, Robert Mislevy, Bengt Muthén, Harold O'Neil, Jr., Lauren Resnick, Richard Shavelson, Lorrie Shepard, Richard Snow, Ronald Stevens, and Noreen Webb.

7. What **type** of Internet access do you have? (Select best one only.)

❑ University	❑ American On-line	❑ Telnet
❑ Compuserv	❑ Prodigy	❑ Other_____
❑ School	❑ Other commercial provider	❑ Don't Know

8. How **often** do you currently visit the CRESST site? (Select best one only.)

Almost never	A few times every six months	Almost monthly	Almost weekly	Almost Daily	Not Sure
[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

9. In the past six months, about how many reports or other documents have you **downloaded** from the CRESST web site?[2]

None or Unsure	About 1-3	About 3-5	About 5-10	About 10-20	More than 20
[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

10. What **type of information** have you looked for on the CRESST Web? (*Mark any that apply*)

❑ General information on testing	❑ Test Scores from States/Districts
❑ Performance-based assessment information	❑ Portfolios
❑ Standardized norm-referenced test information	❑ Other_____
❑ Tests	❑ Don't recall

11. To what extent have you **found** the information you hoped to find?

- ❑ Almost none of the information hoped for (less than 10%)
- ❑ Some of the information hoped for (from 10-50%)
- ❑ Much of the information hoped for (from 51-75%)
- ❑ Nearly all of the information hoped for (more than 75%)
- ❑ Don't recall

12. What specific information do you recall **viewing** on the CRESST web site? (*Mark any that apply.*)

- ❑ Alternative Assessments in Practice Database
- ❑ Newsletters (either *CRESST Line* or *Evaluation Comment*-- PDF Files)
- ❑ General Interest Papers (including resource papers)
- ❑ Video Summaries

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[2] CRESST uses the Adobe Acrobat Reader in the portable document format for downloading large files.

- ❑ CRESST Technical Report Summaries
- ❑ CRESST Technical Reports (PDF Files)
- ❑ Education and Assessment Links to other Web sites
- ❑ Don't recall

13. To what extent did you **use** any materials viewed or retrieved?
    - ❑ Read, reviewed, or used less than 10% of the materials
    - ❑ Read, reviewed, or used about 10-50% of the materials
    - ❑ Read, reviewed, or used about 50%-75% of the materials
    - ❑ Read, reviewed, or used over 75% of the materials
    - ❑ Don't recall

14. What did you **do** with the information you viewed or retrieved? _____

_____

15. What information or feature could be **added** to the CRESST web site to make it more useful to you? _____

_____

16. How likely are you to **use** the CRESST web site in the future?

Very unlikely	Somewhat unlikely	Likely	Very likely
[ ]	[ ]	[ ]	[ ]

17. How likely are you to **recommend** the CRESST web site to others?

Very unlikely	Somewhat unlikely	Likely	Very likely	Already recommended to others
[ ]	[ ]	[ ]	[ ]	[ ]

APPENDIX D

Descriptive Statistics and Charts from CRESST Descriptive Survey

Chart 1

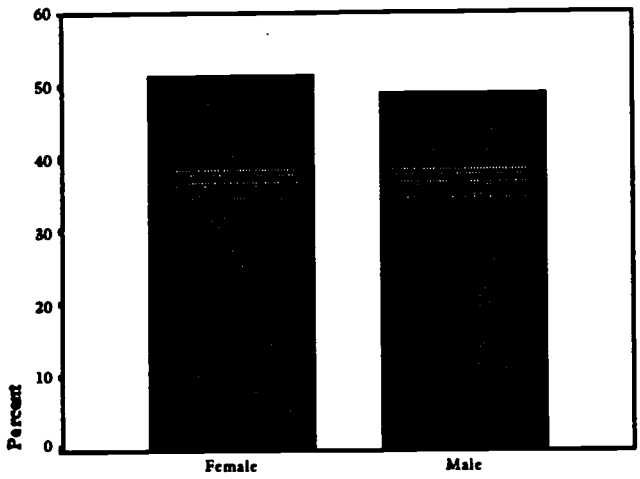
Cross Tab Chart of Counts for Type of Registration by Group Audiences

GROU_REG Type of Registration by GROU_AUD IV Type of Subgroup

GROU_REG	GROU_AUD: District/State 1	School 2	Research 3	Other 5	Row Total
1 Product	81	46	79	49	255
	10.8	6.1	10.5	6.5	34.0
2 Internet	71	76	87	61	295
	9.5	10.1	11.6	8.1	39.3
3 Full Rolodex	53	43	66	39	201
	7.1	5.7	8.8	5.2	26.8
Column Total	205	165	232	149	751
	27.3	22.0	30.9	19.8	100.0

Descriptive Statistics and Chart 2
Gender

Valid Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Female	1	381	50.7	51.3	51.3
Male	2	361	48.1	48.7	100.0
Omitted	99	9	1.2	Missing	
		751	100.0	100.0	



IV 1-Female 2-Male

GENDER IV 1-Female 2-Male

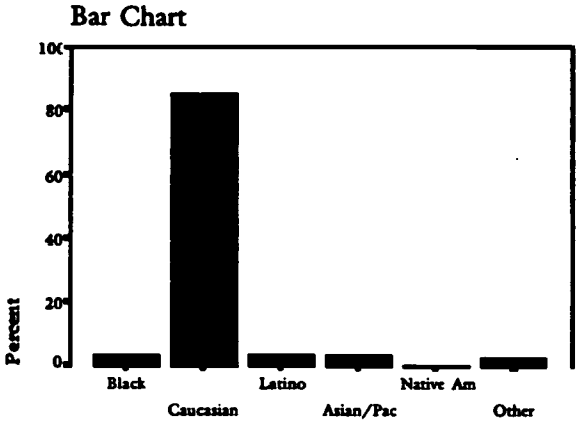
Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Female	1	381	50.7	51.3	51.3
Male	2	361	48.1	48.7	100.0
Omitted	99	9	1.2	Missing	
	Total	751	100.0	100.0	

Mean	1.487	Std err	.018	Median	1.000
Mode	1.000	Std dev	.500	Variance	.250
Kurtosis	-2.002	S E Kurt	.179	Skewness	.054
S E Skew	.090	Range	1.000	Minimum	1.000
Maximum	2.000	Sum	1103.000		

Valid cases 742 Missing cases 9

Descriptive Statistics and Chart 3
Race

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Black	1	24	3.2	3.4	3.4
Caucasian	2	605	80.6	84.9	88.2
Latino	3	27	3.6	3.8	92.0
Asian/Pac	4	30	4.0	4.2	96.2
Native Am	5	5	.7	.7	96.9
Other	6	22	2.9	3.1	100.0
Omitted	99	38	5.1	Missing	
	Total	751	100.0	100.0	



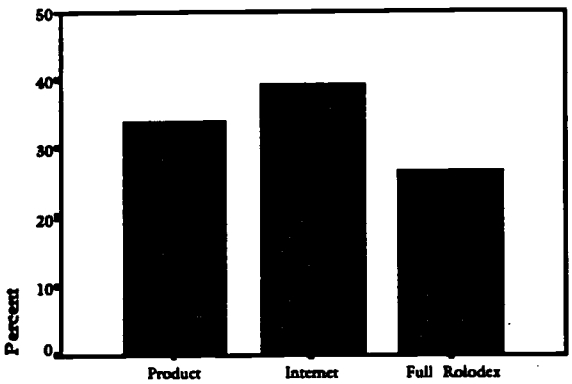
Mean	2.233	Std err	.032	Median	2.000
Mode	2.000	Std dev	.862	Variance	.743
Kurtosis	10.013	S E Kurt	.183	Skewness	3.092
S E Skew	.092	Range	5.000	Minimum	1.000
Maximum	6.000	Sum	1592.000		

Valid cases	713	Missing cases	38

Descriptive Statistics and Chart 4
Type of Registration

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Product	1	255	34.0	34.0	34.0
Internet	2	295	39.3	39.3	73.2
Full Rolodex	3	201	26.8	26.8	100.0
	Total	751	100.0	100.0	

Bar Chart

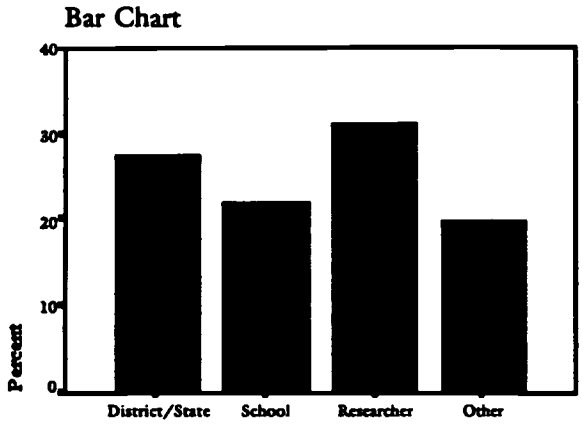


Mean	1.928	Std err	.028	Median	2.000
Mode	2.000	Std dev	.776	Variance	.603
Kurtosis	-1.331	S E Kurt	.178	Skewness	.125
S E Skew	.089	Range	2.000	Minimum	1.000
Maximum	3.000	Sum	1448.000		

Valid cases 751 Missing cases 0

Descriptive Statistics and Chart 5
Type of Group

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
District/State	1	205	27.3	27.3	27.3
School	2	165	22.0	22.0	49.3
Researcher	3	232	30.9	30.9	80.2
Other	5	149	19.8	19.8	100.0
	Total	751	100.0	100.0	

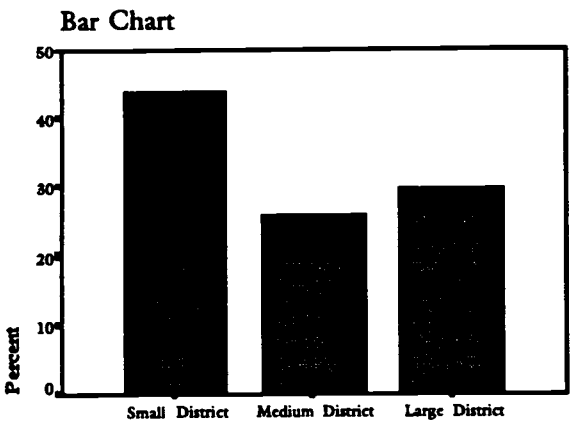


Mean	2.631	Std err	.051	Median	3.000
Mode	3.000	Std dev	1.404	Variance	1.972
Kurtosis	-.878	S E Kurt	.178	Skewness	.512
S E Skew	.089	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	1976.000		

Valid cases 751 Missing cases 0

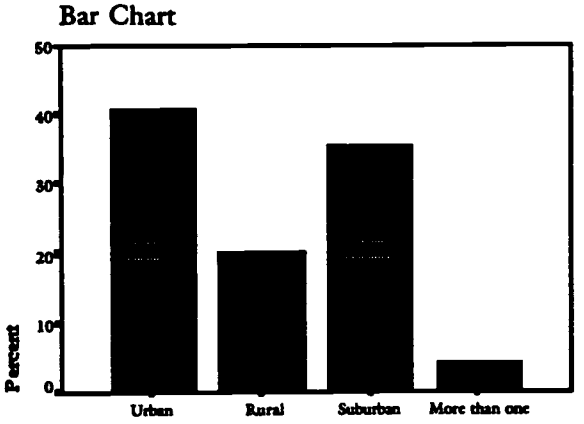
Descriptive Statistics and Chart 6
District Size

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Small District	1	113	15.0	44.0	44.0
Medium District	2	67	8.9	26.1	70.0
Large District	3	77	10.3	30.0	100.0
NA	0	480	63.9	Missing	
Omitted	99	14	1.9	Missing	
	Total	751	100.0	100.0	



Mean	1.860	Std err	.053	Median	2.000
Mode	1.000	Std dev	.850	Variance	.722
Kurtosis	-1.565	S E Kurt	.303	Skewness	.272
S E Skew	.152	Range	2.000	Minimum	1.000
Maximum	3.000	Sum	478.000		
Valid cases	257	Missing cases	494		

Descriptive Statistics and Chart 7
Type of District



Valid Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Urban	1	107	14.2	40.5	40.5
Rural	2	53	7.1	20.1	60.6
Suburban	3	93	12.4	35.2	95.8
More than one	4	11	1.5	4.2	100.0
NA	0	462	61.5	Missing	
Missing	99	25	3.3	Missing	
	Total	751	100.0	100.0	

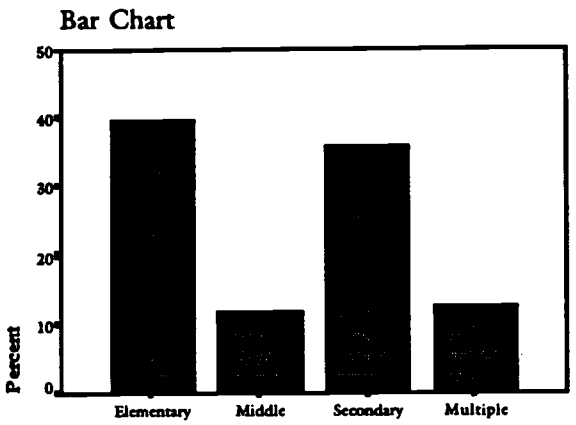
Hi-Res Chart # 78:Bar chart of iv type of district

Mean	2.030	Std err	.059	Median	2.000
Mode	1.000	Std dev	.963	Variance	.927
Kurtosis	-1.366	S E Kurt	.299	Skewness	.223
S E Skew	.150	Range	3.000	Minimum	1.000
Maximum	4.000	Sum	536.000		

Valid cases 264 Missing cases 487

Descriptive Statistics and Chart 8
Type of School

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Elementary	1	67	8.9	39.9	39.9
Middle	2	20	2.7	11.9	51.8
Secondary	3	60	8.0	35.7	87.5
Multiple	55	21	2.8	12.5	100.0
NA	0	568	75.6	Missing	
Omitted	99	15	2.0	Missing	
	Total	751	100.0	100.0	

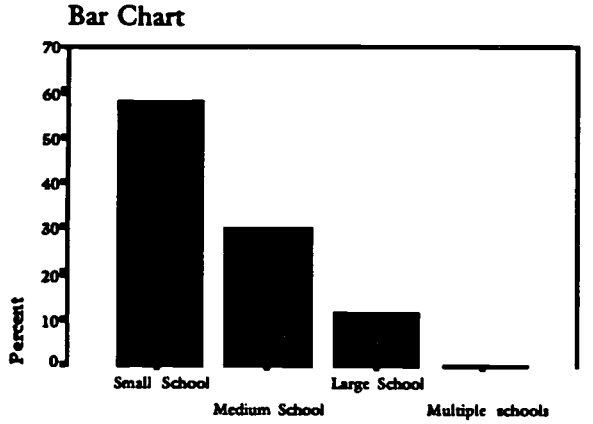


Mean	8.583	Std err	1.359	Median	2.000
Mode	1.000	Std dev	17.618	Variance	310.388
Kurtosis	3.246	S E Kurt	.373	Skewness	2.277
S E Skew	.187	Range	54.000	Minimum	1.000
Maximum	55.000	Sum	1442.000		

Valid cases 168 Missing cases 583

Descriptive Statistics and Chart 9
Size of Schools

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Small School	1	93	12.4	57.8	57.8
Medium School	2	48	6.4	29.8	87.6
Large School	3	19	2.5	11.8	99.4
Multiple schools	4	1	.1	.6	100.0
NA	0	568	75.6	Missing	
Omitted	99	22	2.9	Missing	
	Total	751	100.0	100.0	

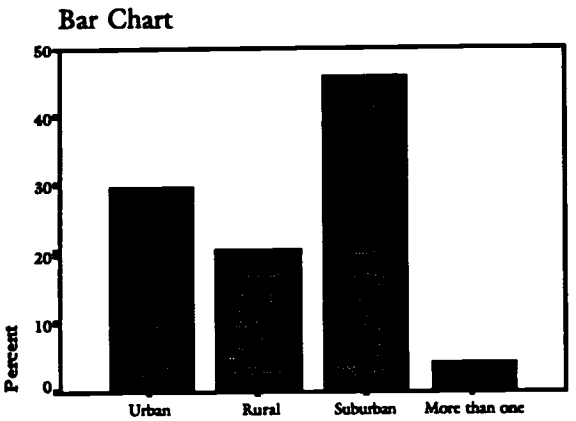


Mean	1.553	Std err	.057	Median	1.000
Mode	1.000	Std dev	.724	Variance	.524
Kurtosis	.014	S E Kurt	.380	Skewness	1.016
S E Skew	.191	Range	3.000	Minimum	1.000
Maximum	4.000	Sum	250.000		

Valid cases 161 Missing cases 590

Descriptive Statistics and Chart 10
Location of School

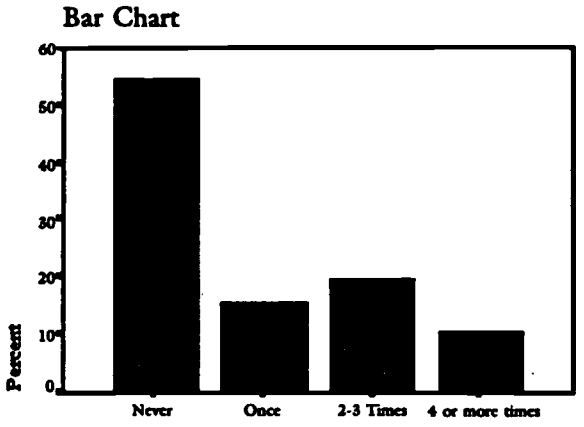
Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Urban	1	49	6.5	29.7	29.7
Rural	2	34	4.5	20.6	50.3
Suburban	3	75	10.0	45.5	95.8
More than one	4	7	.9	4.2	100.0
NA	0	566	75.4	Missing	
Omitted	99	20	2.7	Missing	
	Total	751	100.0	100.0	



Mean	2.242	Std err	.073	Median	2.000
Mode	3.000	Std dev	.932	Variance	.868
Kurtosis	-1.305	S E Kurt	.376	Skewness	-.182
S E Skew	.189	Range	3.000	Minimum	1.000
Maximum	4.000	Sum	370.000		
Valid cases	165	Missing cases	586		

Descriptive Statistics and Chart 11
Contact with CRESST Staff

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Never	0	388	51.7	54.3	54.3
Once	1	111	14.8	15.5	69.8
2-3 Times	2	139	18.5	19.4	89.2
4 or more times	3	77	10.3	10.8	100.0
Unsure	9	28	3.7	Missing	
Omitted	99	8	1.1	Missing	
	Total	751	100.0	100.0	



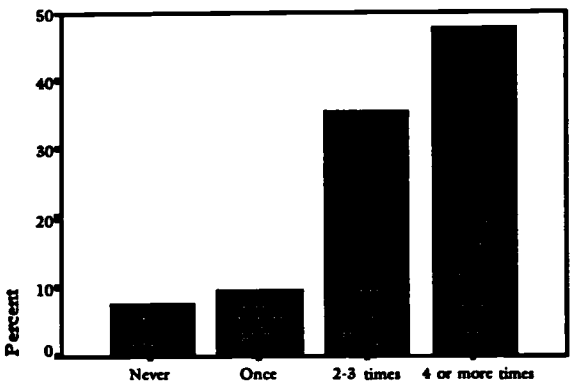
Mean	.867	Std err	.040	Median	.000
Mode	.000	Std dev	1.073	Variance	1.152
Kurtosis	-.839	S E Kurt	.183	Skewness	.791
S E Skew	.091	Range	3.000	Minimum	.000
Maximum	3.000	Sum	620.000		

Valid cases 715 Missing cases 36

Descriptive Statistics and Chart 12
Received Newsletters

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Never	0	54	7.2	7.4	7.4
Once	1	71	9.5	9.7	17.1
2-3 times	2	257	34.2	35.3	52.4
4 or more times	3	347	46.2	47.6	100.0
Unsure	9	18	2.4	Missing	
Omitted	99	4	.5	Missing	
	Total	751	100.0	100.0	

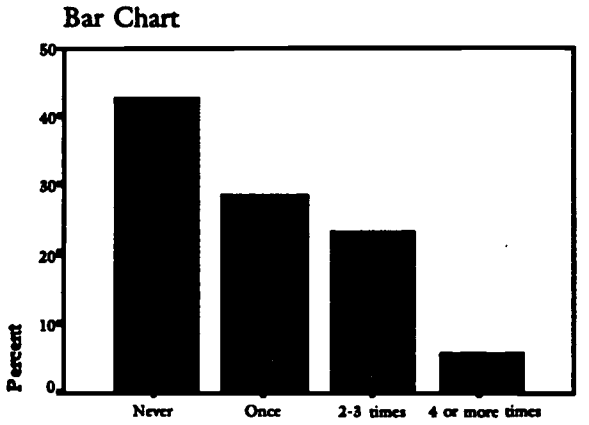
Bar Chart



Mean	2.230	Std err	.033	Median	2.000
Mode	3.000	Std dev	.904	Variance	.818
Kurtosis	.347	S E Kurt	.181	Skewness	-1.074
S E Skew	.091	Range	3.000	Minimum	.000
Maximum	3.000	Sum	1626.000		
Valid cases	729	Missing cases	22		

Descriptive Statistics and Chart 13
Ordered CRESST Products

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Never	0	301	40.1	42.5	42.5
Once	1	202	26.9	28.5	70.9
2-3 times	2	164	21.8	23.1	94.1
4 or more times	3	42	5.6	5.9	100.0
Unsure	9	33	4.4	Missing	
Omitted	99	9	1.2	Missing	
	Total	751	100.0	100.0	

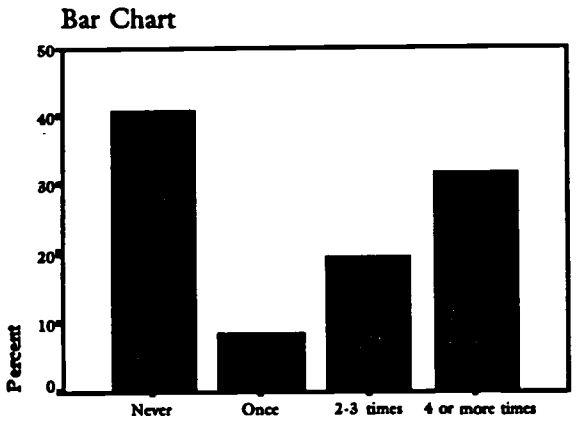


Mean	.925	Std err	.035	Median	1.000
Mode	.000	Std dev	.943	Variance	.888
Kurtosis	-.815	S E Kurt	.183	Skewness	.576
S E Skew	.092	Range	3.000	Minimum	.000
Maximum	3.000	Sum	656.000		

Valid cases 709 Missing cases 42

Descriptive Statistics and Chart 14
Used CRESST Web

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Never	0	300	39.9	40.5	40.5
Once	1	63	8.4	8.5	49.1
2-3 times	2	143	19.0	19.3	68.4
4 or more times	3	234	31.2	31.6	100.0
Unsure	9	5	.7	Missing	
Omitted	99	6	.8	Missing	
	Total	751	100.0	100.0	

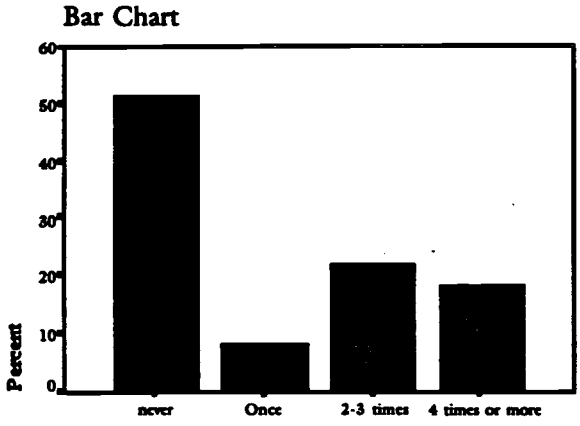


Mean	1.420	Std err	.048	Median	2.000
Mode	.000	Std dev	1.300	Variance	1.689
Kurtosis	-1.723	S E Kurt	.179	Skewness	.053
S E Skew	.090	Range	3.000	Minimum	.000
Maximum	3.000	Sum	1051.000		
Valid cases	740	Missing cases	11		

Descriptive Statistics and Chart 15
Downloaded PDF Documents

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
never	0	392	52.2	53.6	53.6
Once	1	61	8.1	8.3	62.0
2-3 times	2	155	20.6	21.2	83.2
4 times or more	3	123	16.4	16.8	100.0
Unsure	9	9	1.2	Missing	
Omitted	99	11	1.5	Missing	
	Total	751	100.0	100.0	

Hi-Res Chart # 86:Bar chart of iv downloaded pdf documents

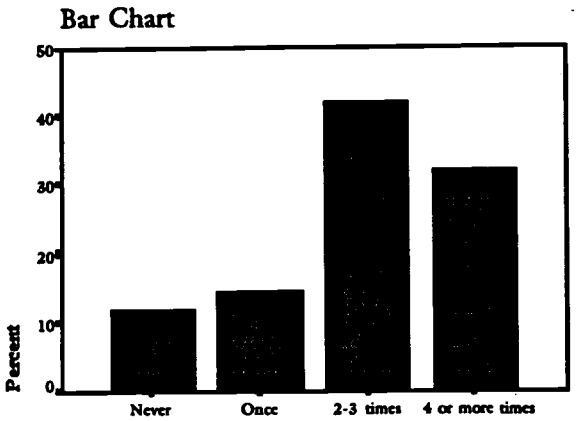


Mean	1.012	Std err	.044	Median	.000
Mode	.000	Std dev	1.193	Variance	1.423
Kurtosis	-1.322	S E Kurt	.181	Skewness	.573
S E Skew	.090	Range	3.000	Minimum	.000
Maximum	3.000	Sum	740.000		

Valid cases 731 Missing cases 20

Descriptive Statistics and Chart 16
Shared CRESST with Others

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Never	0	87	11.6	11.8	11.8
Once	1	107	14.2	14.6	26.4
2-3 times	2	320	42.6	43.5	69.9
4 or more times	3	221	29.4	30.1	100.0
Unsure	9	12	1.6	Missing	
Omitted	99	4	.5	Missing	
	Total	751	100.0	100.0	



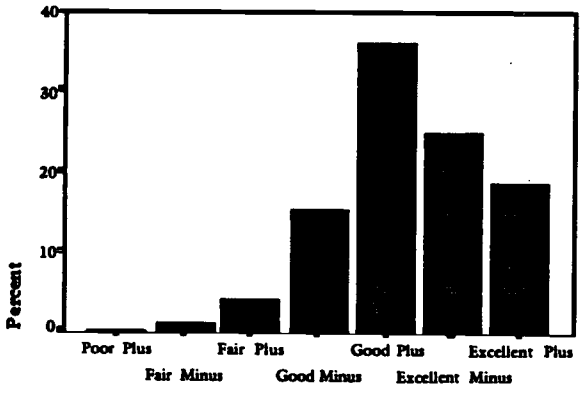
Mean	1.918	Std err	.035	Median	2.000
Mode	2.000	Std dev	.956	Variance	.914
Kurtosis	-.454	S E Kurt	.180	Skewness	-.652
S E Skew	.090	Range	3.000	Minimum	.000
Maximum	3.000	Sum	1410.000		

Valid cases 735 Missing cases 16

Descriptive Statistics and Chart 17
Quality of CRESST Newsletters

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Poor Plus	2	2	.3	.3	.3
Fair Minus	3	8	1.1	1.2	1.5
Fair Plus	4	27	3.6	4.0	5.4
Good Minus	5	107	14.2	15.7	21.2
Good Plus	6	257	34.2	37.8	59.0
Excellent Minus	7	165	22.0	24.3	83.2
Excellent Plus	8	114	15.2	16.8	100.0
Omitted	0	66	8.8	Missing	
Unsure	9	1	.1	Missing	
	99	4	.5	Missing	
	Total	751	100.0	100.0	

Bar Chart

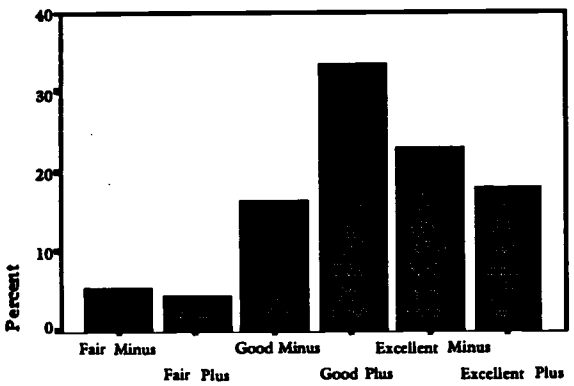


Mean	6.294	Std err	.044	Median	6.000
Mode	6.000	Std dev	1.139	Variance	1.298
Kurtosis	.232	S E Kurt	.187	Skewness	-.384
S E Skew	.094	Range	6.000	Minimum	2.000
Maximum	8.000	Sum	4280.000		
Valid cases	680	Missing cases	71		

Descriptive Statistics and Chart 18
Quality of CRESST Media Products

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Fair Minus	3	11	1.5	4.6	4.6
Fair Plus	4	13	1.7	5.4	10.0
Good Minus	5	38	5.1	15.8	25.7
Good Plus	6	79	10.5	32.8	58.5
Excellent Minus	7	56	7.5	23.2	81.7
Excellent Plus	8	44	5.9	18.3	100.0
Omitted	0	496	66.0	Missing	
Unsure	9	2	.3	Missing	
	99	12	1.6	Missing	
		---	---	---	
	Total	751	100.0	100.0	

Bar Chart

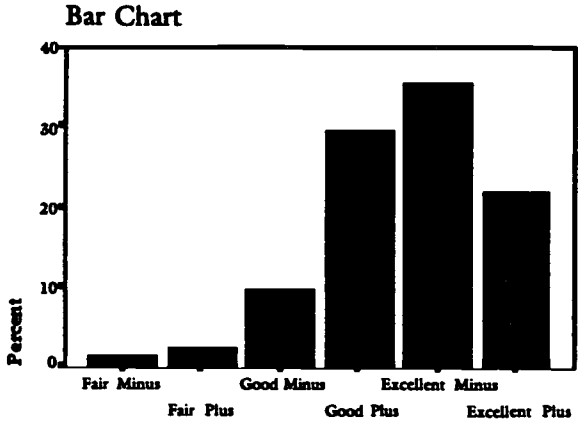


Mean	6.195	Std err	.084	Median	6.000
Mode	6.000	Std dev	1.310	Variance	1.716
Kurtosis	-.113	S E Kurt	.312	Skewness	-.512
S E Skew	.157	Range	5.000	Minimum	3.000
Maximum	8.000	Sum	1493.000		

Valid cases 241 Missing cases 510

Descriptive Statistics and Chart 19
Quality of CRESST Technical Reports

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Fair Minus	3	7	.9	1.2	1.2
Fair Plus	4	13	1.7	2.3	3.5
Good Minus	5	61	8.1	10.6	14.0
Good Plus	6	176	23.4	30.5	44.5
Excellent Minus	7	201	26.8	34.8	79.4
Excellent Plus	8	119	15.8	20.6	100.0
Omitted	0	166	22.1	Missing	
Unsure	9	1	.1	Missing	
	99	7	.9	Missing	
	Total	751	100.0	100.0	



Mean	6.574	Std err	.045	Median	7.000
Mode	7.000	Std dev	1.073	Variance	1.151
Kurtosis	.432	S E Kurt	.203	Skewness	-.636
S E Skew	.102	Range	5.000	Minimum	3.000
Maximum	8.000	Sum	3793.000		
Valid cases	577	Missing cases	174		

Descriptive Statistics and Chart 20
Quality of Journal Articles/Books Authored by CRESST Researchers

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Fair Minus	3	5	.7	.9	.9
Fair Plus	4	7	.9	1.3	2.2
Good Minus	5	47	6.3	8.6	10.8
Good Plus	6	163	21.7	29.9	40.7
Excellent Minus	7	193	25.7	35.4	76.1
Excellent Plus	8	130	17.3	23.9	100.0
Omitted	0	196	26.1	Missing	
Unsure	9	1	.1	Missing	
	99	9	1.2	Missing	
		---	---	---	
	Total	751	100.0	100.0	

Bar Chart

Mean	6.692	Std err	.044	Median	7.000
Mode	7.000	Std dev	1.026	Variance	1.052
Kurtosis	.513	S E Kurt	.209	Skewness	-.638
S E Skew	.105	Range	5.000	Minimum	3.000
Maximum	8.000	Sum	3647.000		
Valid cases	545	Missing cases	206		

Descriptive Statistics and Chart 21
Quality of CRESST Presentations

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Fair Minus	3	1	.1	.3	.3
Fair Plus	4	17	2.3	5.4	5.8
Good Minus	5	40	5.3	12.8	18.6
Good Plus	6	83	11.1	26.6	45.2
Excellent Minus	7	111	14.8	35.6	80.8
Excellent Plus	8	60	8.0	19.2	100.0
Omitted	0	422	56.2	Missing	
Unsure	9	3	.4	Missing	
	99	14	1.9	Missing	
	Total	751	100.0	100.0	

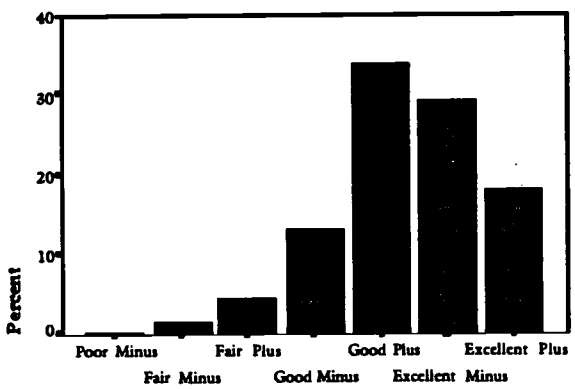
Bar Chart

Mean	6.494	Std err	.064	Median	7.000
Mode	7.000	Std dev	1.123	Variance	1.260
Kurtosis	-.292	S E Kurt	.275	Skewness	-.526
S E Skew	.138	Range	5.000	Minimum	3.000
Maximum	8.000	Sum	2026.000		
Valid cases	312	Missing cases	439		

Descriptive Statistics and Chart 22
Quality of CRESST Internet Services

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Poor Minus	1	1	.1	.2	.2
Poor Plus	2	2	.3	.5	.7
Fair Minus	3	6	.8	1.4	2.1
Fair Plus	4	16	2.1	3.7	5.9
Good Minus	5	56	7.5	13.1	19.0
Good Plus	6	142	18.9	33.3	52.2
Excellent Minus	7	124	16.5	29.0	81.3
Excellent Plus	8	80	10.7	18.7	100.0
Omitted	0	312	41.5	Missing	
Unsure	9	1	.1	Missing	
	99	11	1.5	Missing	
		751	100.0	100.0	
	Total				

Bar Chart

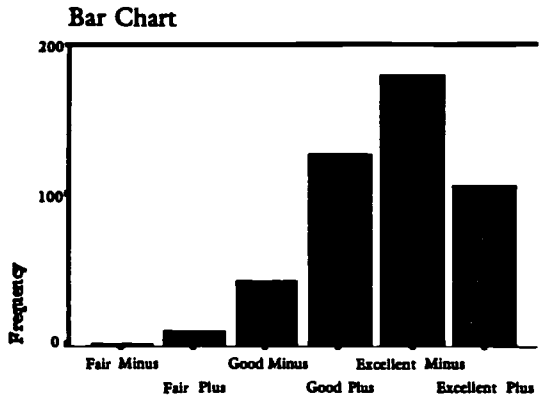


Mean	6.386	Std err	.058	Median	6.000
Mode	6.000	Std dev	1.198	Variance	1.435
Kurtosis	1.211	S E Kurt	.236	Skewness	-.780
S E Skew	.118	Range	7.000	Minimum	1.000
Maximum	8.000	Sum	2727.000		

Valid cases 427 Missing cases 324

Descriptive Statistics and Chart 23
Overall Quality of CRESST Research

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Poor Minus	1	1	.1	.1	.1
Fair Minus	3	2	.3	.3	.4
Fair Plus	4	14	1.9	2.0	2.4
Good Minus	5	69	9.2	9.9	12.4
Good Plus	6	193	25.7	27.8	40.2
Excellent Minus	7	264	35.2	38.0	78.2
Excellent Plus	8	151	20.1	21.8	100.0
Omitted	0	46	6.1	Missing	
	99	11	1.5	Missing	
	Total	751	100.0	100.0	

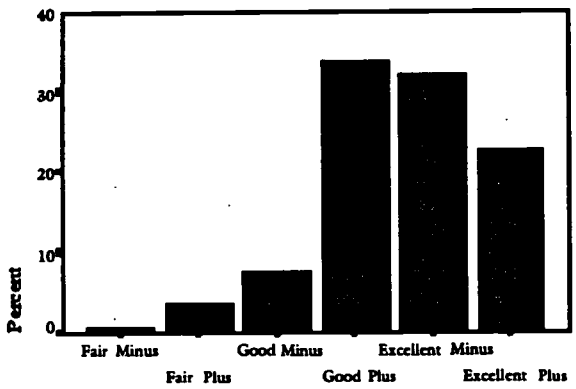


Mean	6.660	Std err	.039	Median	7.000
Mode	7.000	Std dev	1.029	Variance	1.059
Kurtosis	1.060	S E Kurt	.185	Skewness	-.718
S E Skew	.093	Range	7.000	Minimum	1.000
Maximum	8.000	Sum	4622.000		
Valid cases	694	Missing cases	57		

Descriptive Statistics and Chart 24
Quality of CRESST Products

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Fair Minus	3	3	.4	.5	.5
Fair Plus	4	20	2.7	3.1	3.6
Good Minus	5	56	7.5	8.7	12.2
Good Plus	6	211	28.1	32.7	45.0
Excellent Minus	7	223	29.7	34.6	79.5
Excellent Plus	8	132	17.6	20.5	100.0
Omitted	0	94	12.5	Missing	
Unsure	9	2	.3	Missing	
	99	10	1.3	Missing	
	Total	751	100.0	100.0	

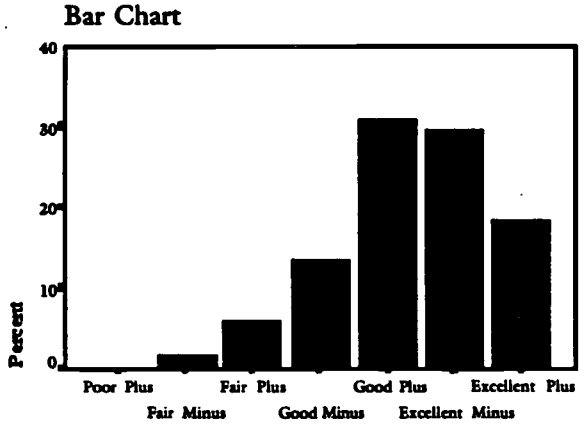
Bar Chart



Mean	6.592	Std err	.041	Median	7.000
Mode	7.000	Std dev	1.033	Variance	1.068
Kurtosis	.165	S E Kurt	.192	Skewness	-.528
S E Skew	.096	Range	5.000	Minimum	3.000
Maximum	8.000	Sum	4252.000		
Valid cases	645	Missing cases	106		

Descriptive Statistics and Chart 25
Quality of Topics Covered

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Poor Minus	1	1	.1	.1	.1
Poor Plus	2	2	.3	.3	.4
Fair Minus	3	12	1.6	1.7	2.1
Fair Plus	4	38	5.1	5.3	7.4
Good Minus	5	95	12.6	13.3	20.8
Good Plus	6	222	29.6	31.2	52.0
Excellent Minus	7	221	29.4	31.0	83.0
Excellent Plus	8	121	16.1	17.0	100.0
Omitted	0	16	2.1	Missing	
Unsure	9	3	.4	Missing	
	99	20	2.7	Missing	
		751	100.0	100.0	



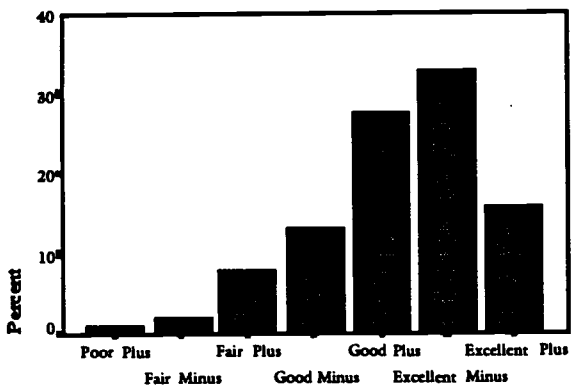
Mean	6.341	Std err	.045	Median	6.000
Mode	6.000	Std dev	1.206	Variance	1.454
Kurtosis	.628	S E Kurt	.183	Skewness	-.703
S E Skew	.092	Range	7.000	Minimum	1.000
Maximum	8.000	Sum	4515.000		

Valid cases 712 Missing cases 39

Descriptive Statistics and Chart 26
Usefulness of CRESST Presentations

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Poor Plus	2	3	.4	1.1	1.1
Fair Minus	3	6	.8	2.2	3.3
Fair Plus	4	27	3.6	10.0	13.4
Good Minus	5	37	4.9	13.8	27.1
Good Plus	6	70	9.3	26.0	53.2
Excellent Minus	7	85	11.3	31.6	84.8
Excellent Plus	8	41	5.5	15.2	100.0
Omitted	0	462	61.5	Missing	
Unsure	9	1	.1	Missing	
	99	19	2.5	Missing	
		-------	-------	-------	
	Total	751	100.0	100.0	

Bar Chart



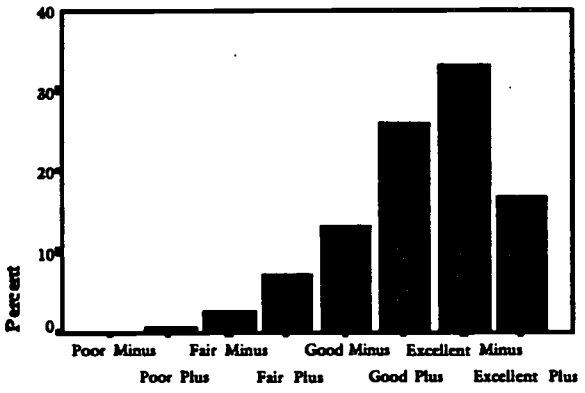
Mean	6.171	Std err	.082	Median	6.000
Mode	7.000	Std dev	1.350	Variance	1.821
Kurtosis	.052	S E Kurt	.296	Skewness	-.682
S E Skew	.149	Range	6.000	Minimum	2.000
Maximum	8.000	Sum	1660.000		

Valid cases 269 Missing cases 482

Descriptive Statistics and Chart 27
Usefulness of CRESST Technical Reports

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Poor Minus	1	1	.1	.2	.2
Poor Plus	2	5	.7	.9	1.0
Fair Minus	3	17	2.3	2.9	4.0
Fair Plus	4	48	6.4	8.3	12.3
Good Minus	5	79	10.5	13.7	26.0
Good Plus	6	156	20.8	27.0	53.0
Excellent Minus	7	176	23.4	30.5	83.5
Excellent Plus	8	95	12.6	16.5	100.0
Omitted	0	162	21.6	Missing	
	99	12	1.6	Missing	
	Total	751	100.0	100.0	

Bar Chart



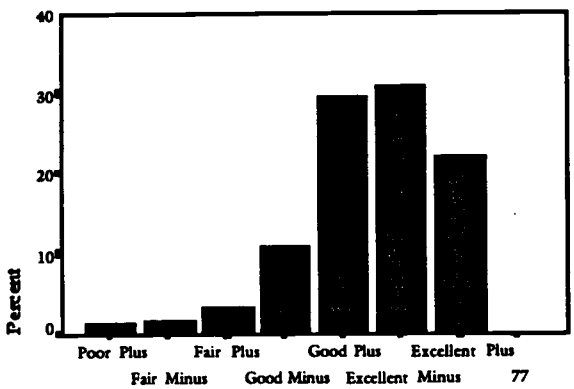
Mean	6.199	Std err	.057	Median	6.000
Mode	7.000	Std dev	1.358	Variance	1.844
Kurtosis	.299	S E Kurt	.203	Skewness	-.745
S E Skew	.102	Range	7.000	Minimum	1.000
Maximum	8.000	Sum	3577.000		

Valid cases 577 Missing cases 174

Descriptive Statistics and Chart 28
Usefulness of Journal Articles/Books Authored by CRESST Researchers

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Poor Plus	2	7	.9	1.3	1.3
Fair Minus	3	11	1.5	2.0	3.3
Fair Plus	4	31	4.1	5.7	9.0
Good Minus	5	58	7.7	10.6	19.6
Good Plus	6	157	20.9	28.7	48.3
Excellent Minus	7	172	22.9	31.4	79.7
Excellent Plus	8	111	14.8	20.3	100.0
Omitted	0	187	24.9	Missing	
	99	17	2.3	Missing	
		---	---	---	
	Total	751	100.0	100.0	

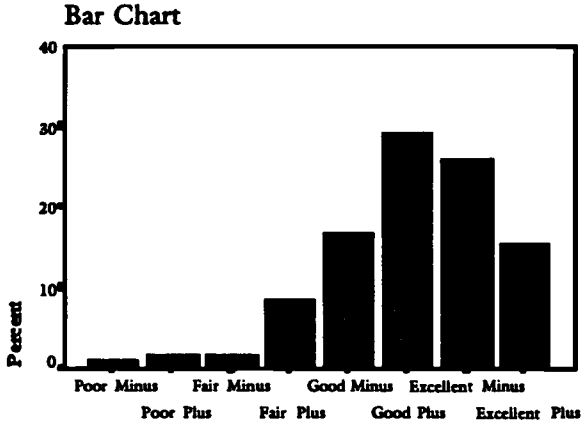
Bar Chart



Mean	6.389	Std err	.056	Median	7.000
Mode	7.000	Std dev	1.302	Variance	1.696
Kurtosis	.879	S E Kurt	.209	Skewness	-.920
S E Skew	.104	Range	6.000	Minimum	2.000
Maximum	8.000	Sum	3495.000		
Valid cases	547	Missing cases	204		

Descriptive Statistics and Chart 29
Usefulness of CRESST Newsletters

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Poor Minus	1	4	.5	.6	.6
Poor Plus	2	10	1.3	1.5	2.1
Fair Minus	3	15	2.0	2.2	4.3
Fair Plus	4	60	8.0	9.0	13.3
Good Minus	5	104	13.8	15.5	28.8
Good Plus	6	193	25.7	28.8	57.6
Excellent Minus	7	178	23.7	26.6	84.2
Excellent Plus	8	106	14.1	15.8	100.0
Omitted	0	72	9.6	Missing	
	99	9	1.2	Missing	
		-------	-------	-------	
	Total	751	100.0	100.0	



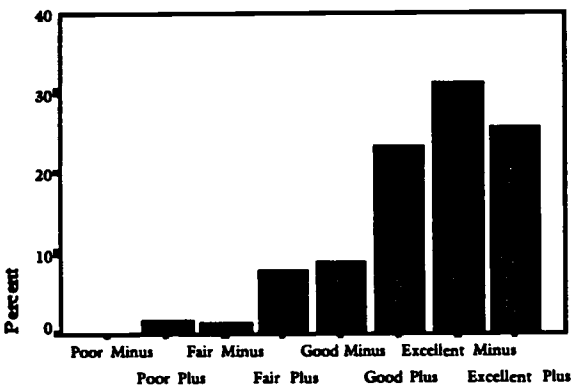
Mean	6.091	Std err	.055	Median	6.000
Mode	6.000	Std dev	1.413	Variance	1.996
Kurtosis	.651	S E Kurt	.189	Skewness	-.781
S E Skew	.094	Range	7.000	Minimum	1.000
Maximum	8.000	Sum	4081.000		

Valid cases	670	Missing cases	81

Descriptive Statistics and Chart 30
Usefulness of CRESST World Wide Web

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Poor Minus	1	4	.5	.9	.9
Poor Plus	2	6	.8	1.4	2.3
Fair Minus	3	8	1.1	1.9	4.2
Fair Plus	4	31	4.1	7.3	11.5
Good Minus	5	45	6.0	10.6	22.1
Good Plus	6	98	13.0	23.0	45.1
Excellent Minus	7	126	16.8	29.6	74.6
Excellent Plus	8	108	14.4	25.4	100.0
Omitted	0	306	40.7	Missing	
	99	19	2.5	Missing	
	Total	751	100.0	100.0	

Bar Chart



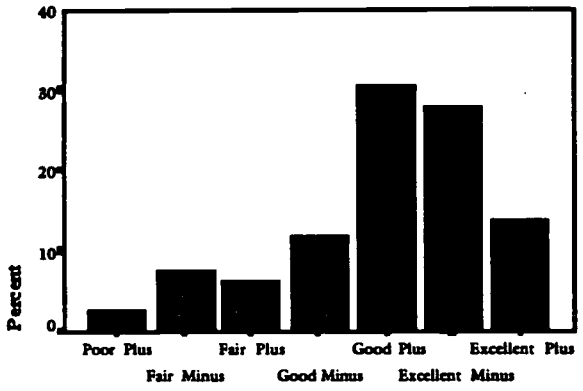
Mean	6.392	Std err	.072	Median	7.000
Mode	7.000	Std dev	1.479	Variance	2.187
Kurtosis	1.268	S E Kurt	.236	Skewness	-1.112
S E Skew	.118	Range	7.000	Minimum	1.000
Maximum	8.000	Sum	2723.000		

Valid cases 426 Missing cases 325

Descriptive Statistics and Chart 31
Usefulness of CRESST Media Products

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Poor Plus	2	5	.7	2.3	2.3
Fair Minus	3	14	1.9	6.5	8.8
Fair Plus	4	15	2.0	6.9	15.7
Good Minus	5	25	3.3	11.5	27.2
Good Plus	6	63	8.4	29.0	56.2
Excellent Minus	7	56	7.5	25.8	82.0
Excellent Plus	8	39	5.2	18.0	100.0
Omitted	0	516	68.7	Missing	
Unsure	9	1	.1	Missing	
	99	17	2.3	Missing	
		751	100.0	100.0	

Bar Chart

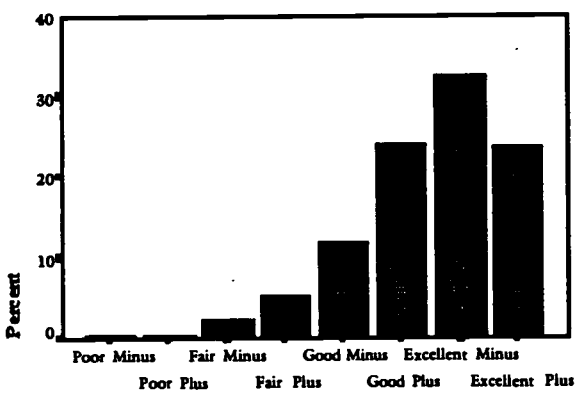


Mean	6.078	Std err	.103	Median	6.000
Mode	6.000	Std dev	1.524	Variance	2.323
Kurtosis	.070	S E Kurt	.329	Skewness	-.783
S E Skew	.165	Range	6.000	Minimum	2.000
Maximum	8.000	Sum	1319.000		
Valid cases	217	Missing cases	534		

Descriptive Statistics and Chart 32
Usefulness of Ideas from CRESST

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Poor Minus	1	2	.3	.3	.3
Poor Plus	2	5	.7	.8	1.1
Fair Minus	3	14	1.9	2.1	3.2
Fair Plus	4	28	3.7	4.3	7.5
Good Minus	5	84	11.2	12.8	20.2
Good Plus	6	155	20.6	23.6	43.8
Excellent Minus	7	212	28.2	32.3	76.1
Excellent Plus	8	157	20.9	23.9	100.0
Omitted	0	79	10.5	Missing	
Unsure	9	1	.1	Missing	
	99	14	1.9	Missing	
		---	---	---	
	Total	751	100.0	100.0	

Bar Chart



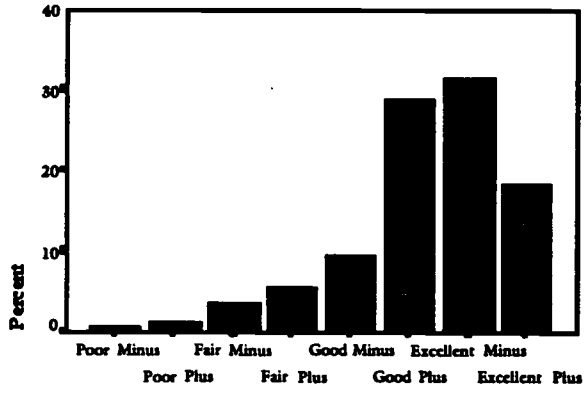
Mean	6.478	Std err	.051	Median	7.000
Mode	7.000	Std dev	1.319	Variance	1.741
Kurtosis	1.140	S E Kurt	.190	Skewness	-.997
S E Skew	.095	Range	7.000	Minimum	1.000
Maximum	8.000	Sum	4256.000		

Valid cases 657 Missing cases 94

Descriptive Statistics and Chart 33
Extent CRESST Provided You Useful Information

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Poor Minus	1	5	.7	.7	.7
Poor Plus	2	12	1.6	1.6	2.3
Fair Minus	3	21	2.8	2.8	5.1
Fair Plus	4	44	5.9	6.0	11.1
Good Minus	5	88	11.7	11.9	23.0
Good Plus	6	209	27.8	28.3	51.3
Excellent Minus	7	226	30.1	30.6	81.9
Excellent Plus	8	134	17.8	18.1	100.0
Omitted	0	5	.7	Missing	
Unsure	9	1	.1	Missing	
	99	6	.8	Missing	
		---	---	---	
	Total	751	100.0	100.0	

Bar Chart



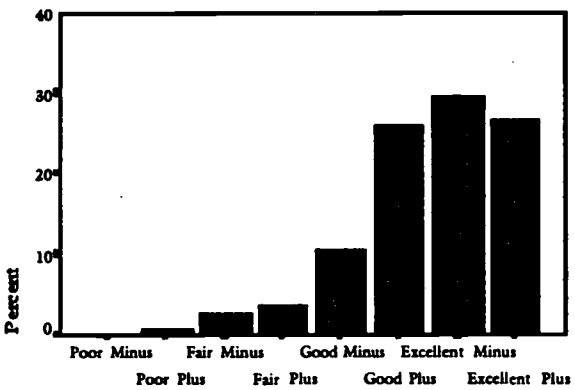
Mean	6.246	Std err	.052	Median	6.000
Mode	7.000	Std dev	1.420	Variance	2.015
Kurtosis	1.258	S E Kurt	.180	Skewness	-1.051
S E Skew	.090	Range	7.000	Minimum	1.000
Maximum	8.000	Sum	4616.000		

Valid cases 739 Missing cases 12

Descriptive Statistics and Chart 34
Extent CRESST Has Been Useful to Education Community

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Poor Minus	1	2	.3	.3	.3
Poor Plus	2	6	.8	.8	1.1
Fair Minus	3	12	1.6	1.7	2.8
Fair Plus	4	27	3.6	3.8	6.6
Good Minus	5	75	10.0	10.6	17.2
Good Plus	6	191	25.4	27.0	44.2
Excellent Minus	7	208	27.7	29.4	73.6
Excellent Plus	8	187	24.9	26.4	100.0
Omitted	0	12	1.6	Missing	
Unsure	9	5	.7	Missing	
	99	26	3.5	Missing	
		-------	-------	-------	
	Total	751	100.0	100.0	

Bar Chart



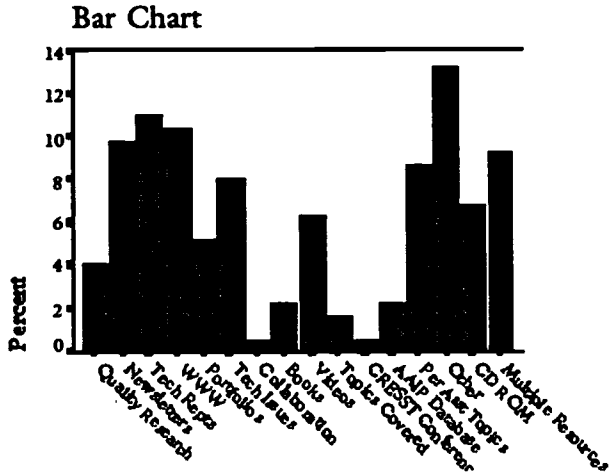
Mean	6.541	Std err	.049	Median	7.000
Mode	7.000	Std dev	1.295	Variance	1.677
Kurtosis	1.421	S E Kurt	.183	Skewness	-1.033
S E Skew	.092	Range	7.000	Minimum	1.000
Maximum	8.000	Sum	4631.000		

Valid cases 708 Missing cases 43

Descriptive Statistics and Chart 35
What Was Especially Useful?

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Quality Research	1	11	1.5	4.8	4.8
Newsletters	2	22	2.9	9.6	14.5
Tech Repts	3	23	3.1	10.1	24.6
WWW	4	25	3.3	11.0	35.5
Portfolios	5	13	1.7	5.7	41.2
Tech Issues	6	19	2.5	8.3	49.6
Collaboration	7	1	.1	.4	50.0
Books	8	5	.7	2.2	52.2
Videos	9	11	1.5	4.8	57.0
Topics Covered	11	4	.5	1.8	58.8
CRESST Conference	12	1	.1	.4	59.2
AAIP Database	13	6	.8	2.6	61.8
Per Asst Topics	14	21	2.8	9.2	71.1
Other	16	33	4.4	14.5	85.5
CD ROM	17	14	1.9	6.1	91.7
Multiple Resources	66	19	2.5	8.3	100.0
Never Used	0	2	.3	Missing	
Omitted	99	521	69.4	Missing	
	Total	751	100.0	100.0	

Chart 35
What Was Especially Useful?

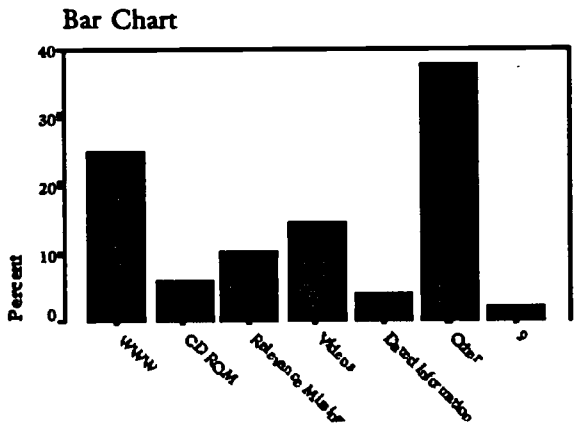


Valid cases 228 Missing cases 523

Descriptive Statistics and Chart 36
What Was Problematic?

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
WWW	1	16	2.1	28.1	28.1
CD ROM	2	3	.4	5.3	33.3
Relevance Missing	3	6	.8	10.5	43.9
Videos	4	6	.8	10.5	54.4
Dated Information	5	3	.4	5.3	59.6
Other	6	23	3.1	40.4	100.0
Never Used	0	12	1.6	Missing	
Omitted	99	682	90.8	Missing	
	Total	751	100.0	100.0	

Chart 36
What Was Problematic?

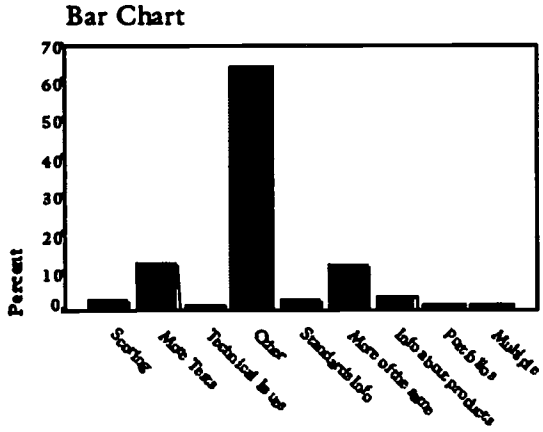


Valid cases 57 Missing cases 694

Descriptive Statistics and Chart 37
What New Reseach or Product is Needed?

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Scoring	1	4	.5	2.0	2.0
More Tests	3	23	3.1	11.6	13.6
More Rubrics	4	2	.3	1.0	14.6
Technical Issues	5	3	.4	1.5	16.1
Other	6	125	16.6	62.8	78.9
Standards Info	7	6	.8	3.0	81.9
More of the same	8	27	3.6	13.6	95.5
Info about products	9	4	.5	2.0	97.5
Portfolios	10	3	.4	1.5	99.0
Multiple	66	2	.3	1.0	100.0
Never Used	0	1	.1	Missing	
Omitted	99	551	73.4	Missing	
	Total	751	100.0	100.0	

Chart 37
What New Reseach or Product is Needed



Valid cases 199 Missing cases 552

APPENDIX E

Normality Plots and Nonparametric Tests

QQ-Plots from SPSS were plotted for the Descriptive Survey data in order to determine if the distributions could be analyzed with parametric tests, such as analysis of variance. According to Norusis (1994) QQ Plots that form a relatively straight line indicate that the data may be considered a normal distribution (Norusis, 1994). She goes on to say in a different section: "It is almost impossible to find data that are exactly normally distributed. For most statistical tests, it is sufficient that the data are approximately normally distributed."

Figure 1

Normal q-q plot for Quality of CRESST Products

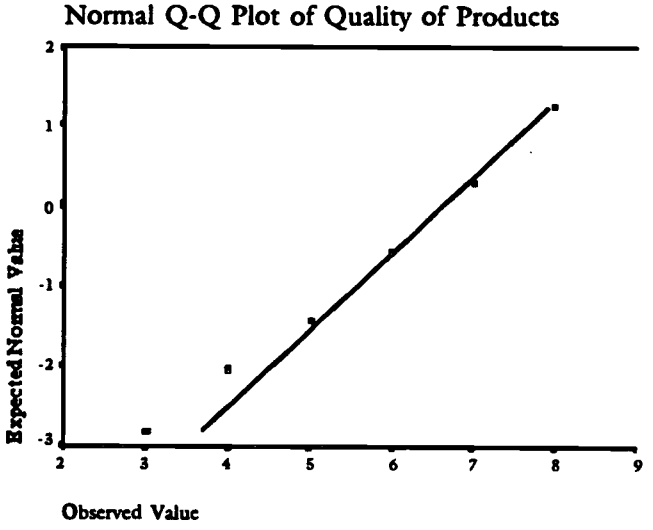


Figure 2

Normal q-q plot for Quality of Tech Reports

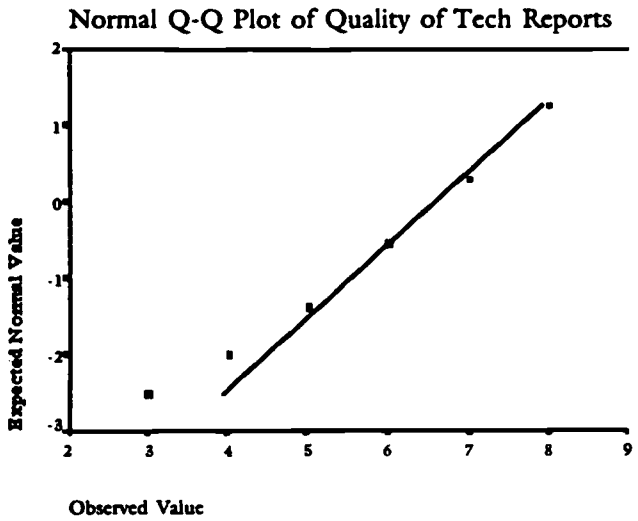


Figure 3

Normal q-q plot for Quality of Presentations

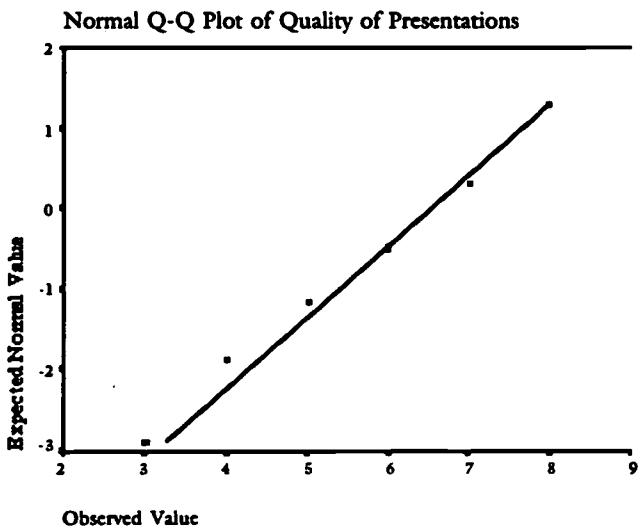


Figure 5

Normal q-q plot for Quality of Topics Covered

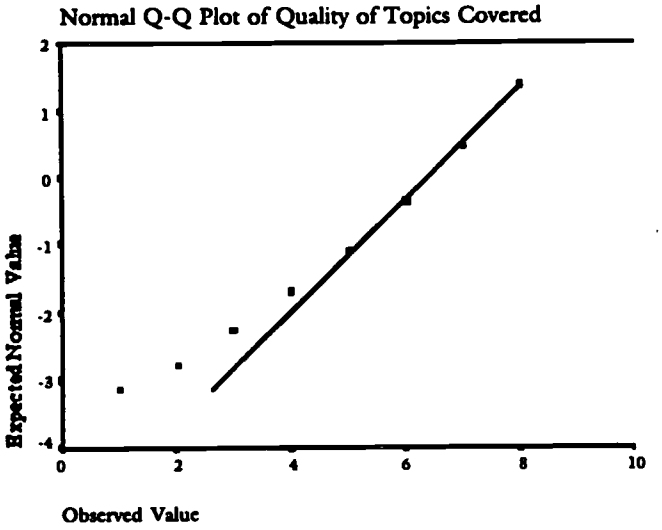


Figure 6

Normal q-q plot for Useful to Education Community

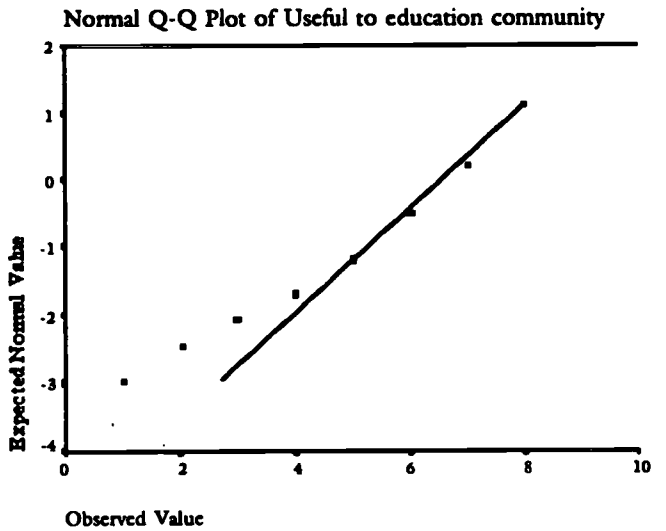
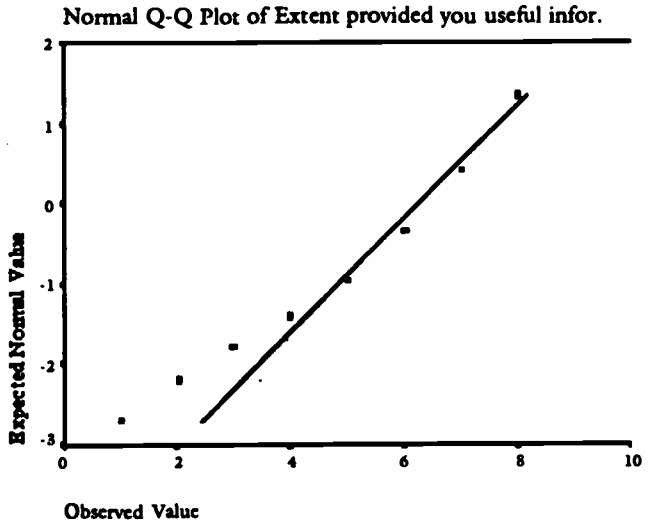


Figure 3

Normal q-q plot for Extent Provided You Useful Information



Conclusion. These plots and those for all the dependent variables of the descriptive survey approach a straight line. This lends support to our ability to safely conduct parametric tests, primarily Analysis of Variance (ANOVA), to detect significant differences between dependent and independent variables.

Nonparametric Tests

Various nonparametric chi-square tests including Chi-square Pearson, Likelihood Ratio, Phi Coefficient, the Coefficiency of Contingency, and Cramer's V, were run to detect associations between dependent and independent variables of the CRESST Descriptive Survey. Eta, for nonparametric distributions, which provides a measure of strength between the variables, was also calculated. A sample of the results are provided in Table 1 focusing on the independent variable "sharing CRESST research with others" and the dependent variable of "overall quality of CRESST research."

Table 1

Nonparametric Measurements of Association

CRESST Descriptive Questionnaire

Quality of CRESST R&D by Shared CRESST with Others

DV	IV	Test	Cases	Value	df	Signif.
Qual RD	shared w/o	Pearson	684	83.76	18	.0000
		Likliehood	684	80.22	18	.0000
		Phi	684	.35	n/a	.0000
		Cramer's	684	.20	n/a	.0000
		Contingen	684	.33	n/a	.0000
		Pearson R	694	.28	n/a	.0000
		Spearman	694	.29	n/a	.0000
		Eta q/dep	694	.29	n/a	n/a
		Eta s/dep	694	.30	n/a	n/a

In the case presented, we can reject the hypothesis that there is no association between the ratings of the overall quality of CRESST R&D and usefulness to the education community across the independent variable sharing CRESST research, just as we did in our analysis of variance in the body of this dissertation. This is based on the P-values for the Pearson chi square, phi coefficient, likelihood ratio, the coefficient of contingency, and Cramer's V, all less than .05. Eta (.29) suggests a fairly strong relationship.

A further analysis showed that we could reject the null hypothesis of no association between all dependent variables and the independent variable "Sharing

CRESST research with others" except for the usefulness of CRESST media products P=.09 and usefulness of CRESST presentations P=.07. This almost exactly matches our ANOVA findings. ANOVA showed a significant difference between the dependent variable "usefulness of CRESST media products" and "sharing CRESST research." However, the Bonferoni and Scheffe tests showed significance only across two groups, group 1, shared CRESST research once and group 3, shared CRESST research 4 times or more. The results suggest that we are quite safe in using ANOVA to test the data from the CRESST Descriptive Questionnaire.

Results presented in Table 2 from nonparametric measurements of association, also confirm our ANOVA findings in the main body of this dissertation, that a significant relationship between the dependent variable "overall quality of CRESST research" and the independent variable, group audiences, does not exist.

Table 2

Nonparametric Measurements of Association

CRESST Descriptive Questionnaire

Quality of CRESST R&D by Group Audiences

DV	IV	Test	Cases	Value	df	Signif.
Qual RD	groups	Chi-Pearson	694	21.07	18	.27561
		Likliehood	694	20.67	18	.29639
		Phi	694	.1742	n/a	.27561
		Cramer's	694	.10061	n/a	.27561
		Contingen	694	.17168	n/a	.27561
		Pearson R	694	-.02081	n/a	.58409
		Spearman	694	-.00228	n/a	.95211
		Eta q/dep	694	.08896	n/a	n/a
		Eta g/dep	694	.11214	n/a	n/a

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