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Editor’s Notes

James R. Stone, III
University of Minnesota

This issue begins my tenure as editor of the *JVER*. It is an inauspicious beginning to be sure as this issue is tardy in its arrival. The cause of the delay lies squarely with this editor. It is my hope to have us caught up by year’s end. John Schell continues as managing editor, a welcomed support. The previous editor, Jay Rojewski has been most supportive in this transition and for his support, I am also appreciative.

Several years ago, my colleague and former *JVER* editor Professor Theodore Lewis (1995), wrote in this column that a journal of vocational education ought to be the place where we resolve the most interesting questions of the field. I would simply add that a journal of vocational education ought to be the place where change agents interested in vocational education go first for new knowledge.

Professor Lewis was right then and he is right today. This journal ought to be a place where we address perennial issues and problems of vocational education. What then, are the most interesting questions, the perennial issues of the field?

In 1995, Professor Lewis discussed the need to understand how workers are coping in the face of technology. He suggested that the correlation of social class and curriculum, the problem of integrating academic and vocational education, the transitions from school to work were all problems of an enduring nature.

More recently, my predecessor, Jay Rojewski, in his final comments as editor, observed what he characterized as an amazing range of topics addressed during his tenure. His list of topics included transition from school to work, environmental ethics, student skill assessment, career development and decision making, community service, and teacher stress (Rojewski, 1999).

The new National Research Center for Career and Technical Education built its proposal around questions derived from the recent Perkins III legislation. They proposed projects that asked questions about curriculum integration, accountability, professional development, educational technology and distance learning, and academic/vocational skills needed for employment and continued education. These topics mirrored the Congressional vocational education agenda.

To this growing list, I add my own thoughts.

- We know that there has been a general decline in the number of students enrolled in secondary vocational education and a decline in the number of vocational courses taken by students (Levesque, Laun, Teitelbaum, Alt, & MPR Associates, 2000). While traditional vocational education is in decline, we see growth in career academies, career-based charter schools, career magnets and other forms of non-traditional, or at least non-reported vocational education. What are the causes and consequences of such trends? Are they a good or bad thing?

- The U.S. Department of Education, under Congressional mandate, is pushing hard for states to create accountability systems. What do we know about the impact on practice of such efforts? How will such efforts affect curricular and programmatic direction?
Many of us have sensed there is confusion over the role and purpose of vocational education in our schools. How should public education address the economic and occupational development of its future citizens? Or do we leave all this to television?

The U.S. Department of Education is crafting and promoting a framework of occupational clusters. How will these or how have other pathway schemes affected the education and career decision making of young people?

Schools and colleges are rushing to spend huge sums on educational technology. Which technologies improve which aspects of the teaching learning process in vocational education?

More than 70% of adolescents work, a third of them more than 20 hours a week (Stone and Mortimer, 1998). Yet we find fewer than 11 percent of them connect that work to school through cooperative vocational education, apprenticeships or internships (Delci & Stern, 1999). What do we know about the effect of this disconnected learning on student achievement in high schools and transition to post high school education and training?

Why do so few women pursue and persist in information technology careers?

Tech Prep, curriculum integration, and contextualized learning have become part of the vocational educational landscape. What do we know about their effect on learning? Private vendors of occupational certification (e.g., Cisco and Novell) are penetrating our schools with “vocational education.” What is the effect of such activities on the young people who participate? What is the impact on the nature of vocational education of such initiatives?

Why aren’t the thousands of articulation agreements created in the past dozen years showing up on our two-year college campuses?

Whither school to work?

Are these the most interesting or important questions? Or are they questions of a transient nature leaving deeper, perhaps more important questions unaddressed? What are today’s interesting questions?

So we turn to our scholars in this issue of the JVER and ask what they are asking. In this issue, we begin with the Presidential Address where Hollie Thomas asks what direction the professional association, AVERA, needs to follow. Marcelle Hardy asks questions of the school to work process in Canada. Bettye Smith, Helen Hall, and Constance Wollcock-Henry ask questions about high school teachers and Attributional Style. Finally, Wanda Stitt-Gohdes, Judy Lambrecht, and Donna Redman ask questions of the critical incident methodology as a strategy for understanding the work world.

In future issues, we will examine tech prep with Debra Bragg as a guest editor. Later this year we will assemble the thoughts of many of our leading thinkers on the nature and purpose of vocational education in a changed and changing world.

But for now, I ask that you consider what you believe to be the important questions and set about answering them. When you have done this, share your new knowledge with your colleagues in the JVER.
References


Keeping on Track to the Future

Presidential Address
American Vocational Education Research Association
Hollie Thomas
Florida State University

Introduction

It has been my privilege to serve as your president during the last year of the Century. The timing has caused me to approach the task differently than I would have at a different point in time. We live in a time when reform seems to be on everyone’s mind (e.g. Lynch, Smith, & Rowjewski, 1994; Hilosky & Watwood, 1997; O’Reilly, Asche, & Rowland, 1995). Because of the timing, I have asked myself whether it is time to think about redirecting AVERA. With this question in mind, I wanted to know how well we are serving the membership and what we should be doing in the future. I have done two things to attempt to provide answers to these questions. First, I appointed a Futures Committee with the anticipation that this group would think out of the box and give us some bold new ideas as well as some ideas of how to fix what we are doing. Secondly, a survey was sent to all of the 1999 membership as well as to those who had been on the 1998 membership list but not on the 1999 list. The development of this survey is pretty much thinking inside of the box. All of this was designed to help us take a look at the changes we need to make in the organization.

We as educators have always been agents of change. We expect our students to make changes in their knowledge, skills and abilities. If they don’t we are obliged to give them a failing grade. We as Vocational Educators, however, have been known for our reluctance to change. As Marion Asche (1991) has said, Vocational Educators have been accused of starting every sentence about the future of Vocational Education with “now in 1917…” On the other hand, it has been shown that Vocational Educators are seen by their administrators as being very willing to change (Thomas & Schmidt, 1999). The question here is, are we making the changes needed in the organization that are needed to keep it up as a viable force in Vocational Education and what are the changes we should make in the future.

In this presentation I will present some ideas on change and why it is essential to the life of the organization, discuss the findings from the survey, and provide some thoughts about what we might do to keep the viability of the organization at an optimum level. I want to preface my statements with the thought that all of us have been asked to do more and more as our faculties in Vocational Education get smaller and smaller. Thus, the efforts that we are able to put into a professional organization may not be what we would like to be able to give. We need to think about maximizing the returns for the energy expended in nearly everything we do. Thus, I do not seek change for change’s sake.

Change Theory

Why is change important to an organization like ours? When put in bold relief like the Saber Tooth Curriculum (Benjamin, 1972) did many years ago, it is obvious that if one wants to remain relevant, change is necessary. Research in the area of physical systems has shown that a system will run long enough without a new source of energy (Horwich, 1987). In other words, it will simply run out of energy and run down. It isn’t, however, inevitable that a system must run down. Blanchard and Waghorn (1997) have written extensively on the life expectancy of organizations. Their theory indicates that a new system starts off slowly, but after a relatively long period of slow growth, builds rapidly for an undetermined amount of time; then after a brief plateau it begins to decline rapidly. This theory is depicted by an S-shaped or sigmoid curve (see Figure 1). Based on this theory, Blanchard and Waghorn’s idea of how to succeed is to start something new just before the old system runs out of energy. In my opinion, that might work in business, but in professional organizations the alternative strategy of generating new energy periodically so that the period of growth goes on indefinitely is more viable. This can be depicted by a Double S curve as shown in Figure 2. This suggests that one should anticipate an impending downturn and start up a new curve so that the system has sufficient energy to sustain itself for
another period of time. It is my opinion that this is what the AVERA has done. We can point to many injections of new energy into the system. Incremental changes whether they are large or small can put new energy into an organization. Examples of the changes that the organization has made include the starting of a research journal, sponsoring the Vocational Education SIG at AERA, development of a newsletter, giving awards to worthy members, and including a past presidents forum in the program. If you were to ask me what change the organization has made in recent years that equals these rather major changes, I would point to the AVERA web page for one. There haven’t been as many changes in what we do and how we do it in the last sixteen years as there was in the first sixteen. However, we do get a new infusion of energy each time we elect a new set of officers, elect new members to the Journal Editorial Board, elect a new Editorial Board Chair and appoint a new Journal Editor. Even though there is a learning curve for new officers, a new person will give new insights and provide leadership in a different way.

Actors in the Change Process

Given that changes are needed to keep an organization viable and relevant, we need to know how to bring about change. My experience is that individuals either grouse about the lack of change/relevance or just vote with their feet and fail to renew their membership in the organization that ceases to meet their needs. If this becomes a predominant trend among the membership and a ready source of new members is not available, then it is apparent that entropy is about to occur. We will look at the actors that are necessary for change to occur and then at the process of change.

The actors involved in the change process according to Conner (1992) include sponsors, agents, targets and advocates. Sponsors are those individuals in an organization who can actually make the changes if the changes advocated pass the muster of being beneficial for the organization. In this organization these actors would be the executive committee or with changes in the Journal, the Editorial Board. Agents are the individuals who actually do the work to make the change. I am afraid that is too often the same folks as those who sponsor the change in this organization. The actors identified as targets are the individuals who need to change. You know, those of us who are out of date and need to be brought into the 21st century. Finally, but the most important actor, is the advocate for change. This is the person who is not in the position to make the change but wants the change to occur. We need to encourage our membership to advocate for the changes that would make the organization more relevant to their needs and we must let folks know that we want their input and we are listening. It should be made clear that anyone of us may play any of these roles at any point in time, i.e. there is not one set of players who are playing the same roles all of the time. I could be advocating for a change in the Editorial Board policy while being the target, one needing to change, on the Executive Committee etc.

Change Process

The steps in the process of changing an organization involve:
(1) determining member needs; (2) determining which changes to make and which needs to attempt to meet; (3) organizing study groups to focus on implementing the desired changes; (4) developing plans for making the identified changes; (5) implementing the plans developed; and (6) evaluating the results of the change. The process here is similar to that described by Murphy and Lick (1998) and to the PDSA process described by advocates of TQM (Deming, W. E., 1990). The six-point process proposed here is illustrated in Figure 3. The assumption is that the entire process would be
conducted within the context of AVERA and that the mission of the organization would be kept in mind while conducting the process.

We, as officers in the AVERA, perhaps I should limit my generalizations to myself, have a life and a job outside of the organization. Thus we may approach the organization as something we have to get done before the meeting gets here. This often causes me to do what has always been done. Bradshaw (1988) refers to this mindless tracking on the chores at hand as being done by “human doings”. If this process continues in an organization, it is clear that the changing needs of the membership will be ignored. Clearly the needs being met by the activities of the organization will continue to be met; hence the need for determining the needs of the membership is evident. Sources of information about the needs of the membership range from a single member advocating for change to a formal assessment of needs. We should be listening to the membership as well as conducting studies.

When identified, the needs should be discussed and prioritized. In order to do this it is important to look at all of the consequences of making the change as well as to debate the pros and cons of making the change. If the goal of making a change is to create more energy in the organization, we certainly do not want to make changes that will consume more energy than it creates. This is the time when a person or group should be advocating for a change that they want to see occur. To do this they will have to develop a strong case for the change in order to convince those doubters like me.

The use of study groups in bringing about change is clearly presented by Murphy and Lick (1998) as a useful tool for use in educational organizations. The usual process of this type of activity is that we have the same group doing the thinking, i.e. the executive committee. While the futures group was not supplied with data about the needs of the membership, I did ask them to look at the changes that were needed in the organization. You may note that the committee included two members of the executive committee. However, I asked for volunteers for this committee in two Beacon messages. The only two who volunteered were current officers. I asked a third person to join them.

The fourth step, developing plans for making the identified changes, is certainly not new to vocational educators. We have been teaching others to plan programs by stating the tasks required, setting timelines and establishing critical paths for as long as I can remember. However, other than individual members who have responsibilities for ongoing aspects of the organization, I do not recall a plan for changes or new initiatives being planned systematically. It is my opinion that an organization that seeks to be relevant must seek out needed changes and make the changes in a systematic manner.

Making changes in an organization, step five, requires work and may result in efforts on the part of some members to resist the changes. We know that it is difficult in our current environment to find the time to do extra work for our professional organizations given the increased demands for productivity that everyone seems to be experiencing. For this reason, it seems essential to involve a larger percentage of the membership in the work of the organization. If we identify new initiatives,
plan the implementation process and involve our membership in the implementation, I think we can continue to put new energy into the organization.

Finally, evaluation is one of the things vocational educators do well. However, we may not be applying what we know to the organization. It would seem appropriate to evaluate any new initiative that the organization undertakes so that we can determine how well we are doing what we have undertaken and what results the initiative produces.

I have a feeling that many in the audience are asking, “why is this person stating the obvious?” I just think that as we come to the end of a millennium it is time to remind ourselves that the principles that we apply to program development also apply to our professional organization. Survey of Membership

In an effort to gain a perspective on how the organization is viewed by the members, I have undertaken a survey of the membership to determine their perception of whether we should be undertaking a list of activities and how well we have been doing them. I am sure that many of you completed the survey.

The survey, which asked the extent that the respondents agreed with statements concerning AVERA and the services and opportunities provided by the organization, was sent to all current members. A second questionnaire was sent to individuals who were included on the 1998 AVERA directory but not in the 1999 AVERA directory. The total number of surveys sent was 169 for current members and 140 for lapsed members. One of the former and 25 of the latter were returned for insufficient/non-current address. The number of returned useable surveys was 87 (51.5%) for current members and 6 (4.3%) for individuals who had not renewed their membership. Although the survey was sent to individuals whose membership had lapsed at a later point in time, time alone does not account for the non-response of this group. While the lack of response is informative, the responses from the six who did respond were not included in the analysis of data.

The survey was developed based on the records accumulated by the past presidents as well as on the memory of the activities the organization had sponsored by the current president who has attended all AVERA meetings since 1970. Fourteen statements were written reflecting how well the organization has been functioning on the selected items and fourteen similar items reflecting the advisability of the organization continuing to conduct similar activities. A final item asked the extent to which the respondents agree or disagree with the statement that the AVERA membership should consider making a name change.

The analysis of the data was descriptive for each of the 29 statements using means, frequencies and percentages. In addition, the items reflecting the same activity for the current situation and future desired status were paired and response for the current situation subtracted from the desired future status for each respondent. These data were also analyzed using the same descriptive statistics. Results of the Survey

First, I learned more than the responses to the 29 statements in doing this survey. I learned that we have a viable organization that has the potential of attracting new members. Of the 169 current members we have 43 new members who were not in the 1998 Membership Directory. We also appear to have one institutional member for a total 1999 membership of 170. By comparing the 1999 Membership Directory with the 1998 I discovered that a total of 140 individuals who had been listed as members in 1998 had not renewed in 1999. This may have been an accumulation over a period of years if we were not systematically deleting members who did not renew. The forwarding address of 25 of these 140 individuals had expired forwarding addresses leaving 115 whose addresses had not changed. I had a similar experience with the e-mail addresses. We sent follow-up notices to everyone who had an e-mail address listed. This included 107 former members and 144 current members. Nineteen of the current member e-mails and 57 of the former member e-mails were returned by the internet. While I am not concerned with the fact that the 1998 Directory is out of date, I am concerned that we do not have correct e-mail addresses for our current members listed in the 1999 directory.

The results from the survey indicated that the current AVERA members give a favorable response to the activities listed on the survey. In general, the respondents indicated that the organization should in the future perform at a slightly high level on all of the activities listed. As
shown in Table 1, the majority of the respondents gave a response of Agree or Strongly Agree on 9 of the fourteen evaluative items of how well AVERA is doing at the present time. The five that did not receive a majority of responses representing this level of agreement were items that relate to representing legislative interest at a national level (27.5%), to providing leadership in the reform of Vocational Education (43.7%), and to providing workshops on research methods (37.9%), statistical techniques (21.8%), and acquisition of grants (21.8%). The items receiving more than three-fourths of the respondent ratings of Agree and Strongly Agree were “Providing ample opportunities for members to present their research” (83.9%), and “Recognizing the most deserving members by presenting awards to them” (82.8%).

Table 1
Frequency of Response by Survey Item

<table>
<thead>
<tr>
<th>ITEM</th>
<th>RESPONSE</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>SA</td>
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<tr>
<td>1p</td>
<td>31</td>
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<tr>
<td>1f</td>
<td>76</td>
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<td>2p</td>
<td>20</td>
</tr>
<tr>
<td>2f</td>
<td>75</td>
</tr>
<tr>
<td>3p</td>
<td>10</td>
</tr>
<tr>
<td>3f</td>
<td>52</td>
</tr>
<tr>
<td>4p</td>
<td>10</td>
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<td>11p</td>
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<td>11f</td>
<td>42</td>
</tr>
<tr>
<td>12</td>
<td>28</td>
</tr>
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</table>
The responses to the activities that AVERA should be doing in the future were rated high with all of the items receiving a rating of Agree or Strongly Agree by more than two-thirds of the respondents. Nine of the 14 items receiving these ratings came from more than 90 percent of the respondents. The five items that received less than 90 percent of the response of Agree and Strongly Agree were those relating to representing legislative interest (79.3%), revising the AVERA mission statement (66.7%) and providing workshops concerning statistical techniques (79.3%), research methods (83.9%), and acquisition of grants (77.0%). It should be noted that the verb used with the item about the mission statement was “revise” rather than “provide” which would have given data parallel to the other items.

It can be observed that many of the items that were rated lower for the activities that the organization is currently doing are also the ones that were rated lower for the things that AVERA should be doing. This prompted me to look at the difference between the responses given by each individual for the 14 pairs of items. This procedure produced a possible scale of negative 4 to a positive 4 with the negative score representing respondents who more strongly agreed that the organization was doing activities than they agreed that the organization should be doing in the future. The positive responses represented the converse. Table 2 presents the data from the discrepancy analysis. It may be noted that the discrepancy scores equal to or less than positive or negative 1 accounted for one-half of the responses with the range being from 55.2 percent to 92.0 percent. The five items for which the frequency of discrepancy scores of equal to or greater than positive or negative 2 exceeded 30 percent were (a) “Provide workshops on the emerging statistical techniques (44.8%)”, (b) “Provide workshops concerning research methods (41.4%)”, (c) “Provide workshops on the acquisition of grants” (36.8%), (d) “Provide leadership in the reform of Vocational Education” (35.6%), and (e) “Represent the members’ legislative interest at the national level” (35.6%). The five items for which the discrepancy scores were equal to or greater than positive or negative 2 was less than 20 percent were (a) “Recognize the most deserving members by presenting awards to them” (8.0%), (b) “Provide leadership opportunities for the membership” (11.5%), (c) Represent the membership in the New and Related Services Division” (11.5%), (d) “Provide opportunities for members to present their research” (16.1%), and (e) Provide (revise) the mission statement to provide new guidance for the organization” (18.4%). It should be noted that the discrepancy concerning the mission statement should be questioned given the inconsistency between the wording of the items. For this item, there were nearly as many negative as positive discrepancy scores.

Table 2.
Frequency of discrepancy by survey item pair

<table>
<thead>
<tr>
<th>DISCREPANCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITEM</td>
</tr>
<tr>
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</tr>
<tr>
<td>1p</td>
</tr>
<tr>
<td>1f</td>
</tr>
</tbody>
</table>

p = indicates in the past  f = indicates in the future
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Past Score</th>
<th>Future Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>2p</td>
<td>Provided ample opportunity for members to publish their research.</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2f</td>
<td>Provide opportunities for members to publish their research.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3p</td>
<td>Provide ample opportunities for members to discuss their innovative ideas.</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>3f</td>
<td>Provide opportunities for members to discuss their innovative ideas.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4p</td>
<td>Provided an excellent forum for discussing emerging trends in Vocational Education.</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>4f</td>
<td>Provide a forum for discussing emerging trends in Vocational Education.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5p</td>
<td>Represented the members’ legislative interests at the national level.</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>5f</td>
<td>Represent the members legislative interest at the national level.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6p</td>
<td>Provided adequate workshops concerning research methods for members.</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>6f</td>
<td>Provide workshops concerning research methods for members.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7p</td>
<td>Provided adequate workshops on emerging statistical techniques.</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>7f</td>
<td>Provide workshops on emerging statistical techniques.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8p</td>
<td>Provided adequate workshops on publishing in the JVER.</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8f</td>
<td>Provide workshops on publishing in the JVER.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9p</td>
<td>Provided adequate workshops on the acquisition of grants.</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>9f</td>
<td>Provide workshops on the acquisition of grants.</td>
<td></td>
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<tr>
<td>10p</td>
<td>Provided leadership opportunities for the membership.</td>
<td>0</td>
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</tr>
<tr>
<td>10f</td>
<td>Provide leadership opportunities for the membership.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11p</td>
<td>Represented the membership in the New and Related Services Division of AVA (ACTE).</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>11f</td>
<td>Represent the membership in the New and Related Services Division of AVA (ACTE)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12p</td>
<td>Recognized the most deserving members by presenting awards to them.</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>12f</td>
<td>Recognize the most deserving members by presenting awards to them.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13p</td>
<td>Provided leadership in the reform of Vocational Education.</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>13f</td>
<td>Provide leadership in the reform of Vocational Education.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14p</td>
<td>Provided a mission statement that has guided the organization.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>14f</td>
<td>Revise the mission statement to provide new guidance for the organization.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

p = indicates in the past  f = indicates in the future

Another way to look at the discrepancy scores is to observe that more than one-half of the respondents had discrepancy scores of positive 1 or greater for 10 of the 14 items. In addition, 8 of
the items had a mean discrepancy score of 1.00 or greater. Thus, it seems that the organization is perceived as having room to improve.

The last item on the survey was concerning whether the AVERA should consider changing the name. Nearly one-half (48.3%) of the respondents either agreed or strongly agreed with this statement while 21.8 percent either disagreed or strongly disagreed. Twenty-six (29.9%) of the respondents were undecided.

At the time of this writing there were insufficient responses from the non-renewal group to make any generalizations about the organization in terms of the responses to items. This lack of response can, in part, be attributed to the addresses used. However, this does not nearly explain the response rate. Of those who did respond, predominant reasons given for not being a current member was either that they thought they were or that they had intended to renew but had failed to do so. Please remember that we are dealing with a response rate of 4.3 percent.

Conclusions

The conclusions drawn here are from several sources: the literature, the survey data, comments written on the survey, and a combination of the above three sources with my thoughts thrown in for good measure.

Conclusions from the Literature

As I reread the literature in preparation for this presentation I thought of the implications of the literature for our organization. I am usually thinking of the implications for others such as in school districts. Thus, the literature affected me in different ways. Here are some of the things that came to mind.

- An organization that does not inject new energy into the organization will entropy over time. This organization has had infusions of new energy from time to time and has benefited from both the leadership and new member energy. We should be conscientiously aware of the need for renewal of energy to sustain our organization and to anticipate when new initiatives are needed to meet the needs of the membership.
- The literature indicates that there are various actors in the change process and that a change needs a sponsor who has the authority to see that the appropriate steps are taken to move the change through the system. Equally important, however, is the advocate for change—that young person who sees a need for change and lets his/her opinions be known. We need to cultivate an environment in which everyone feels that his/her ideas for change will be heard.
- Inclusion of a greater percentage of the membership in the dialog about changing the organization will result in more energy being created. Appointing special groups to do tasks for the organization is a way to involve more members in getting the work done. The idea that the Executive Committee should do all of the work is a control mechanism that will limit the scope of the organization.
- A systematic process for obtaining input about the needs of the membership is desirable for the health of the organization. A process for winnowing the input should be developed and systematically used. It is important for the members to know that feedback is desired and will be considered. However, it is important to choose new initiatives carefully in order to maximize the return on the energy expended.
- Change for change sake has no productive use other than to dissipate scarce energy and resources. Proposed changes should be discussed and the consequences of making and not making the change thoroughly understood. Resistance to change is healthy, at least up to a point. It gives air to the discussion of why the change is important and requires the individuals proposing the change to express the needed change in greater detail and with acceptable clarity.
- We need to change the culture in the organization so that we get input from a broad spectrum of members about the types of changes that need to occur. New members are in the best position to make suggestions about what would make the organization more relevant to them.
Conclusions from the survey of members

There are many conclusions that could be drawn from the data collected by the survey of the membership. It is gratifying to know that at least one-half of the membership will take the time to respond to a survey about the organization. It is my opinion that this simple survey is just the beginning of the assessment of the activities of the organization. I hope that we can move to an assessment of needs of the membership and make progress on meeting those needs that are congruent with the mission of AVERA and most important to the membership. The conclusions that I drew from the results of the survey are:

- The response of the membership regarding how well the AVERA is doing in conducting the various activities listed was very positive. With the exception of two items concerning workshops on statistics and research methods, all items received a majority of the ratings in the agree/strongly agree category.
- Without exception the desired future status for all activities received a higher percentage of agree/strongly agree ratings than were given for the present status. It seems that, although the organization is rated favorably, there is still room for improvement.
- Some individual respondents rated the present status higher on the agree scale than they rated the desired future status. These discrepancy scores rarely exceeded one scale point, however. It would thus seem that there is reason to look closely at the activities and question whether the organization should do the activities in the future.
- With the number of new members that we have and the favorable response that was given for conducting workshops in such topics as statistics, research methods, and acquisition of grants, it seems advisable to consider the possibility of resuming these activities. To my knowledge these activities have not been done for many years. Some of us who have been members for a long time are also likely candidates for these activities.
- The time appears right to consider a change in the name of the organization. The item on the survey stated that a name change should be considered which does not lead me to conclude that the membership considers a name change to be imperative or necessarily advisable. Rather it seems important for the membership of the organization to weigh the alternatives.

Recommendations for the future

In preparing this presentation I have made some conclusions that are not necessarily based on sound evidence, i.e. more my opinion than fact perhaps. I will list a few.

- The data and literature gathered for this presentation suggest that change is essential to the health of organizations. The survey data gathered seem to indicate some possible changes. However, an extensive need assessment is recommended prior to making major changes in the organization.
- The membership should be provided the opportunity to be involved in as many aspects of the organizational life as possible. The executive committee and editorial board tend do the work themselves rather than delegate.
- An on going futures committee composed of a cross section of membership should be appointed and asked to think outside the box and make recommendations for change in the activities of the organization.
- A study should be conducted to determine the reasons for the drop in membership over the past year. It is obvious that I was not able to tap the reasons for this reduction. At this point I do not know whether this is a statement about the health of the organization or natural attrition due to retirement and the like.
- The fact that forty-four new members were attracted to the organization is indicative of the organizational health. I would recommend that we look carefully at the recruitment process as well as retention process that we are using and determine what we should do in the future to maintain a viable organization.
I have appreciated the opportunity to serve as the president of AVERA. I hope that the next millennium will start off with a new burst of energy and that we are able to make a difference in the preparation of the workforce for the nation.

References

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The explanatory style of 219 secondary vocational teachers in Georgia was determined using the Attributional Style Questionnaire (M.E.P. Seligman, 1984). Teachers had similar explanatory styles based on gender; they had an optimistic style. Based on years of teaching experience, teachers who had taught between 11 and 20 years were more optimistic on negative events and all events than teachers who had taught 21 years and longer.

The education reform movement of the 1980s was primarily directed toward improving the academic skills of college-bound students; little attention was given to strengthening academic skills of those students who were not college-bound. However, during recent years, politicians and business leaders have recognized and acknowledged the need to better prepare students for the workplace (Smith & Edmunds, 1998). The Carl D. Perkins Vocational and Applied Technology Education Act of 1998 and the School-to-Work Opportunities Act of 1994 are examples of national reports that have promoted an urgency in preparing students for the workplace.

The Carl D. Perkins Vocational Education Act, first established in 1984, focused on improving vocational programs and serving special populations--such as the underemployed, unemployed, and disadvantaged. The law was reauthorized in 1990 as the Carl D. Perkins Vocational and Applied Technology Education Act (American Vocational Association, 1993), and again in 1998 as the Carl D. Perkins Vocational-Technical Education Act (Hettinger, 1999). The most recent law, Perkins Act 1998, is expected to give states and local districts greater flexibility to develop programs while making them more accountable for student performance.

Additionally, such federal legislation as the School-to-Work Opportunities Act of 1994 (STWOA) has been designed to assist educators in preparing students to be able to respond better to workplace needs. Originally focused on youth apprenticeship, the legislation has evolved into a much more comprehensive area: school-to-work transitions. The recently enacted STWOA stimulated more significant collaboration between education and employers to help prepare a high skilled workforce (Scott & Sarkees-Wircenski, 1996).

Although legislation has been passed and funds allocated for work-based programs, implementation has to be orchestrated and executed by knowledgeable professionals. Since one characteristic of secondary vocational education programs is preparation for the workplace, implementation of work-based initiatives is likely to be the responsibility of vocational teachers. However, the success of such work-based programs is linked to the perspective of the vocational teacher toward change and adaptability. According to Pellatiro (1989), American vocational-technical schools need teachers who exhibit positive professional attitudes. A positive attitude is generally conceived as a state of readiness to respond effectively in challenging situations. Organizing and managing work-based initiatives and programs may prove to be challenging for vocational teachers. How vocational teachers view new and different programs may be detected through explanatory style, a descriptive term used for the manner in which individuals habitually explain to themselves why life events occur as they do (Seligman, 1990).

Explanatory style has been used extensively in psychological research to predict depression (Hjelle, Busch, & Warren, 1996; Peterson & Seligman, 1984; Seligman, 1990). The explanatory style theory offers a framework for examining optimism and pessimism (Seligman, 1990) and is a construct that emerged from the concept of learned helplessness. Explanatory style is a descriptive
term used to explain variations in people's response to uncontrollable events; it reflects individual differences along three dimensions in how people habitually explain good and bad events they encounter in life. The first dimension is the extent that explanations are internal “It's I” versus external “It's someone else.” The second dimension contrasts stable “It's going to last forever” versus unstable “It's short lived” elements. The third is the global “It affects everything that happens to me” versus the specific “It's only going to affect this” dimension (Gottschalk, 1996; Peterson, Buchanan, & Seligman, 1995). According to Seligman (1990), individuals who give internal, stable, and global explanations for bad events are more prone to have a pessimistic explanatory style, whereas individuals who explain bad events in terms of external, unstable, and specific causes have an optimistic explanatory style.

Seligman (1990) distinguished the beliefs of optimists and pessimists to illustrate their opposing perspectives on difficult life events. Optimists believe that defeat is a temporary, situational setback that is not their fault. Pessimists believe that bad events are long-lasting, potentially undermining large portions of their lives, and likely to be their fault. The differing beliefs that distinguish optimists and pessimists have a direct impact upon their abilities to take actions in difficult situations.

According to some researchers, (Fry & Hibler, 1993; Moss & Johansen, 1991), optimism is described as an ability to consider challenging situations as opportunities rather than perceiving challenging situations as threatening, insurmountable tasks. Thus, whether vocational teachers view work-based education reform and initiatives as opportunities or threats may be understood using the explanatory style construct. Initially, we hypothesized that vocational teachers who adjust readily to change are needed to initiate these initiatives and work-based programs. Explanatory style has attracted research interest in recent years (Hjelle, et al., 1996; Peterson & Seligman, 1984; Phelps & Waskel, 1994; Seligman, 1990) and guided our research. The relevant studies we reviewed pertain primarily to psychology and explanatory style.

Findings from Burns and Seligman (1989) showed that explanatory style toward negative events were stable across adult life. On the other hand, explanatory style for positive events demonstrated no stability across the adult life span. They concluded that if explanatory style for negative events was a stable aspect of adult life functioning, then individuals with a dysfunctional explanatory style might be at an increased risk for depression, poor health, and low achievement throughout their lives. Likewise, Seligman and Elder (1986) found stability of explanatory style for negative events but no stability of explanatory style for positive events.

Findings were congruent from Greenberger and McLaughlin (1998) and Bunce and Peterson (1997) studies investigating gender differences. Greenberger and McLaughlin (1998) explored sex differences in attachment, coping and explanatory style. They found that females did not differ from males in explanatory style. Similarly, Bunce and Peterson (1997) found no mean differences between men and women on any dimension of the Attributional Style Questionnaire (ASQ) for either positive or negative events.

In an attempt to establish norms for the Optimism-Pessimism scale of the Minnesota Multiphasic Personality Inventory, 691 girls and 624 boys who ranged in age from 13-17 years were used. Results revealed that boys reported significantly more optimism than girls. On negative events, girls reported significantly more pessimism than boys. Additionally, for positive events and age groups, scores among the age groups (13, 14, 15, 16 and 17) were significantly different, with 16-year-olds reporting the least optimism. For negative events, scores among the age groups were significantly different; again, 16-year-old showed the most pessimism. The age and sex interaction was not significant for either positive events or negative events, meaning that the sex differences were consistent across ages (Malinchoc, Colligan, & Offord, 1996). In conflict with Malinchoc et al. was Nolen-Hoeksema, Gingus, and Seligman’s (1991) study, that found boys constantly showed more depressive symptoms and maladaptive explanatory styles than girls at an early age.

Phelps and Waskel's (1994) study with women 40 to 75 years old attempted to determine whether a significant relationship existed between explanatory style and specific work reinforcers. Their results revealed a weak but significant relationship between explanatory style and ability utilization, activity, and creativity. The authors concluded that individuals with a depressive explanatory style, experience less job satisfaction in the areas studied.
The explanatory style thesis is a new phenomenon in education; consequently, little is known about the explanatory style of teachers. Hall and Smith (1999) started the discourse on the explanatory style of teachers with a study on vocational teachers and found they possessed an optimistic explanatory style. Vocational teachers were similar on positive events (CoPos), but different on negative events (CoNeg) and all events (CPCN). On negative events, business and marketing teachers were more optimistic than trade and industrial teachers, family and consumer sciences and marketing teachers were more optimistic than agricultural teachers. On all events, business teachers were the most optimistic of the six program areas investigated.

Conclusions from the studies we reviewed are drawn. There was no gender difference reported for explanatory style when participants were adults. However, there was a difference when participants were younger. Adolescent boys were more optimistic than girls. Interestingly, women with a pessimistic explanatory style experienced less job satisfaction. The one study concerning explanatory style of teachers (Hall & Smith, 1999) theorized that gender and years of teaching experience might affect explanatory style.

Therefore, we attempted to determine the effect of gender and years of teaching experience on explanatory style (optimism or pessimism) of secondary vocational teachers. Objectives of the study were to determine the explanatory style of secondary vocational teachers based on gender and positive events (CoPos)—how positively/optimistically one reacts to good events, negative events (CoNeg)—how positively/optimistically one reacts to bad events, and all events (CPCN)—how positively/optimistically one reacts to all events. We were also interested in determining if differences existed on gender and positive events, negative events, and all events. Finally, we examined possible differences based on years of teaching experience and positive events, negative events, and all events.

**Method**

The population of secondary vocational teachers in Georgia was used to achieve the sample. Names and addresses of 3,746 vocational teachers were obtained from the Georgia Department of Education. Based on Krejcie and Morgan (1970), the number of participants for a simple random sample was established at 351. For descriptive research, using the largest sample possible is recommended especially if the expected difference between groups is small; this difference might not show up if the samples are too small (Gay, 1987; Gall, Borg, & Gall, 1996). According to Fraenkel and Wallen (1990), the larger the sample, the more likely it is to represent the population from which it comes. The sample size was doubled since we anticipated that vocational teachers share some similarities and that differences between groups might be small. The actual sample, therefore, included 703 possible participants. Two hundred and nineteen or 31% of potential participants responded, 36% male and 61% female. Participants had a range of 1 to 35 years of teaching experience. The complexities of the questionnaire, description provided in the ensuing paragraphs, increased the chances of a low response rate. However, according to Sudman (1976), there should be at least 100 subjects in a major subgroup and 20 to 50 in minor subgroups in order to generalize. The 219 participants in this study satisfied Sudman’s principle.

**Instrumentation**

The Attributional Style Questionnaire (ASQ) was developed by Peterson, Semmel, von Baeyer, Abramson, Metalsky & Seligman (1982) and revised by Seligman (1984). The ASQ was designed to determine style of thinking; pessimistic or optimistic. The self-reporting questionnaire contains 12 hypothetical situations: 6 negative events and 6 positive events. Six of the questions relate to interpersonal/affiliation and six are achievement-related. Participants are asked to imagine the event happening to them. There are four responses per situation. First, respondents are asked to provide a reason or cause for the situation. This response is not scored; but is used to prepare respondents. The second response deals with the internal or external dimension of explanation. The third response deals with stable or unstable dimension of explanatory style, and the fourth response is concerned with the global or specific dimension of explanatory style. Respondents indicate on a 7-point rating scale, 1=completely external/completely unstable/completely specific to 7=completely internal/completely stable/completely global, the degree to which the cause of each situation was internal or external, stable or unstable, and global or
specific with each dimension being rated separately. On the rating scale, positive situations range from a high of 7 to a low of 1, whereas negative situations range from a high of 1 to a low of 7.

Reported reliability for ASQ subscales (internal/external, stable/unstable, and global/specific) range from .39 to .64 which are unsatisfactory. However, when composite scores are formed (CoPos, CoNeg, CPCN) substantially higher and satisfactory levels of internal consistency are found (Reivich, 1995). Composite measures have reported reliabilities of .69 and .73 for positive and negative scores, respectively. One study reported reliabilities of .72 for CoPos and .75 for CoNeg (Peterson et al., 1982). For our study, reliabilities on the composite scores of .64 (CoPos), .61 (CoNeg), and .76 (CPCN) were calculated.

The three attributional dimensions (internal, stable, and global) rating scales associated with each event description are scored in the directions of increasing internality, stability, and globality. The scales are anchored so that external, unstable, and specific attributions receive lower scores (optimistic), and internal, stable, and global attributions receive higher scores (pessimistic). So on the negative dimension, low scores are more optimistic and high scores are more pessimistic, while on the positive dimension low scores are more pessimistic and high scores are more optimistic.

For the positive events, Composite Positive Attributional Style (CoPos), the total of all positive situations scores are summed and divided by the total number of positive situations. For example, the best score is 7 multiplied by 3 questions per situations multiplied by 6 situations then divided by 6 positive situations equals 21. The worst score is 1 multiplied by 3 questions per situations multiplied by 6 situations then divided by 6 positive situations equals 3. The range of scores is from 3 to 21. This score reflects how positively or optimistically one reacts to good events.

For negative events, Composite Negative Attributional Style (CoNeg), the total of all negative situations scores are summed and divided by the total number of negative situations. For example, the best score is 1 multiplied by 3 questions per situations multiplied by 6 situations then divided by 6 negative situations equals 3. The worst score is 7 multiplied by 3 questions per situations multiplied by 6 situations then divided by 6 negative situations equals 21. The range of scores is 3 to 21. This score reflects how positively or optimistically one reacts to bad events.

For all events, Composite Positive minus Composite Negative (CPCN), is computed by subtracting the lowest scores 3 (lowest CoPos) - 21 (lowest CoNeg) = -18 and the highest scores 21 (highest CoPos) - 3 (highest CoNeg) = 18. The negative score (-18) is less optimistic (pessimistic) whereas the positive score (18) is most optimistic. Therefore, the range of scores for CPCN is -18 to 18. This score reflects how positively or optimistically one reacts to all events- a measure of overall explanatory style, optimism or pessimism.

Procedures
The data were collected using a mailed questionnaire developed by Seligman (1984) entitled The Attributional Style Questionnaire. A cover letter and questionnaire were mailed to 703 secondary vocational teachers in Georgia. The questionnaire packet included a pre-addressed, stamped return envelope. According to Dillman (1978), a follow-up postcard should be sent in approximately 14 days, and so two weeks later a postcard was mailed to 599 participants reminding them to complete the survey. Two weeks later a second questionnaire was mailed to participants who had still not responded.

According to Miller and Smith (1983), comparing early respondents with late respondents will allow one to estimate the representativeness of late respondents to non-respondents. So as questionnaires were received, dates were recorded. After data collection ended, a t-test was used to compare early and late respondents on positive events, negative events, and all events to determine if they were different. Results revealed no statistically significant difference between early and late respondents. With the assumption that late respondents are more typical of non-respondents, generalizing from respondents to the population was warranted.

Findings
In order to determine the effect of gender and years of teaching experience on explanatory style of vocational teachers, means, standard deviations, t-tests, and the planned comparisons approach were used.
Gender

Based on mean scores that ranged from 2.46 to 15.55 (see Table 1), both males and females had an optimistic explanatory style. A t-test revealed no statistically significant differences between males and females on positive events, negative events, and all events. Therefore, it appears that male and female vocational teachers have similar explanatory styles toward negative events, good events, and all events.

TABLE 1
Composite Scores of Explanatory Style based on Gender and Years of Teaching Experience

<table>
<thead>
<tr>
<th>Variables</th>
<th>COPOS</th>
<th>CONEG</th>
<th>CPCN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>75</td>
<td>15.51</td>
<td>2.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>13.04</td>
<td>2.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.46</td>
<td>2.4</td>
</tr>
<tr>
<td>Female</td>
<td>127</td>
<td>15.55</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12.13</td>
<td>2.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.48</td>
<td>2.6</td>
</tr>
<tr>
<td>Missing</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>210</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Teaching Experience

Teachers varied in their years of teaching experience. Three teachers reported 1 year of experience while another reported 35 years of teaching experience. In order to understand better the effect of teachers in various stages of their careers, teachers were sub-grouped according to number of years of teaching experience. This grouping yielded the following categories of teachers: 1-10, 11-20, 21 and over. On the Certified Personnel Data section of the Georgia Public Education Report Card, teachers are grouped in ten-year increments for years of experience (Georgia Department of Education, 1998). Teachers in this study were divided accordingly to stay with this categorization. In our study, there were only four participants with more than 30 years of teaching experience, therefore, they were included in the 21 and over group of teachers.

On years of teaching experience, frequencies were disproportionately distributed among three groups (see Table 1). The years, 11-20 received the highest number of tallies while the second highest category was 1-10 years. The lowest count was reported for the 21 years and over period.

The planned comparisons approach was used to determine if teacher groups were different on years of teaching experience and positive events (CoPos), negative events (CoNeg), and all events (CPCN). Rather than testing whether several populations have identical means, the planned comparisons approach determines whether one population mean differs from a second population mean or whether the mean of one set of populations differ from the mean of a different set of populations (Olejnik & Hess, 1997). Analysis indicated no significant difference in positive events and any teacher group. However, a significant difference was noted on negative events ($M = 12.93$, $SD = 2.5$), $t(132) = 2.04$, $p = .04$) and all events ($M = 2.60$, $SD = 2.5$), $t(127) = -2.19$, $p = .03$). The significant difference occurred on negative events (CoNeg) and all events (CPCN) between teachers who had taught 11 to 20 years and teachers who had taught 21 or more years. Teachers who had taught 11 to 20 years viewed negative events and all events more positively than teachers in the more experienced group.

Discussion and Implications

Three major findings emerged from our study. First, teachers in our study, regardless of gender, had an optimistic explanatory style. An optimistic explanatory style is characterized by attributing
negative events to external (someone else), unstable (short-lived), and specific (not pervasive) causes rather than internal, stable, and global causes.

Second, gender had no significant effect on explanatory style as indicated by means on positive events (CoPos), negative events (CoNeg), and all events (CPCN). That is, males and females were alike in regard to pessimism and optimism. Our results are congruent with findings from studies conducted by Bunce and Peterson (1997) and Greenberger and McLaughlin (1998) who found no mean differences between males and females for either positive events or negative events. However, our findings differed from Nolen-Hoeksema et al., (1991) who found that boys showed a more maladaptive (negative) explanatory style than girls. Our findings also varied from Malinchoc et al., (1996) who found girls exhibited a more pessimism explanatory style than boys.

Third, teachers were different with respect to years of teaching experience on negative events and all events. Teachers with 11 to 20 years of teaching experience were more optimistic toward negative events and all events than teachers with 21 or more years of teaching experience. This result did not support the findings of others (Burns & Seligman, 1989; Seligman & Elder, 1986) who determined that explanatory style for negative events seem to be stable across life span; individuals who were pessimistic about negative events were pessimistic throughout their lifetime.

According to the explanatory style thesis, the difference between an optimist and a pessimist will determine how difficult situations are handled. The task of implementing, evaluating, and revising work-based programs and other legislative mandates such as The Carl D. Perkins Vocational-Technical Education Act of 1998 and the School-to-Work Opportunities Act of 1994 can be challenging and demanding. However, based on the results of this study, secondary vocational teachers in Georgia, regardless of gender, are optimistic and will view new initiatives as a challenge rather than a threat. We believe that these teachers will adjust well to change and are inclined to try new programs and change curricular to meet the demands of legislation and the workforce.

Concerning the difference in teachers based on years of teaching experience, we hypothesize that after 10 years of teaching, teachers have matured in their careers and will embrace change more readily. We propose that after so many years in the profession, these teachers have experienced some systematic educational reforms and are more positive and accepting of such changes. These teachers also feel less discomfort in implementing change. We also theorize that during this point in a person’s career, one is most enthusiastic, initiating, and ambitious about the profession. However, after 20 or more years of teaching, some educators are grounded in their beliefs and feel threatened by change. Based on the results of this study, we strongly recommend that teachers who have more than 10, but less than 21 years of teaching experience be pursued to initiate new programs and take a leadership role in implementing curricular changes.

Generally, in an educational environment where greater attention is given to required courses and preparation for post-high school education rather than vocational programs, these findings should support and enhance the discussion and decision making process concerning curricular changes and new mandated programs. Specifically, the optimistic disposition of vocational teachers ensures the likelihood of new programs experiencing some degree of success. Additionally, the potential for students in these work-based programs being more successful in making the transition from school to work is increased; this is achieved through modeling of behavior by vocational teachers who are optimistic.

Based on the results of this study, it is anticipated that vocational teachers will approach challenges presented by changing conditions in education in general and in vocational education specifically, optimistically.

References


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From Vocational Education and Training to Work: Representations from Two Occupational Areas

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Abstract

In this longitudinal and qualitative analysis, the experiences of vocational education and training students were examined as they transitioned from secondary school to work. The study was based on 107 interviews with 28 women in Secretarial Studies and 111 interviews with 29 men in Machining Technics. Following a discussion of the family and peer influences on students’ professional orientation, the evolution of subjects’ representations of their occupation and the workplace was examined, from the beginning of their studies, through the mid-point, to the time of completion. Their professional situation one year after graduation was then probed. Through testimonials, the students’ experiences were interpreted with respect to workplace relations, working conditions, learnings achieved, and professional aspirations. Differences and similarities between the subjects’ perceptions and realities experienced during and one year out of school are described.

The study of school-to-work transitioning by vocational high school students is contextualized by the evolution of the labor market and accompanying transformations in vocational education and training. An overview of the evolutionary characteristics of vocational education and training in Quebec and the main theoretical elements of the research served to situate my analysis of the participants’ work experience; methodological details offer insight into the nature of the research itself. Once I have outlined the students’ socio-professional characteristics and presented a description of the family and peer influences that may have affected their professional direction, the evolution of their representations over the course of their studies is examined. I then turn to their professional situation one year after leaving school and describe their appreciation of their work with respect to professional relations, working conditions, interest in the job, learnings achieved and career. Next, I compare the students’ representations during their studies with their perceptions and experiences one year after leaving school, teasing out the similarities and differences between the two periods. Finally, the limits of this study, as well as potential implications for orienting students and preparing them for the labor market, are detailed.

Theoretical Framework

The past decades have been marked by a growing concern over the quality of workforce training with respect to labor market demands (Appelbaum & Batt, 1994; Carnevale, 1991; Conseil économique du Canada, 1992; Ministère de l’Education, 1993). This preoccupation has led to educational reforms designed to promote a sharing of agendas by industry and education, and to facilitate the transition from school to work. In Quebec, growing pressure from industry prompted the Minister of Education to implement vocational education and training reforms (Ministère de l’Education, 1987), whereby industry and education representatives worked in tandem to revise the content of vocational curricula and methods of evaluating learning. These reforms were accompanied by an increased requirement of one to two years of high school education prior to vocational education and training. Introducing theoretical elements into vocational curricula was intended to promote the development of such skills as problem solving, as well as the integration of youths and adults in the same classes. Ten years later, a new Action Plan (Ministère de l’Education, 1997) has furthered the previous reforms by contributing to increased collaboration among education and industry partners, and by diversifying vocational education and training models. These reforms have been characterized mainly by curriculum changes intended to respond to employers’ requirements for higher-quality labor. Furthermore, recent interviews with employer representatives demonstrate their satisfaction with respect to vocational education and training graduates (Hardy & Parent, 1999a; 1999b). The reforms also aimed to better inform students as to the nature of the
workplace through the integration of a company-based internship in all vocational education and training programs, and to facilitate the school-to-work transition. However, while this latter aspect prioritized employers’ needs, it largely failed to take into consideration students’ experiences in transitioning to work.

The transition from school to work is another focus of studies reflecting this growing social concern, as seen in works by Canadian (Anisef & Axelrod, 1993; Crysdale & Harry, 1994; Hardy, Trottier, Carrier & Bouchard, 1989), American, (Klerman & Karoly, 1995; Lakes & Borman, 1994) and European authors respectively, (Adamski & Grootings, 1989; Banks et al., 1992; Bates & Riseborough, 1993; Tanguy, 1986). The work of Adamski & Grootings (1989) and that of Tanguy (1986) attempt a theoretical reflection on the school’s role in preparing youth for work. These authors have assembled around them a group of sociologists, psychologists and economists who wish to contribute to the development of closer ties between education and the workplace. Elsewhere, Anisef & Axelrod (1993), Banks et al. (1992), Bates & Riseborough (1993), Crysdale & Harry (1994) and Hardy et al. (1989), as well as Lakes & Borman (1994), emphasize the challenges and obstacles to youths’ entry to the labor market. Their analyses cast light on inequalities among youth, chiefly attributable to social class, gender and ethnicity. Their studies have largely concentrated on high school graduates. The conclusions of Anisef & Axelrod (1993), Klerman & Koraly (1995) and Hardy et al. (1989) are based on quantitative and longitudinal data reconstructing the process of integration into the labor market during the first years after leaving school, whereas the studies by Banks et al. (1992), Bates & Riseborough (1993), Crysdale & Harry (1994) and Lakes & Borman (1994) adopted an ethnographic approach and conducted qualitative analyses of interviews with students. These latter analyses have guided our own research efforts, especially so in the case of Banks et al. (1992), who studied 16-19-year-old students in England.

In this study, priority was given to the experiences of students’ transitioning from school to work. This transition can be affected by the instability of employment, as well as by the chronic under-employment which primarily affects younger and less qualified individuals, as highlighted by Gauthier (1994) in Quebec and by Klerman and Karoly (1995) in the United States. I began by examining students’ representations of the vocation they were preparing to perform, as well as their perceptions, during their studies, of the labor market that awaited them. I then turned to the conditions under which these students entered the workforce. What gaps, if any, existed between their perceptions of the occupation they were studying and their subsequent professional experience? Were they working in their field of specialty? Did the professional integration they experienced meet their expectations? In the spirit of the aforementioned studies, these questions are aimed towards comprehending the school-to-work transition of vocational education and training students. They fall within the framework of the following question: How do vocational high school students experience vocational education and training and the transition from school to work?

To answer these questions, I opted for a longitudinal study that would follow the students from the beginning of their studies until the end of their first year following graduation. Unlike the aforementioned longitudinal studies which adopted a quantitative methodology, I favored a qualitative methodology, in order to identify the difficulties encountered by students during their vocational studies and the first years after leaving school. This qualitative approach considered the students’ representations during their studies as to the anticipated characteristics of their future workplace and, subsequently, their appreciation of their situation one year after obtaining their diploma. I drew on the work of Moscovici (1993) — wherein the system of notions and images is associated within a greater or lesser, yet coherent network and is constructed through a process of social interactions — to analyze the representations of students who had already been studied in a school environment (Hardy, Grossmann, & Mingant, 1997).

This study of students’ representations is also indebted to the work of Gilly (1993), who developed an analysis of social representations in the educational field, focusing on the meaning that students attach to educational situations and school activities. Gilly emphasized “that students do not approach learning material with an empty spirit, devoid of content, but rather with a full collection of prior or naïve representations, themselves rooted in the beliefs, customs and practices of their living environment ”p. 381. Students thus interpret the various levels of meaning (short, medium- and long-term) of proposed teachings, by drawing on the more general representational systems of
schooling and educational purpose that characterize diverse social and family environments. Since I focused on transition from school to work, I factored in the representational systems of the vocation and the workplace. Such an interpretation of students’ representations facilitates our understanding of what occurs during the course of studies from the point of view of the learnings imparted and the psychosocial mechanisms employed in their transfer. It also helps us delve into the experience of students’ first year in the workforce.

**Methodology**

**Participants**

Following the example of the ethnographic-type studies of Banks et al. (1992) and other authors mentioned above, I opted for a qualitative approach based on interviews with students. In the vein of Glaser and Strauss (1967), theoretical criteria were used to select the groups for study. The choice of student groups was based on four theoretical criteria applied to vocational curricula: (a) preparing for occupations subject to technological change; (b) significant proportion of theoretical teaching content; (c) potential for graduates to find work in their chosen specialty; and (d) attracting both a male and female clientele. To satisfy this final criterion while responding to the first two, I had to choose different profiles for the men and women. Programs that attract a mixed student body, such as Sales and Catering, were not taken into consideration because of the lesser proportion of theoretical knowledge in their curricula. The Secretarial and Machining Technics programs were selected accordingly. The choice of these two occupational areas facilitated a study of sectors exposed to technological change in two very different spheres of the labor market. The secretarial field primarily attracts women and allows for an examination of business occupations. Conversely, machining technics is employed in traditionally male occupations where industrial working conditions may be observed. At the beginning of the research, I retained all the Secretarial and Machining Technics students enrolled in the Laval School Board’s Vocational Education and Training Center, as well as all the Machining Technics students enrolled in the Repentigny School Board’s Vocational Education and Training Center. These two centers are public schools serving a working- and middle-class population, situated in a suburb north of Montreal. At the outset of our research, our sample corresponded to the whole student population, which is to say 60 Secretarial students and 38 Machining Technics students. We selected a greater number of Secretarial students, as the number of failures and dropouts were much higher in Secretarial than in Machining Technics. Our sample was thus progressively reduced from 60 to 28 Secretarial students and from 38 to 29 Machining Technics. The students were questioned at school from September 1990 to May 1993, and were contacted after their studies in 1993 and 1994.

**Data Collection**

This longitudinal study covered the full duration of vocational studies and the subsequent year using four measuring points: the initial session, half way through the program, completion of studies, and one year after leaving school. Analysis corresponded to these four measures and included the 28 women and 29 men who participated in all the interviews during their vocational education and training. This number was subsequently reduced to 23 women and 24 men during the final collection period, owing to difficulties in reaching students after they had left school. The analysis was based on a total of 107 interviews with women taking secretarial studies and 111 interviews with men studying machining. All the interviews were semi-directed. Initial interviews probed social and family characteristics, academic and professional experiences, and family and peer influences on career direction. Interviews during all four collection periods also focused on students’ social representations of the chosen occupation, according to its anticipated or experienced workplace characteristics, social valorization and associated socioeconomic status and social mobility. Final interviews provided additional information on job seeking, experiences with employment and unemployment, and professional aspirations. Interviews that occurred during the first three phases were held at school, during class hours, by agreement with instructors. The majority of final phase interviews were conducted at the new employee’s workplace, with the consent of the employer or foreman. A few interviews were also carried out at the student’s residence or in a research facility at the university. All the interviews were recorded and their duration ranged from 45 to 90 minutes.
Analysis

All audio taped interviews were transcribed to computer media and subjected to a qualitative analysis. After developing and validating a codification grid for each series of interview, the text of each interview was double-coded under supervision. The coded interviews were processed using an Oracle application. The qualitative content analysis was thus able to highlight themes in examining the substance of students’ representations and experiences. I was careful to follow each student’s development by comparing viewpoints revealed successively during the four interviews. This longitudinal analysis allowed me to recognize similarities and differences between prevailing representations or experiences during the course of studies and those expressed a year after completing the vocational curriculum.

Findings

Socio-Professional Characteristics of Students

Fathers of both women and men (n=57) shared very similar occupational and educational levels. A majority of fathers (n=40) were blue-collar or white-collar workers and had not acquired a post secondary education (n=44). Fathers of the women were somewhat more likely to have earned a high-school diploma (n=11), whereas fathers of the men (n=12) were more likely to have pursued vocational education. Mothers either had educational levels or held occupations similar to those of the fathers, or were housewives. The concentration of women in secretarial studies and of men in Machining Technics was the result of a gender-based polarization of career choice that affects working-class students in particular. This supports the conclusions of Valli (1986) about the importance of gender identification in student counseling.

The average age of the secretarial students was 27.7 years, and ranged from 17 to 49 years. They could be divided into two almost equal age groups: 17 to 22 years (n=13), and 22 to 49 years (n=15). The Machining Technics students ranged from 16 to 21 years, and averaged 18.2 years of age. Four-fifths of the women were aged 22 years or less (n=11) and all of the men had no children and tended to live with their parents (n=26). Almost half of the women (n=13) had one or more children. A great majority of these mothers (n=11) were over 22 years and many (n=7) were single parents. The educational profile of secretarial students was similar, regardless of age. The majority of secretarial students (n=16) held a high school diploma and half of them (n=12) chose secretarial studies after interrupting their collegiate studies. By contrast, the vast majority of men (n=23) in Machining Technics identified a career in Machining Technics as their first choice and actually began their studies without having completed all the requirements for a high-school diploma (n=21).

Studying the students’ occupational paths revealed three routes. The first applied to ten secretarial students aged 22 years or under, and all of the students in Machining Technics (n=29). This group worked part-time while in school, or full-time during the summer months. The second avenue was shared by 5 women in secretarial studies who had had some experience in the labor market outside of their vocational curriculum, during which time they received unemployment or social welfare benefits for less than a year. A third path characterized older women (n=12) with a varied occupational history. They had lived on social assistance for over two and a half years. All of the students’ employment was unstable and demanded few qualifications; seven secretarial students were employed in occupations related to their chosen field. Most of the students in secretarial studies had followed a complicated academic and occupational path, first attending college, only to return to high school (n=12) or turning to unstable employment and social assistance (n=12). The other secretarial students and those in Machining Technics had experienced a smoother route from academic to vocational education. Despite these differences, all students hoped to improve their chances of integrating into the workforce and enhance their socio-professional status by pursuing or returning to occupational studies.

Family and Peer Influences and Professional Orientation

The presence of professional role models in family and peer groups, as well as the reactions of family members to students’ choices, may have influenced students’ professional direction. The machinists and younger secretaries benefited from the presence of professional role models. Nearly all the younger secretaries (n=12) reported having at least one family member or friend either employed as a secretary or possessing a diploma in secretarial studies. Similarly, a majority of
machinists (n=18) had a father or another family member working as a machinist, a mechanic, or a welder.

Comments attributed to family or peers revolved around going back to school, one’s choice of occupation, and level of professional accreditation. Students received generally positive comments about returning to school. For the younger secretaries and machinists, the emphasis was on the importance of pursuing one’s education. “As long as his daughter’s in school, he’s happy. The important thing for him is that I continue my education. He doesn’t want me to stop.” For older secretaries, returning to school represented a means of reintegrating into the workforce after a prolonged absence, or of ensuring a better professional future. “When I told her I was going to school, she (my mother) said, ‘Oh, I’m happy, you’ll have a good job.’ Because she didn’t like me being at home.” However, some of the older secretaries received comments characterizing their return to school as a waste of time, such as “You must have a lot of time on your hands, going back to school at 40.”

As for the choice of occupation, opinions expressed to the secretaries were universally negative. Their occupation was perceived as degrading and non-professional, or as offering inadequate pay and working conditions. “My sister thinks it’s a lowly job.” “Lots of people see secretarial work as a boring job. I don’t know, it’s weird, as though you were serving people all day, doing dull work, typing and taking orders.” Conversely, the machinists’ families and peers believed their occupation offered solid job prospects, a good salary and favorable working conditions. “Lots of people — friends and close relatives — told me I’d never be without work.” “Some of my friends say it’s a job that opens doors. It pays well.” Some of the machinists also received negative comments related to job openings, the physical environment, and salaries. Some machinists “complain all the time because the shop is too hot in the summer and too cold in the winter. Sometimes, the unions don’t treat you right and neither do the bosses. It doesn’t seem too well organized.” Several machinists felt that their occupation was misunderstood and that they constantly had to educate their family or friends about the nature of a machinist’s work.

Opinions about the level of accreditation were mixed. It was mainly the younger secretaries who received negative commentary. Their families and peer groups tended to perceive their diplomas as inadequate. “At the beginning, my family was always asking me why I didn’t go to college.” “There wasn’t a lot of enthusiasm… If you say you’re going to university and you’re going into this field or that field, that’s fine…” (It should be noted that twelve of these students had already begun college programs before turning to a vocational curriculum.) By contrast, few (n=3) of the machinists received disparaging comments about the value of their diplomas.

Students’ Representations of their Chosen Occupation

Secretarial and Machining Technics students’ representations of their chosen occupations arose out of their own responses to questions of opinion, as well as their friends’ and relatives’ opinions regarding the students’ chosen occupations. Analysis of the discussions was intended to bring out those aspects judged to be positive or negative in both occupations. The students described their representations of the work environment and social perceptions of their occupations.

Representations of the Work Environment

Secretarial and Machining Technics students expressed their perceptions of the work environment through reference to (a) characteristics of the workplace, (b) working conditions, and (c) labor relations with employers and the public or co-workers. At the beginning of their studies, secretarial students had a positive perception of the working conditions and human relationships likely to prevail in their future workplace, whereas from the mid-point until the end of their studies they became pessimistic. By contrast, Machining Technics students reacted as did Secretarial students with respect to their working conditions, but human relationships were of lesser concern.

Characteristics of the workplace

Students of both vocational profiles were interested in the geographic location of companies, and hoped to work in the Montreal area. Secretarial students were more restrictive in their interests and wanted jobs in the immediate area where they lived, close to their parents and friends. “Obviously, I live in Laval [close to Montreal], my family lives in Laval. I would like to work in Laval or Montreal. I don’t want to move.” At the mid-point and end of their studies, two out of three secretarial students hoped to work for a large communications company or a government
agency because of the social benefits and possibilities for promotion. “There’s always the possibility of being promoted in a big company. Everybody knows you can get promoted more easily.” Other secretaries preferred a small or medium-sized company where they could grow and enjoy friendly relationships with their colleagues. They therefore preferred to work in a law office or medical clinic. Conversely, the machinists preferred to work in a small or medium-sized company where the work was varied. “I want to work for a small machine shop [...] it’s more diversified and you learn a lot.” A third of the machinists wanted to work in the aerospace industry, which is highly developed in the Montreal area. Machining techincs students’ negative perceptions of big companies stems from a fear of being confined to mass production, which implies boredom and routine. “What would please me least is being on a production line[...]. They always make the same part, five days a week.”

Working conditions

At the beginning of their studies, Secretarial and Machining Technics students maintained very positive representations of their expected working conditions. Approximately half of the secretaries and 10 machinists were attracted by work environment, salary, and work schedule. According to Secretarial students, “It's a matter of being able to work at set hours and without too much pressure.” “But at least I’ll earn a better living. And besides, there are advantages as far as the hours.” A machinist offered the following, “You don't work outside during the winter. Also, your salary tends to be higher when the economy is growing rapidly.” “We can’t complain about the work areas. They’re supposed to be well ventilated and well lit.” By mid-program, more and more of the students could identify the negative aspects of working conditions, especially as regarded salary. Secretaries asserted, “This work is generally underpaid.” A typical machinist admitted, “I’m a bit skeptical – where salaries are concerned, people think too high, they haven’t been well informed.” The machinists also cited environmental noise and dirtiness. “When you work with cast iron, there's always dust [...] so for sure your lungs pick it all up. You're constantly working with oil, you're all dirty [...] you breathe oil.” Both groups of students deplored the stress and pressure, combined with the amount of work that could be assigned, and its scheduling. The secretaries declared, “It’s too stressful. Too much work for the salary. Employers are strict with their secretaries. You have to do everything all at once, without making mistakes.” The machinists echoed, “The disadvantage is that you always have to aim for perfection. It’s difficult because of the stress. The boss is behind you and you can’t botch the part, not even by a tiny bit.” The contrast between students’ comments at the beginning of their studies and after the mid-point was remarkable; it reflected a more realistic assessment as compared with initial expectations.

Human interaction

Only the Secretarial students were concerned with working relationships. At the beginning of their studies, they appreciated contact with the public. “Working with people, communicating — I like to have contact with people.” “Receiving clients; I like working with the customers.” During their studies, these students’ interest in developing relationships with the public was accompanied by an increasing interest in enjoying a positive relationship with the employer. They stressed the importance of an egalitarian relationship, based on respect for their competence and their willingness to assume responsibility. “Secretaries have more to do than in the past. They have more responsibilities. You’re your boss’ right hand.” At the same time, they were skeptical of the reality. “The worst part is the boss — it’s true that they’re sometimes very demanding.” “I wouldn’t want to work for an employer who always asks you to perform the same tasks without giving you any opportunity to take initiative.” These fears provided a counterpoint for the students’ positive expectations. The wistful perceptions they held at the beginning of their studies were later tinged with doubts concerning their relationship with a potential employer.

Social Perception of their Occupation

Students’ social perception of their occupation was defined, on one hand, by its general social quality — the personal development possibilities and societal prestige of secretarial or machining positions. On the other hand, their perception was defined by the socioeconomic status and mobility which they might expect from opportunities and promotions available in the labor market.

Social quality

Both Secretarial and Machining Technics students demonstrated increasing interest in the social quality of their occupation. By the end of their studies, this interest united the two groups. The
secretarial students were focused on acquiring core competencies — they were seeking sound education and training in preparation for secretarial positions. “The occupation requires a higher knowledge level. Secretarial jobs are more advanced now.” The Machining Technics students, for their part, emphasized the essential contribution of machinists to society. “If there were no machinists, we’d be unable to enjoy a lot of things — cars, for example — anything that has been manufactured has been machined [...] the telephone was made from a mold, and that mold was created by a machinist [...] What about doctors? How is their equipment manufactured? The scalpel was created by a machinist.” On the other hand, when the secretarial students noted the disadvantages of their occupation, they bemoaned the persistence of negative opinions and stereotypes. “It’s not recognized because people have no idea about secretarial work, about what goes on in an office. Secretarial school is always the last option. The occupation is too closely identified with women.” Similarly, many Machining Technics students considered that the occupation of machinist was often poorly understood. “They don’t exactly know what your work means — you have to explain it: that once the blueprint’s done, someone has to produce the part accordingly, and that you operate the machine that produces the part. Sometimes they get lost and don’t understand, even after you’ve explained it.” The Machining Technics students noted, however, that after repeated explanations, social (mis)representations could change. “Most people now have a good idea of the machinist’s job. Some say it requires thinking all the time while you work.” Even if the Secretarial students felt valorized in their chosen occupational field, they were nonetheless all aware of the various depreciatory perceptions held by society. In the end, the Machining Technics students attested to a better understanding on the part of their friends and relatives.

Socioeconomic situation and social mobility

Students in both occupational groups referred only to the positive aspects of their socioeconomic situation and social mobility, ignoring any discourse about recessions or lack of employment. They considered their occupation valuable by virtue of the numerous and varied employment opportunities available. As one secretary opined, “there are a lot of opportunities in the secretarial field, so your chances of finding a job fast are good.” In the words of a machinist, “It’s a good trade and there are lots of job openings — because it’s an occupation that has a future that’ll last forever.” The majority of both groups believed that, given a chance, they would be able to develop their skills and climb the company ladder through their own effort and through complementary training. One secretary stated, “There’s a lot of opportunity for promotion [...] my wish isn’t to be just a secretary. I’d like to take a stenography course, so I could work for the court, as a more professional secretary.” A machinist offered, “what I find interesting is the possibility for advancement, the opportunities to learn and keep yourself in shape mentally.” The older secretarial students, however, emphasized stability. “I often say I’m afraid because nowadays jobs are so hard to find. But when it comes right down to it, they can’t do away with secretaries.” As for those who attended college, they considered secretarial work as a springboard to a different career. “I don't want to be a secretary all my life, I want to charge in and go further in life.” The machinists believed that continuous professional development would eventually allow them to become self-employed workers and start their own businesses.

Professional Situation One Year after Completing Studies

I first present the professional situation of all the graduates we interviewed, then we describe in greater detail the role and initiation process of those who are working in their own field.

Graduates’ Professional Situation

One year after completing their studies, 23 Secretarial and 24 Machining Technics graduates were contacted. Fifteen former Secretarial students were employed, six were unemployed and two were pursuing their studies — one in college and the other at university. As for the Machining Technics graduates, 15 were working, two were unemployed, and the other seven had returned to school. A majority of them (n=5) had specialized in tooling or numerical control machining, or had decided to extend their vocational education by studying industrial mechanical maintenance; two had returned to college. Two-thirds of the secretaries (n=10) were still working in their first job, whereas another third (n=5) were working in a second job, after having left a temporary job unrelated to secretarial studies. Since completing their studies, three of the unemployed secretaries had not worked at all, and the other three had held one or two jobs lasting 5 months or less. About half of the
machinists had held one job (n=8); the others, two or more (n=7). Since they left school, all the
unemployed machinists had worked to some extent. Instability of employment was more in evidence
among the machinists, but more secretaries were out of the workforce. A majority of secretaries
(n=10) and machinists (n=14) found their first job during the first month after completing their
studies. Five secretaries and one machinist required two months or more to secure their first job. All
the secretaries (n=15) held a job related to their studies, whereas only nine machinists worked in the
occupation they had studied for. Six of their colleagues worked in handling, shipping, printing or
maintenance where no special training was required.

Working in Chosen Occupation and Initiation to Work

Working secretaries were employed by private lawyers, opticians or dentists (n=5), in the
fields of business or real estate (N=6), or by telecommunication companies or health and social
services agencies (n=4). Working on computers, using software, preparing documents, welcoming
customers, administering the mail and answering telephone calls were the most common duties. Some
also performed accounting functions. As for the machinists, nine worked for small companies or
machine shops. Their main duties involved turning, countersinking or precision grinding, using
conventional machines or numerical control machines. Some manufactured parts in limited quantity,
while others mass-produced. The initiation process for both secretaries and machinists was gradual
and informal. After the nature of the work had been explained, the initiation was conducted under the
supervision of experienced employees, who provided explanations as requested, while the new
employees went about their duties. A majority of the secretaries (n=11) and all machinists (n=9)
benefited from supervised training lasting from a few days to three weeks. Moreover, some
machinists had the opportunity to work with a mentor, to whom they became an apprentice; this
type of training was longer in duration. In the main, the secretaries and machinists were satisfied with
their initiation, they appreciated the approach taken by their supervisors, and they emphasized the
importance of taking initiative for one’s training, and being resourceful. Only two secretaries
complained about pressure and intolerance from their supervisors.

Appreciation of the Work Situation

I examined the assessments made by the secretaries and machinists of their jobs, with respect
to working conditions and relationships, as well as their own interest in and appreciation for their
work, in comparison with prior representations. I then considered the learning they had achieved
and their professional aspirations.

Work Relationships

The secretaries and machinists appreciated their relationships with their supervisors, citing
good communication, respect, honesty, adaptability, a sense of humor and patience. Secretaries
stated, “It’s easy to communicate with him.” “She’s very accommodating — if you need something,
she’s always there to help and doesn’t stress you out.” One machinist offered, “Whenever I make a
mistake I’m always afraid to be told ‘we no longer need you’ — instead, he says: ‘how did this
mistake happen, do you know why? If you don’t know why, I think I do and I’ll tell you,’ and then
we talk.” The graduates appreciated hearing their supervisor’s opinion as to how they could improve
their skills and better fulfill their job requirements. They emphasized the importance of their
supervisor’s teaching abilities. Some complained about his or her character or poor communication
skills. Most judged their relationships with their colleagues to be very positive. Teamwork and
cooperation amongst co-workers were very important aspects for both the secretaries and the
machinists. Their definition of a pleasant working atmosphere was: communication, humor, reduced
competition, and minimal stress. One secretary specified, “What I find most stimulating is the fact
that we’re a team and that we complement each other. We all lend each other a hand. A machinist
admitted, “They’re very nice to me — seriously, you can ask them any question about work and
they’ll answer you [...] they’ll do anything to help you, they’re really wonderful.” Both the
secretaries and the machinists also appreciated the family atmosphere of their respective companies.
They regretted occasional instances of hypocrisy, indiscretion, or lack of cooperation on the part of
certain colleagues.

Working Conditions

Both secretaries and machinists complained about low salaries. By way of explanation, they
cited the economic situation and their own lack of experience. One machinist explained, “Sure, the
salaries are low, but it's the same everywhere.” A secretary asserted, “I’m waiting [...] I’m staying here to gain experience. Once I have some, I’ll go elsewhere.” The machinists worked from 40 to 50 hours per week, which they disparaged. “Well, the hours worked, together with the traveling, they make for long days [...] but you expect that, when you first start out — once you’ve been working a while, you have more spare time.” The secretaries particularly appreciated the flexibility of their work schedule, the advantage of living close to their work, their varied duties, and the lack of pressure. “Here, I come in and finish at the time I want [...] I’m responsible for everything, there’s nobody to tell me: ‘do this’ or ‘don’t do that’.” “I’m satisfied because it's close to home.” They negatively cited overwork resulting from bad planning or personnel shortages. “The boss dreams up a lot of projects without planning in advance — every day, practically, so at some point you end up having to work late or on weekends.” “I have a lot of work [...] since I’m really working for two.” The machinists especially noted certain unpleasant aspects of their work, as regarded their physical environment and the physical effort required of them. “Always working in the dust [...] the heat [...] creates a lot of discomfort — you’re not always working with the proper material.” “It's dirty work.”

**Interest in the Work**

In general, secretaries and machinists were interested in their respective work functions. While a minority of the secretaries (n=2) disliked working with the English versions of certain software programs, or had difficulty with spelling, and one machinist disliked working on machines with which they were not familiar and which they had to learn quickly, they were nonetheless aware that these difficulties were due to an insufficient mastery of required skills. The secretaries were proud of the quality of the work they had achieved, and appreciated having responsibilities. “The best thing is creating files daily. You start from scratch, all by yourself, and when it's finished, it's amazing. The company’s pleased [...] with the work you’ve done.” Machinists emphasized the pride associated with turning raw material into a part that adheres to very precise and strict standards. “It's great, you pick something raw and turn it into something truly impressive.” “When the part comes along, I produce it — I produce it successfully and then I’m proud of myself. I say to myself, ‘why were you afraid?’ ‘It’s passed inspection and now it’s gone.’” Both groups enjoyed diversified work. One secretary noted, “It’s not routine work — we never know what will happen from one day to the next.” A machinist added, “Well, it’s a small shop, you have to wear a lot of hats. You never see the same parts twice — that’s what’s so interesting.”

**Representation of the Work**

The majority of the secretaries (n=11) and machinists (n=5) noted that their work experience had done little to alter their prior perceptions of the occupation. Some had already had exposure to the occupation through family members, while others had developed their perceptions while studying. Those who admitted having modified their representation of the work emphasized the transition from theory to practice, real-life requirements, and the stress associated with the job. Some secretaries observed, “Working in an office is something else [...] You have to perform.” “You can’t make mistakes because of the serious consequences.” A machinist admitted, “Well, in school, there’s no stress, but here it's not the same. I guess I had an idea [...] but I never thought it would be this stressful.” With only a few exceptions, secretaries and machinists reaffirmed their choice of occupation and expressed continued interest in the work.

**Learning at Work**

The secretaries and machinists were satisfied and even enthusiastic as to the degree of learning they had accomplished during the first year of work. They felt it was essential to have a job in which they could acquire work experience and improve their chances of employment. The secretaries related their satisfaction to their feeling of work being well performed. “I’m fast enough not to fall behind, and the quality of my work is good.” They were conscious of the effect their learning had on their work, as well as of their adaptability to their workplace. “What I’ve learned has helped me to perform better in my workplace.” “I’m doing a good job, and that gets noticed, so that's fine.” Moreover, the secretaries had developed skills to fulfill a full range of occupational tasks; they felt at ease in their role. The machinists related their satisfaction mainly to improved knowledge and expertise. “Yes, because there, the parts are produced on time, with adequate precision. I’m aware that I make mistakes but, most of the time, I get the job done on time.” They were proud of the efficiency and precision they had developed, and of the experience they had.
acquired in the machinist's occupation. “Every day, I acquire more experience. If I left my job tomorrow to go and work somewhere else, it wouldn’t be the same as when I started here; I didn’t know anything and I had trouble. Now, I have a good base. Every day, I learn something new.” Thus, they felt the learning they acquired would eventually allow them to search for another job and overcome the lack of experience with which they were so often forced to contend.

**Professional Aspirations**

When it comes to the desired focus of their work, secretaries cited computer-related work, while machinists felt they would like to advance in numerical control or a closely related field such as tooling and mechanics. The secretaries hoped to “do a little bit of everything, work with different kinds of software.” “I’d like a job with […] more computer work.” Similarly, the machinists reflected “I always wanted to be in numerical control […] the machine is closed off […] there’s no dust. You just do your work.” “I’d like to be a toolmaker in a good company or, maybe later, self-employed.”

The secretaries and machinists hoped to advance professionally, acquire more responsibilities and secure an increased salary. The secretaries looked ahead “To get another job […] become a #6 clerk — right now I’m a #5 clerk.” “I’m giving myself 3 months and then I’ll get promoted. It's because I get involved and my bosses are happy with my work.” The machinists added “Well, maybe not right now because I just had an increase, but possibly next year, my wage will go up another dollar or two.” “I’m going to ask for a raise — this is no good.” As for future training, secretaries emphasized the importance of acquiring better English language and computer skills, in order to become more flexible. “I plan to take English classes […] to improve myself […] You have to develop at the same speed as the software.” The same was also true for machinists, who were considering taking additional specialization classes. “In September, I’ll register in an evening class in numerical control — computer design and numerical control seems like a good combination.” “I’d like to purchase the company — I’m interested in taking courses on business management, accounting, stuff like that. It could help me.” Nearly half of the younger secretaries intended to pursue studies at college or university. “Take an accounting class to qualify for something better at university or college.” “Not do the same thing all my life.” “I could increase my knowledge in something else […] I’d like to become a businesswoman.” The secretaries noted that their vocational studies provided them with an opportunity to begin earning a living quickly, thereby freeing them up to pursue further studies or prepare for another career. The machinists were equally aware of the need to constantly increase their knowledge.

**Conclusion**

This study was unique for its focus on the perceptions of students enrolled in vocational high school curricula, as well as for its longitudinal approach, which allowed comparisons of the development of students throughout their studies and their first year in the workforce. I now focus, through comparison, on what meaning the experience of entering the job market held for these students. I highlight the differences and similarities between their representation of the chosen occupation during their studies and their professional situation one year after leaving school. I thereby put the emphasis on the transition from school to work. Finally, I identify some of the limitations of this study, as well as its potential impact.

Throughout their studies, students expressed their various positive and negative perceptions of their prospective occupation. One year after finishing school, they described their professional situation and formulated new representations based on the main aspects of their occupation experience. I compared the perceptions and realities experienced by Secretarial and Machining Technics graduates, noting the differences and similarities observed during those two periods.

**Differences Between the Two Periods**

The differences observed related mostly to workplace characteristics. During their studies, students emphasized the opportunities in their occupational field, and overlooked the lack of employment. One year after completing their studies, two-thirds of the secretaries and machinists were gainfully employed. As for the other third, most machinists had returned to school, whereas a majority of the secretaries were unemployed. However, while all of the employed secretaries were working in their field, only 60% of the working Machining Technics graduates had a job related to their studies. Moreover, even if a majority (n=24) found work within a month of completing their
studies, many machinists would be searching for another job within the first year. The comfortable optimism fueled by an apparent abundance of opportunities in their occupational field gave way, after a year in the workforce, to the experience of precarious employment for many of the machinists, and outright unemployment for one in four of the secretaries. The participants’ testimonials reveal a desire to gain professional experience of value in applying for another job offering better working conditions. This demonstrates, on the one hand, that vocational education and training did not automatically lead to occupational success for individuals in transition from school to work, as has been stated by Lakes et Borman (1994). On the other hand, these difficulties in transitioning highlight the instability and precariousness of employment which accompany initial work experiences, as observed by Gauthier (1994) and Klerman & Karoly (1994).

If considering only those working in their chosen field, the secretaries were likely to revise their position concerning the size of company they would like to work for. During their studies, two out of three students wished to work for a large company, whereas one third would prefer a smaller one. One year after completing their studies, the opposite was the case. Similarly, the Machining Technics students, who had little to say about work relationships during their studies, became much more vocal after acquiring some work experience. As in the case of secretaries, they appreciated a relationship with their supervisor that was based on communication, patience, and respect. They pointed to the advantages of collaboration and teamwork. These observed changes confirm the importance of social relations in new employees’ adaptation to the workplace, as noted by Lakes & Borman (1994).

Similarities Between the Two Periods

The similarities between comments gathered during the program and those gleaned a year following completion concerned both workplace characteristics and the participants’ appreciation of their employment situation. With regard to the workplace, all Machining Technics students working in their field were, as expected, employed by small companies, and a majority of the secretarial students were indeed happy to be working close to home. Regarding working conditions, many of the negative expectations developed during the second half of their program of study were confirmed in the workplace. In secretarial and Machining Technics occupations, these perceptions centered on low salaries, work under pressure, and stress caused by the quality and quantity of work required. Machinists had to deal with the dirt and noise that they feared while studying. The experiences of these secretaries and machinists corroborate analyses of the working conditions affecting school-to-work transitions studied by Anisef & Axelrod (1993), Bates & Riseborough (1993) and Crysdale & Harry (1994).

Societal perceptions cited by the students were in line with the social valorization constructs expressed during their studies. Participants were proud to benefit from diversified work in which they could strengthen their occupational skills and earn the respect of their co-workers. The learning they underwent during their first year of work reflected the knowledge and skill valorized at the end of their studies (Hardy & Landreville, 1998). Thus, they placed emphasis on improving their abilities in such areas as precision and speed, and focused on their adaptability to the work environment. Their professional aspirations were consistent with previous social mobility constructs. The confidence they acquired through learning stimulated many to pursue further education and training, in order to increase their flexibility and improve their promotion possibilities. Five Machining Technics students decided to delay their entrance into the workforce in order to complete their education in sectors related to Machining Technics; almost half of the younger employed secretaries were considering returning to college or university studies. The students’ transition from school to work took place through a progressive modification, over the course their studies, of various professional aspirations relating primarily to working conditions. The inability of some secretaries to secure employment, as well as the movement of many machinists towards work outside of their field and the unstable employment situation of some others illustrates the fragility of the school-to-work transition for these two groups of students. This fragility is manifested differentially with respect to the men and the women, as a number of the women remained outside the workforce. This more precarious position on the part of the women has been confirmed elsewhere by Anisef &

My analysis of the representations of students working in their chosen occupation suggests that the secretaries and machinists stayed true to the logic observed during their studies. The various aspects of their appreciation of work situations and continuous learning speak to their interest in professional development, their involvement in their work, and their desire for professional improvement. This demonstrates that their transition to the labor market is really begun during the course of their studies, and continues within the workforce.

Limitations and Potential Effects

This study has two limitations. First, the qualitative and longitudinal format forced me to study only two occupational profiles and a relatively restricted number of individuals. Ideally, this study should be repeated with a greater number of students involved in other occupational areas. Furthermore, this analysis was restricted to those who succeeded in their transition from school to work by securing employment in their chosen field. This would tend to provide us with a relatively optimistic view of the situation. Analysis of other students’ experiences is rendered problematic by a diversity of employment and unemployment experiences. This heterogeneity prevents the grouping of subjects and leads to a study of individual paths. Nevertheless, the difficulty and uncertainty of these graduates’ situations is critical to a full understanding of the school-to-work transition experienced by vocational education and training graduates.

Despite its limitations, this qualitative analysis offers insight into the experience of students in vocational education and training and their transition from school to work, and highlights the changes experienced by a group of men and a group of women. This project should therefore assist the directors of vocational education and training centers, as well as vocational educators, in enhancing their understanding of the vocational education and training process for their students. The present analysis has been further developed in a published volume intended for use by instructors, guidance counselors, students and parents (Hardy, Grossmann, Bah, Barry, & Gingras, 1998). This work, also considered as a tool for the basic training of future vocational educators, should help further reflections on high school vocational education and training.

References


Notes

1. This research received support from the Social Sciences and Human Resources Council of Canada (SSHRC), under its Strategic Research program. It was also supported by the FCAR (Researcher Training and Research Assistance) Fund’s Assistance Program.
2. In Canada, individual provincial governments are responsible for education. The organization of education and various educational reforms are implemented at the provincial level, without inter-provincial or federal coordination.
3. A high school diploma, obtained upon completion of 12 years of schooling, is a prerequisite of registration in most vocational curricula.
4. This criterion was included in order to meet the overall objectives of the research program, the sociological aspect of which has here been fused with a further cognitive aspect examining the
acquisition of theoretical knowledge with respect to practical knowledge. (Hardy & Landreville, 1998).

5. The secretarial studies program lasted 1,450 hours and included women, whereas the machining technics program lasted 1,800 hours and included men.

6. Since each vocational education and training center accepts only a single group of Machining Technics students — comprising about 20 individuals — we were required to request the collaboration of a second school board.

7. These interviews were conducted with the cooperation of the following research assistants: Renée Barbeau, Alain Charlebois, Lyne Drapeau, Sophie Grossmann, Daniel Maher, Anne Mingant and Sylvie Varin.

8. The ORACLE application (Claviez, 1990; ORACLE, 1989) is a qualitative-analysis software tool which allows for a combined analysis of qualitative and quantitative data collected from the same participants. To briefly clarify the analysis of qualitative data via this ORACLE application, I would compare it to the analysis of qualitative data via the NUD*IST software which I currently use. The ORACLE application can only code paragraphs, whereas the NUD*IST application codes lines of text. The NUD*IST analysis utilizes a similar approach to ORACLE, but the work is friendlier and more flexible.

9. The coding, processing and qualitative analysis of this information was carried out by the following research assistants: Thierno Hamidou Bah, Abdoulaye Barry, Pascale Gingras, Sophie Grossmann, Anne Mingant and Sylvie Varin.

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The Critical-Incident Technique In Job Behavior Research

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Abstract

The critical incident technique is examined as representing a qualitative approach to understanding requirements of the work world. The technique itself is described, followed by an explanation of how themes are identified and coded using sample interviews. Data analysis techniques are illustrated using sample data sets from a recent investigation of office work requirements. Finally, an approach for drawing conclusions from critical incident data is discussed.

As workplaces and educational settings become more complex, educational researchers are wise to consider employing a variety of research methodologies and data collection techniques that will properly capture the types of information and data needed to address the educational problems of today and tomorrow. We focus on one of several qualitative methodological tools available to researchers, the critical incident technique (CIT). The CIT is a tool used in qualitative research that can capture the complexity of job behavior in terms of the job’s social context. Key concepts and techniques for conducting critical incident interviews are discussed. Issues related to the data coding process and analysis process are subsequently addressed. Finally, the process of drawing inferences from data via the critical incident technique will be examined.

The CIT, a qualitative approach, employs the interview method to obtain “an in-depth analytical description of an intact cultural scene” (Borg & Gall, 1989, p. 387). According to Gay and Diehl (1992), behavior occurs in a context, and an accurate understanding of the behavior requires understanding the context in which it occurs. The culture of an organization can have a direct influence on the behavior of employees. Qualitative approaches are appropriate methods for understanding real-world job settings. The critical incident approach, in particular, is an appropriate tool that can be used to analyze jobs in the social context in which they occur. Not only is it important to understand the appropriateness of the CIT as a qualitative research tool, it is also important to understand that the approach is appropriate for job analysis.

Approaches to Job Analysis

Currently, there are fundamentally different approaches that can be used to analyze job requirements in a specific work context so educational programs can be developed to prepare future employees. Three of these will be briefly described: the skills component model, the professional model, and the general components model.

The skills component model is a task-analytic approach to describe job duties, tasks, skills, and generally broad competencies (Bailey & Merritt, 1995). Work settings reflective of the skills components model have been characterized as Tayloristic in their orientation to work and supervision. Planning and control reside with management, and precise instructions are provided to workers who carry out pre-determined and perhaps repetitive procedures under close supervision. Time-and-motion studies may provide the basis for decisions about the most efficient work practices. Tools that are used for carrying out Skills Components Job Analysis are DACUM (Develop A Curriculum), Functional Job Analysis (FJA), and V-TECS (Vocational-Technical Consortium of States). The most significant disadvantage in using these models in job analysis according to Bailey and Merritt (1995) is work fragmentation. Work fragmentation is the result of dissecting work-based activities into component parts. This, in turn, can lead to instructional materials that are highly task-specific. This process of dissecting jobs into specific component parts usually reduces worker
roles and learning needs to a series of unrelated job functions or skills.

The second is the professional model, a professionally oriented, more holistic approach that seeks to understand job requirements in specific work settings or social contexts. It also has the goal of identifying job competencies for employment preparation, but it is less likely than the task-analytic approach to assume that general skills and competencies can be taught separately from specific work contexts (Bailey & Merritt, 1995). This model captures the complexity of jobs in high-performance organizations where workers have more discretion in their jobs and more responsibility for planning and problem solving. The focus of professional job analysis is on jobs in a broader sense and the incorporation of the social context of jobs.

The third approach, the general components model, differs from the first two in that it extends beyond the requirements of a single job category or occupational group. Descriptions of broad job requirements are used for developing curriculum appropriate for all students and for many different jobs. This approach focuses on the generic skills or traits that are needed by individuals and not necessarily on the tasks found in a particular organization.

Vocational and technical education has depended largely on the skills component model to describe job competencies and derive educational program requirements. However, because of the dynamic nature and increased use of computing technology in business and industry, job competencies are being viewed more broadly. The broadest approach to describing employment requirements is to separate them from specific jobs or occupational areas and describe general competencies. The professional model can serve as an alternative, more holistic work analysis procedure that is tied to particular employment settings and resulting work cultures. As a tool of professional model analysis, the CIT can function as an important means for gathering information about events that are rich in work requirements. Also, the CIT approach potentially compliments task analysis information in an attempt to extend information to broad job categories in similar settings.

### Critical Incident Technique Approach

The critical incident technique has recently been identified among the job-analysis tools most likely to capture a holistic and professionally-oriented description of workplace requirements (Bailey & Merritt, 1995; Merritt, 1996). The technique can capture employees’ interpretations of their work settings. CIT is “an epistemological process in which qualitative, descriptive data are provided about real-life accounts” (Di Salvo, Nikkel, & Monroe, 1989, pp. 554-555).

The CIT was developed by Flanagan (1954). His now famous article, The Critical Incident Technique, is considered by the Society of Industrial and Organizational Psychology to be the most frequently cited article in the field of industrial/organizational psychology (American Institutes for Research, 1998). The CIT is an outgrowth of studies done in the Aviation Psychology Program of the United States Army Air Forces during World War II. Flanagan was faced with the problems of improving military flight training, bombing missions effectiveness, and combat leadership. On a large scale, he systematically asked trainees and veterans to describe exactly what they had done successfully and unsuccessfully with respect to a designated activity. Later, Flanagan formalized this data collection process and defined it as a method of identifying critical job requirements. The process involves collecting factual stories or episodes about job behaviors that are crucial in performing a job effectively (Zemke & Kramlinger, 1982). The American Institutes for Research (1998) defines CIT as a “set of procedures for systematically identifying behaviors that contribute to the success or failure of individuals or organizations in specific situations.” The CIT is not an appropriate job analysis tool for every job. Rather, it is appropriate for jobs that have a flexible or undefinable number of correct ways to behave.

The structure of CIT involves (a) developing plans and specifications for collecting factual incidents (e.g., Determine from whom the information is to be collected. Determine methods of collection. Develop instructions about the data collection.), (b) collecting episodes/critical incidents from knowledgeable individuals, (c) identifying themes in the critical incidents, (d) sorting the incidents into proposed content categories, and (e) interpreting and reporting results. Data can be collected from observations or from viable self-reports, i.e., interviews. Classification and analysis of critical incidents are the most difficult steps because the interpretations are more subjective than objective (Di Salvo et al., 1989).

The CIT has been used recently in a long-term project of the National Center for Research in
Vocational Education (NCRVE) to understand leadership development in vocational education (Finch, Gregson, & Faulkner, 1991; Lambrecht, Hopkins, Moss, & Finch, 1997). The approach of asking jobholders to provide in-depth descriptions of specific events in order to gain an understanding of thoughts, feelings, and behaviors has also been called the behavioral event interview. This particular label has been used to describe the research technique used to examine the higher-order critical thinking skills used in banking (Bacchus & Schmidt, 1995) and to examine teachers' roles in the integration of vocational and academic education (Schmidt, Finch, & Faulkner, 1992). Schmidt, Finch, and Moore (1997) used the CIT to examine professional development programs. The approach allowed them:

to stimulate interviewees' descriptions of professional development activities that helped teachers to meet students' school-to-work needs. Interviewees were also asked to describe the best school-to-work practices teachers had used, including those where they interfaced effectively with employers. The critical-incident technique was again used to help interviewees focus on describing examples of teachers' best practices.

Another project completed for the NCRVE used the CIT to identify instructional practices in exemplary office technology programs (Lambrecht, 1999).

For a national study sponsored by Delta Pi Epsilon (DPE), the critical incident approach was selected to determine factors that influenced primary computer users’ successful assimilation into the workforce (Lambrecht, Redmann, & Stitt-Gohdes, 1998). The CIT allowed the researchers to capture employees’ interpretations of their work settings and was a method that could be used consistently by a national group of data collectors. The DPE national study will provide the context for illustrating how the CIT can be implemented.

**Preparing to Use the Critical Incident Technique Process**

The first step in the CIT process involves developing detailed plans and specifications for collecting factual incidents. The following types of decisions need to be made:

1. What is the purpose of the investigation?
2. From whom should information/data be collected?
3. What is the most appropriate method to use? Observations? Interviews?
4. What questions should be asked?
5. Who should collect the data?
6. Should the data collectors receive training on how to conduct the interviews?
7. What instruction(s) need(s) to be developed for collecting the data?
8. Should details about collecting data be provided to data collectors in written form?

**Purpose of Investigation**

As in any investigation, pertinent research questions must be identified. For the DPE national project, we wanted to gain a greater understanding of how employee socialization and organizational adaptability influence workplace learning within office settings. For other recent projects which have used the CIT, the primary purposes have included documenting examples of effective leadership from subordinates of recognized leaders (Finch et al., 1991), obtaining examples of developmental experiences from exemplary leaders (Lambrecht et al., 1997), identifying professional development practices of practicing teachers (Schmidt et al., 1992), and to record effective teaching practices from teachers and students (Lambrecht, 1999).

**Determining Participants**

A formal definition of research participants should be developed that will maximize useful information relevant to the purpose of the investigation. For the DPE national project, participants determined to be primary computer users were selected. We defined primary computer users as employees in an information processing area of a business using a desktop computer for completing more than 50% of job responsibilities.

**Determining Methods for Collecting Data**

There are basically two data collecting methods that can be used with a critical incident approach--observations or in-depth interviews. Observations are useful when examining unambiguous overt behavior, but are not appropriate for covert behavior, like decision-making. If observations
(either in person or videotaped for later observation) are used, the role of the observer has to be
predetermined. This role can range from complete participation within a group to removed observer
where the individuals may not realize they are being observed (Fraenkel & Wallen, 1996).

If the interview approach is employed, either face-to-face or telephone interviews can be
conducted. The advantages of using in-person interviews include allowing the interviewer to read or
react to nonverbal communication and to probe for in-depth responses. It is highly recommended
that all interviews, even those conducted in person, be taped. By audio taping interviews, interviewer
reliability can be monitored by examining the questions used by the interviewers. In the DPE
national project, we chose face-to-face interviews to collect critical incidents about how primary
computer users learned their job. 

If telephone interviews are used, the process can be facilitated by allowing the interviewees to
prepare in advance (Lambrecht et al., 1997). Interviewees must also be informed and consent to
having the telephone interview taped. Electronic devices are available which make it easy to record
phone conversations onto cassette tapes.

After deciding the means for collecting data, the next decision involves determining who will
collect the data. Several options exist including the researchers or a team of trained interviewers.
This decision is based on the scope of the project. For a large-scale national project, such as the
DPE study, a team of trained interviewers is probably most appropriate. In order to engage as many
DPE chapters in the DPE national study as possible, we elected to use a national team of interviewers
who were recruited from two national conferences. The project staff required interviewers to tape
the 30- to 60-minute interviews. Completed tapes were sent to one of us, who in turn had the tapes
transcribed. Transcribed interviews were returned to the interviewers who shared them with
interviewees in order to allow the transcripts to be checked for accuracy and completeness. Cross-
checking interviews helps ensure that inadvertent speaking errors are caught. Interviewees also get
confirmation of genuine concern for capturing an accurate representation of their views.

Determining Questions

Questions used in the CIT should be ask people who are familiar with the situation being
analyzed to provide examples of incidents that are critical to successful and unsuccessful
performance. Incidents are usually anecdotal accounts of events that have actually occurred.
Interviewees are asked to describe incidents in terms of (a) the circumstances preceding the event, (b)
what exactly was done and why was it effective or ineffective, (c) the outcome or result of the
behavior, and (d) whether the consequences of the behavior were under the employee’s control
(Siegel & Lane, 1987). Critical incidents can be revealed in a number of ways as illustrated by these
examples of probes. “Describe what led to the situation.” “Exactly what was done that was
especially effective or ineffective?” “What was the outcome or result of this action?” “Why was
this action effective?” (American Institutes for Research, 1998). We employed the following
questions to guide face-to-face interviews:

1. Describe a critical/significant/important experience that is an example of what you do well in
   your current job.
   - Why do you feel competent?
   - How did you learn to do this?

2. Describe a critical/significant/important experience that is an example of a problem in your
   current position that you could not solve quickly on your own.
   - What do you do when you have a problem?
   - What resources do you use when you have a problem?
   - When do you or have you felt incompetent and why?

3. What experiences would you like to have that would have helped you or could help you to
   become more competent?

4. What other roles do you desire or would you like to pursue within the organization?

Instruction for CIT Data Collectors

Consistency in the data collection process is key to the success of the CIT. A detailed set of
procedures should be developed for preparing data collectors. These procedures should include:
1. the purpose of the research,
2. concise definition of individuals to be interviewed or observed,
3. the interview process,
4. steps for gathering data,
5. interview techniques/tips,
6. respondent demographic information sheet,
7. interview questions, and
8. sample letters to interviewee/respondents from interviewers.

If the research study is small scale and researchers are primarily responsible for conducting data collection, training for data collectors may not be necessary. However, if several data collectors will be employed, we recommend that some form of training be provided. Training can range from simply covering the basic steps of the interview process to critiques of role-playing activities. To ensure consistency, steps in the data collection process should be provided in written form.

**Using the Critical Incident Interview Technique**

The interview is a powerful tool for gathering information because it is flexible, can facilitate the active support of the interviewee, and can provide a multi-dimensional picture, e.g., nonverbal communication can be assessed (Rossett & Arwady, 1987). While the interview is an excellent means for learning about problems or situations, it is a tool that may challenge the interviewer. Interviewers cannot control interviewees nor do they want to for fear of misdirecting the flow of information. It is also difficult for interviewers to change their interpersonal style to match the inclinations of respondents, e.g., a respondent may use a random spontaneous approach or a holistic approach (Rossett & Arwady).

The success of an interview can be enhanced by pre-interview preparation. For example, if an interviewer has an agenda and knows the purpose of the research, the interview process should go much smoother. Also, the interviewers should be prepared to address typical questions from interviewees concerning reasons for being selected, ways that results will be used, or issues of confidentiality.

To prepare the volunteer interviewers for the DPE national project, an instructional booklet was developed. The purpose of the research project was described along with an overview of the interview process and the criteria to use in identifying individuals to interview. Ten steps for gathering data were detailed. A section on interview techniques/tips consisted of steps to (a) prepare, (b) begin, (c) conduct, and (d) conclude the interviews. Interviewers were instructed to make copies of a demographic information sheet and the interview questions sheet for each interview. To ensure that all the questions were asked during each interview, the interviewers were asked to check off each question when asked. Four sample letters intended for interviewees were provided to (a) schedule/confirm interviews, (b) express thanks for completing the interview, (c) request a review of transcripts, and transmittal letter for transcript, and (d) extend thanks for return of transcript.

**Interview Techniques/Tips**

*Pre-interview activities*

Know the purposes for the interview. Develop an agenda or interview guide that you are comfortable with that incorporates the interview questions required by the project. Use an agenda designed to establish a relationship with interviewees that will encourage respondents to give needed information. The agenda will help you track your progress through the interview. Learn enough about the research project and each interviewee to ask intelligent questions and respond to inquiries. Learn the local language, review or learn basic vocabulary related to each respondent's job. Admit you are not an expert. Schedule the interview with sensitivity and flexibility. Schedule a time and place that will enhance the likelihood of getting desired information. Such a place usually requires privacy, quiet, comfort, no distractions, and compliance with the interviewee's wishes for a location and a time. Ethics demand that the interviewee's permission be obtained before a tape recorder is used.

*Beginning the interview*

Be on time with your visit or call. Since the first moments of an interview are crucial, the initial task is to create an atmosphere that puts the respondent at ease. To build rapport, enlist willingness to corporate, clarify the purpose of the meeting, explain who you are, and how you got involved in this research project. Explain the purpose of the project, its potential impact, why participants were selected, and approximately how long the interview is anticipated to last. When
explaining the purpose of the interview, avoid giving information that could bias the study. Allow interviewees to ask any questions. It is during the introduction phase that you are establishing a rapport with interviewees.

When you move out of the introductory phase of your interview into the heart of the inquiry, let the interviewee know by using a transitional phrase: "Now that you have heard about me and the purpose of the project, let me give you a chance to ask questions." After the question/answer period, use a transitional phrase that informs the interviewee that the interview is beginning: "Let's talk about your job and the challenges and successes you have experienced in learning your job."

**Conducting the interview**

Since the purpose of our interviews was to get details about exactly what respondents do that makes them successful in their jobs, we wanted to ensure that respondents dominated the conversation. Refrain from expressing approval, surprise, or shock at any of the responses. The structure for our interviews was open-ended questions that tend to encourage free-flowing conversation. It is important to listen carefully to answers so appropriate questions can be asked. Note: Sometimes respondents may answer more than one question with a particular response. Therefore, reference to study questions may be useful. Questions can be repeated or their meaning explained in case they are not understood.

Pay attention to the tone of voice and watch for body language. These may yield nonverbal feedback worth noting. Use prompts to keep the interviewee on track or to encourage the interviewee to say a lot or little. "Tell me more about . . ." "Can you think of a specific example of that?" "What did you do then?" "What makes you say that?" "I don't understand what you mean there. Could you explain it in another way." "Whatever you can remember is fine." "Take your time; I'm just going to give you some time to think." Rephrase what a respondent said to clarify and to keep the conversation going. Record the entire interview, starting with the introduction through the conclusion.

**Concluding the interview**

After all the questions have been answered, begin the conclusion phase of the interview. During the concluding phase, allow interviewees to ask any questions and make any comments they deem relevant. Try to provide a verbal summary of what was said as it relates to the purpose of the study. This can be a means of clarifying what has been said and promote a common understanding of the incident described.

Discuss how the interviews contribute to the success of the project. Establish an opening to come back to the respondent for additional information. Inform interviewees of the next stage involving reviewing the transcript. Determine whether the interviewee prefers you to mail the transcript or for you to return in person with the transcript. Express your appreciation for interviewee’s contribution.

**Coding Themes in Interviews**

**Theme Development**

A pre-determined set of open-ended questions is usually developed to guide interviews. Transcribed interviews yield a wealth of information that researchers must synthesize into categories to make meaning of the data. While admittedly there are any number of ways to develop categories, a convenient “macro” approach is to begin with the interview questions themselves. Flanagan (1982) suggested that “the preferred categories will be those believed to be most valuable in using the statement of requirements” (p. 299). In the DPE study, we attempted to determine those factors that effected and affected a primary computer user’s organizational adaptability. That purpose required us to determine when current employees felt competent, when they felt incompetent, and what additional training they desired. The frame of reference or primary theme development centered around those skills and abilities relevant to the interviewees’ work.

Again referencing the DPE national study, the initial frame of reference was the interview questions. What do you do well? How did you learn how to do what you know? What problems arise in your work? What resources do you consult to solve the problems? When do you feel incompetent? What additional experiences do you desire that may improve your performance? What other roles might you pursue either in this organization or another? As those interviewed spent at least 50% of their time using a personal computer for their work, the frame of reference
relevant for these questions focused on computer use.

“The induction of categories from the basic data in the form of incidents is a task requiring insight, experience, and judgment. Unfortunately, this procedure is . . . more subjective than objective, . . . the quality and usability of the final product are largely dependent on the skill and sophistication of the formulator” (Flanagan, 1982, p. 300). As the lead researcher in the DPE national study was most experienced in work-based and qualitative research, she developed the initial categories or codes. She read 11 of the 65 transcripts. Based on a careful analysis of the transcripts, an extensive literature review, and related research experience, 67 codes for the 7 interview questions were developed.

At this same time, the other two researchers also read the first 11 transcripts. The initial code list was distributed among all three researchers for review. This procedure was advocated by Flanagan (1982). “One rule is to submit the tentative categories to others for review” (p. 300). As a part of this process and subsequent conference calls, six codes were added, making a total of 73 different themes. At that time, prior to all 65 transcripts having been read, the initial list of codes was adopted. Thus, all three of us read all of the first 11 transcribed interviews. The development of initial codes leads to the next step, reaching inter-rater agreement.

**Inter-rater Agreement**

When more than one individual collaborates on a qualitative research project, it is critical to the value of the research and the validity of the process that inter-rater agreement on the codes be reached. This may be done in a variety of ways--face-to-face, telephone conferencing, via paper mail. For the DPE national study, we chose two approaches: face-to-face meetings and a series of telephone conference calls. After we had read the first 11 transcripts (17% of the total number, 65), we met to discuss the original 67 codes, plus 6 additions, and to develop consensus on these codes. This process took about two days of conversation, analysis, and revision. An important item to make note of deals with establishing the titles of the codes. Flanagan (1982) notes that “the titles should convey meanings in themselves without the necessity of detailed definition, explanation, or differentiation” (p. 300). A process was developed for reading and coding the remaining 54 transcripts. We agreed that the next step to assure inter-rater agreement was that all transcripts must be read by at least two of us.

As the transcripts were read the number assigned to each code was written in the margin of the transcript next to the narrative corresponding with the code. This facilitated conversation during later conference calls. Once all transcripts were read, we reached consensus or inter-rater agreement, by literally going through every page of all remaining 54 transcribed interviews.

**Using a Code Sheet**

With the use of spreadsheet software, we developed a code sheet. On the top row each interview number was listed; in this case 65 columns. On the left column each of the seven interview questions was listed with all the codes appropriate to the category listed underneath. Each of these codes was numbered with space provided for expansion. A total of 73 rows of themes was listed. When a code appeared in a transcript, a mark was recorded in the appropriate cell on the spreadsheet. It is important to note that once an incident, or code, was noted, no additional marks were recorded for that code. The reason for this is that the purpose was not to determine the number of times the incident occurred in a single interview, but rather that it occurred at least once. (Note: this spreadsheet was transposed later to make each interviewee a row rather than a column in order to allow transfer of data to a statistical package. The main point is to set up a cross-tabulation of interview-by-theme matrix. see Table 1.) Once again, in order to assure accuracy in coding, these code sheets were compared during a number of conference calls. This provided an additional level of inter-rater agreement.

**TABLE 1**

*Spreadsheet Cross Tabulation of Demographic Information Themes by Interviewee*

<table>
<thead>
<tr>
<th>Demographic Information</th>
<th>Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID</td>
<td>Sex</td>
</tr>
<tr>
<td>---</td>
<td>-----</td>
</tr>
</tbody>
</table>
The use of the coding sheets in this way can also facilitate later data analysis should one wish to quantify the data, e.g., \( x \% \) of participants indicated \( y \) theme code. This may be useful in presenting macro information as it relates to the research questions that frame the study.

**Data Analysis Techniques**

The purpose of analyzing critical incident interviews is to understand the commonalties among responses. Responses need to be summarized so that dominant or common themes can be identified. There are several software packages designed specifically for this purpose such as NUD\*IST and Ethnographer (Miles & Huberman, 1994). Miles and Huberman provide extensive discussion of what such programs can do. The criterion we used to select a spreadsheet and a standard statistical program, Systat, was familiarity with the software.

Analysis of themes from the critical incident interviews includes rank ordering the frequency of occurrence and identifying themes that were occurring together frequently within the same interviews. A decision needs to be made about the unit of analysis—a single theme or an interview. A theme can occur more than once within a single interview, so if themes are chosen as the unit of analysis, their frequency of occurrence will affect rankings. If a single interview contains several examples of a particular theme, each of these occurrences would affect the frequency of this theme—perhaps giving a single interview a disproportionate amount of weight. To avoid this, the interview (or interviewee) can be considered the unit of analysis. A theme occurring several times within one interview would be counted only once per interview. In our study, the interview was considered the unit of analysis. This choice was made as our intent was to identify rather than quantify themes that emerged from the interviews. Each theme coded in all of the interviews was coded on a spreadsheet as occurring within each interview.

**Data Preparation**

Table 1 shows part of the spreadsheet we used for coding both demographic features and theme occurrence. Notice that each interviewee is a row within the spreadsheet, and the demographic characteristics and themes are the columns. The categories in each demographic area are coded to permit tallying. For example, a "5" in the "Job Title" category for interviewee No. 1 means "Data Entry." These codes are maintained in a codebook so that the report summaries can be linked back to the meaning of the codes. Each theme is identified by a number from 1 to 73 (only portions of which are shown below), and a "1" in a cell means that the theme occurred within the interview. Again, the theme and its code numbers are entered in the codebook so that later the themes, rather than the codes are reported.

**Theme Frequency**

Once the interview codes have been entered into the spreadsheet, it is a simple matter of counting and sorting to answer the question about frequency of occurrence of the various themes. It is possible to identify the most commonly occurring theme within each major category of theme type. Table 2 (Lambrecht et al., 1998) shows the presentation of work-related problems for the 65 primary computer users from the national DPE research project.

<table>
<thead>
<tr>
<th>Table 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>&quot;Problems Encountered&quot; – Response Category and Rank Order</strong></td>
</tr>
<tr>
<td>Category</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
Technical problems: software versions; system down; transcription issues 36 55% 1
Depending on other people for information/work/support 20 31% 2
Using new software 18 28% 3
Getting accurate information 11 17% 4
Dealing with workflow--pressure versus slack 10 15% 5
Knowing expectations 6 9% 7
Prioritizing work from several people 2 3% 8
No problems 1 2% 9

Commonalities Across Interviews
A second question that can be raised about critical incidents is about the commonalities among interviews or whether certain themes tend to appear in the same interviews. Table 3 shows that cross tabulations can help to illustrate visually the number of times pairs of themes occurred in the same interview. In this case the themes are those which arose from asking in the national DPE study what primary computer users did well (14 different themes) and where they learned whatever it was that they did well (12 themes). Notice that the 65 interviews are the unit of analysis. Each cell shows the number of responses on a particular theme that occurred in common from these 65 interviews. For example, Theme #7, a response to "What work was done well?", is the response "Producing high-quality, accurate work." This theme appeared in a total of 23 interviews. Theme #21, a response to the question "Where did you learn what you do well?", is the response "Informal, on-the-job training/observation/picking things up." This theme appeared in 46 interviews. A total of 20 interviews contained both of these themes.

TABLE 3
Cross Tabulation of Themes Across Interviews
Cross Tabulation of Question 1a (Do Well) with Question 1b (How Learned)

<table>
<thead>
<tr>
<th>Themes</th>
<th>1.a – Do Well</th>
<th>1.b – How Learned</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>21</td>
<td>20</td>
<td>33</td>
</tr>
<tr>
<td>22</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>23</td>
<td>13</td>
<td>21</td>
</tr>
<tr>
<td>24</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>25</td>
<td>14</td>
<td>21</td>
</tr>
<tr>
<td>26</td>
<td>18</td>
<td>24</td>
</tr>
<tr>
<td>27</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>28</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>29</td>
<td>14</td>
<td>20</td>
</tr>
<tr>
<td>30</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>31</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>32</td>
<td>13</td>
<td>24</td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td>47</td>
</tr>
</tbody>
</table>

NB Bold Numbers: Number of interviews where both themes appeared

These cross tabulations were obtained by transferring the spreadsheet data partially illustrated in Table 1 into a statistical analysis package with the capability of preparing cross tabulations and carrying out chi-square analysis. Such software is quite common. Systat was used in the recent national DPE research study, but SPSS or Statistix are also commonly used statistical software programs. Once these data have been cross tabulated, chi-square analysis permits the identification of theme clusters that occurred more frequently than would be expected by chance. When this type of analysis is carried out on qualitative data, care must be taken not to give the impression that generalizations can be made to a larger population. This is not inferential statistics. Rather, the chi-
square calculation is being used to provide descriptive information about clusters of themes within interviews that may aid in understanding what these themes mean for the specific group of primary computer users interviewed.

Table 4 is an illustration of the chi-square analysis for the two themes mentioned above, #7 and #21 from Table 3.

TABLE 4
Chi-Square Analysis Example

<table>
<thead>
<tr>
<th>#7 – High Quality Work</th>
<th>No</th>
<th>Yes</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>16</td>
<td>26</td>
<td>42</td>
</tr>
<tr>
<td>Yes</td>
<td>3</td>
<td>20</td>
<td>23</td>
</tr>
<tr>
<td>Total</td>
<td>19</td>
<td>46</td>
<td>65</td>
</tr>
</tbody>
</table>

Pearson Chi-Square = 4.509; df = 1, p = 0.034

In Table 3 the cells with bold print are those for which a chi-square value had a probably of .10 or less of occurrence. These are the common interview themes that need to be examined more closely.

The next challenge for researchers is how to present this information in a way that truly summarizes the data and does not overwhelm readers with numbers. There are 168 separate chi-square analysis behind Table 3 above, only 9 of which were statistically significant. The individual chi-square tables provide too much detail. One way to report both the frequencies of common themes across interviews in relation to the total number of themes without presenting a table dense with numbers is to use percents.

Table 5 (Lambrecht et al., 1998) is an illustration of how this was done in the DPE national study being used as an example. The results of each significant chi-square table are reported in a single row. In addition, the ranks of each theme are shown for the two questions reported in this table: "Work that was done well" is being compared with themes from the question "How did you learn what you do well?" The percents reported for each theme are the proportion of interviews (remember, interviews are the unit of analysis) which contained a particular theme which shared that theme in common with interviews containing the second theme in the table row. For example, using the first row of Table 5, "Mastery of Software" was the top-ranked theme for "Work that was done well." Of all the interviews that contained this theme, 45% also contained the theme of "Self-Taught," the 5th-ranked theme "Self-Taught" for "How did you learn what you do well?"

Correspondingly, 88% of the interviews that contained the theme "Self-Taught" were the same interviews that said they did well was "Mastery of Software." While the number of common responses was 21 (see Table 3 for Themes #2 and #25), 47 different interviews contained the "Mastery of Software" theme (21/47=45%), and 24 interviews contained the theme "Self-Taught" (21/24=88%).

Table 5
Primary Computer Users Cross Tabulations: Significant Relationships between Work Done Well and How It Was Learned

<table>
<thead>
<tr>
<th>Rank</th>
<th>Q: What is an Example Of What You Do Well</th>
<th>% of Common Responses (C/R)</th>
<th>Rank</th>
<th>Q: How Did You Learn This?</th>
<th>% of Common Responses (C/R)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mastery of Software</td>
<td>45%</td>
<td>5</td>
<td>Self Taught</td>
<td>88%</td>
</tr>
<tr>
<td>2</td>
<td>General Office Work</td>
<td>62%</td>
<td>2</td>
<td>Formal Classroom Training</td>
<td>56%</td>
</tr>
<tr>
<td>3</td>
<td>High Quality, Accurate Work</td>
<td>35%</td>
<td>7</td>
<td>Access to Individuals</td>
<td>53%</td>
</tr>
<tr>
<td></td>
<td>C/R</td>
<td>C/R</td>
<td></td>
<td>C/R</td>
<td>C/R</td>
</tr>
<tr>
<td>3</td>
<td>High Quality, Accurate Work</td>
<td>87%</td>
<td>1</td>
<td>Informal O-J-T</td>
<td>43%</td>
</tr>
<tr>
<td></td>
<td>C/R</td>
<td>C/R</td>
<td></td>
<td>C/R</td>
<td>C/R</td>
</tr>
<tr>
<td>5</td>
<td>Interpersonal Skills</td>
<td>68%</td>
<td>2</td>
<td>Formal Classroom Training</td>
<td>34%</td>
</tr>
<tr>
<td></td>
<td>C/R</td>
<td>C/R</td>
<td></td>
<td>C/R</td>
<td>C/R</td>
</tr>
</tbody>
</table>
When there are several key questions from a critical incident study with several resulting themes, the data analysis takes a little time to organize and present in a well-synthesized final report. The recent national DPE study involving primary computer users had four main questions with several subquestions. A total of 73 themes emerged for the 65 interviews. Once the key tables have been developed to synthesize the theme rankings and relationships, the study conclusions become a matter of interpreting what they mean in response to the key questions in the study.

**Drawing Conclusions from Critical Incident Data**

Drawing conclusions from qualitative research projects is similar to drawing conclusions from quantitative research projects in that both require interpretation. It is important not to mistake a restatement of the findings for the conclusions of the study. Rather, it is necessary to interpret the findings while considering both the original research questions and the conceptual base for the study.

What does the theory, the conceptual base, allow you to make of the findings? To aid in answering this question, a visual aid such as Gowin's Vee is helpful (Novak, 1998). The question of a research project is the Focus Question at the top of the Vee (see Figure 1). At the bottom of the Vee are the events or objects, the data, collected in a study to answer the focus question. What one says about the data depends upon how the findings are presented (the Transformations of the original data Records) which permit researchers to make knowledge claims based on the conceptual base described on the left side of the Vee. This conceptual base exists whether or not the researcher makes his or her assumptions explicit. However, if these assumptions and the conceptual base are not made explicit, it can be difficult to know what to make of findings—how to explain what has happened.
Application of Gowin's Vee (Novak, 1998) to the DPE research project is depicted in Figure 2. The Focus Question at the top provided the framework for the investigation. The critical incident interviews provided the objects to be studied. The theme codes and cross tabulations provided the foundation for the knowledge claims and subsequent value claims. The left side of Gowin’s Vee provides a framework for the conceptual or theoretical base for the study, the professional job analysis model.
As demands for research that is both theory-based and real-world relevant increase, the consideration and use of a variety of research methods will be required. The critical incident technique is one such strategy to investigate issues relevant to job behavior in terms of the social job context. We have provided guidelines and examples drawn from a recent research project to demonstrate how the CIT may be used.

While other strategies are available, the CIT is an excellent strategy for job behavior analysis which moves far beyond the traditional list development of needed skills and knowledge. Research study participants’ own words provide greater clarity and specificity than any checklist of job skills or tasks to which they may respond. This technique allows researchers to more clearly capture those incidents critical to job behavior.

References


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