DOCUMENT RESUME

ED 351 526 CE 062 340

AUTHOR Schmidt, B. June
TITLE Collaborative Efforts between Vocational and Academic Teachers: Strategies that Facilitate and Hinder the Efforts.
INSTITUTION National Center for Research in Vocational Education, Berkeley, CA.
SPONS AGENCY Office of Vocational and Adult Education (ED), Washington, DC.
PUB DATE Oct 92
CONTRACT V051A80004-90A
NOTE 31p.; For a related document, see CE 062 335.
AVAILABLE FROM National Center for Research in Vocational Education, Materials Distribution Service, Horrabin Hall 46, Western Illinois University, Macomb, IL 61455 (order no. MDS-164: $2).
PUB TYPE Information Analyses (070)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Academic Education; Basic Skills; Classroom Techniques; Curriculum; Educational Administration; *Educational Cooperation; Educational Strategies; High Schools; *Integrated Curriculum; Program Effectiveness; School Counselors; Secondary School Teachers; Surveys; *Teaching Methods; *Vocational Education

ABSTRACT

Research identified strategies implemented collaboratively between vocational and academic teachers at Southern Regional Education Board-Vocational Education Consortium pilot sites to develop basic academic competencies of students in vocational programs. Structured interviews were completed at three pilot-site schools--a comprehensive high school and two vocational centers that served four feeder high schools. Thirty individuals (10 at each site) were interviewed; they included 11 vocational teachers, 9 academic teachers, 3 counselors, 3 vocational directors, 2 principals, 1 supervisor, and 1 remediation specialist. Information regarding educational experience and preparation was tallied. Statements were recorded from responses to interview items asking for descriptions of strategies that had been implemented at the sites and asking for descriptions of strategies that had been particularly effective and those that had not. A total of 129 positive and 89 negative statements were recorded. The statements were synthesized to 57 positive and 41 negative strategies in 4 categories: instructional strategies, curricular strategies, cooperative efforts, and administrative practices and procedures. Some key ideas surfaced: (1) administrators need to set the stage, but teachers need to determine the "how to" of specific integration strategies; (2) teachers' focus becomes the students; and (3) administrators must establish and maintain a positive climate for change. (YLB)

NCRVE

National Center for Research in Vocational Education

University of California, Berkeley

COLLABORATIVE EFFORTS BETWEEN VOCATIONAL AND ACADEMIC TEACHERS: STRATEGIES THAT FACILITATE AND HINDER THE EFFORTS

Supported by
the Office of Vocational and Adult Education,
U.S. Department of Education

This publication is available from the:

National Center for Research in Vocational Education
Materials Distribution Service
Western Illinois University
46 Horrabin Hall
Macomb, IL 61455

800-637-7652 (Toll Free)

COLLABORATIVE EFFORTS BETWEEN VOCATIONAL AND ACADEMIC TEACHERS: STRATEGIES THAT FACILITATE AND HINDER THE EFFORTS

B. June Schmidt

Virginia Polytechnic Institute and State University

National Center for Research in Vocational Education
University of California at Berkeley
1995 University Avenue, Suite 375
Berkeley, CA 94704

Supported by
The Office of Vocational and Adult Education,
U.S. Department of Education

October, 1992

MDS-164

FUNDING INFORMATION

Project Title:	National Center for Research in Vocational Education
Grant Number:	V051A80004-90A
Act under which Funds Administered:	Carl D. Perkins Vocational Education Act P.L. 98-524
Source of Grant:	Office of Vocational and Adult Education U.S. Department of Education Washington, DC 20202
Grantee:	The Regents of the University of California National Center for Research in Vocational Education 1995 University Avenue, Suite 375 Berkeley, CA 94704
Director:	Charles S. Benson
Percent of Total Grant Financed by Federal Money:	100%
Dollar Amount of Federal Funds for Grant:	$5,675,000
Disclaimer:	This publication was prepared pursuant to a grant with the Office of Vocational and Adult Education, U.S. Department of Education. Grantees undertaking such projects under government sponsorship are encouraged to express freely their judgement in professional and technical matters. Points of view or opinions do not, therefore, necessarily represent official U.S. Department of Education position or policy.
Discrimination:	Title VI of the Civil Rights Act of 1964 states: "No person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance." Title IX of the Education Amendments of 1972 states: "No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving federal financial assistance." Therefore, the National Center for Research in Vocational Education project, like every program or activity receiving financial assistance from the U.S. Department of Education, must be operated in compliance with these laws.

EXECUTIVE SUMMARY

The recently passed Carl D. Perkins Vocational and Applied Technology Education Act of 1990 emphasizes the need for strengthening the academic foundations of students in vocational programs. It calls for funding programs that integrate vocational and academic education through coherent sequences of courses so that students achieve both occupational and academic competencies. A number of efforts are underway at local levels to implement innovative programs for achieving this integration. The Southern Regional Education Board (SREB)-Vocational Education Consortium includes seventeen states with more than forty pilot sites working toward the goal of improving the basic academic competencies of students completing high school vocational programs. The Consortium is advancing, applying, and evaluating approaches that will strengthen these competencies.

At Consortium pilot sites, a number of innovative instructional, curricular, and administrative intervention strategies have been implemented. To date, data has not been collected at the sites to determine which of the strategies have and have not been effective. This research, therefore, focused on identifying strategies used at the pilot sites and examining the effectiveness of the strategies.

Three Consortium pilot sites identified as having implemented a number of strategies that involved the collaboration of vocational and academic teachers were selected for conducting interviews. One site was a comprehensive high school, while the other two sites had vocational centers that served four feeder high schools. At each site, ten individuals were interviewed over a two-day period. For the thirty interviews, eleven vocational teachers, nine academic teachers, three counselors, three vocational directors, two principals, one supervisor, and one remediation specialist were interviewed.

From the interviews, information regarding educational experience and preparation was tallied. Statements were recorded from responses to interview items asking for descriptions of strategies that had been implemented at the sites and asking for descriptions of strategies that had been particularly effective and those that had not. A total of 129 positive and 86 negative statements were recorded. The statements were synthesized to 57 positive and 41 negative strategies distributed among four categories: (1) instructional strategies, (2) curricular strategies, (3) cooperative efforts, and (4) administrative practices and procedures.

Though limited in scope and subject to biases from the perspective of the researcher as well as from those interviewed, this research contributes significantly to the movement to integrate vocational and academic education. It provides insight at the "grass roots," school-site level as to what will and will not work when teachers strive to integrate vocational and academic education. Outcomes of the interviews provide specific examples of strategies that have been implemented and teachers' and administrators' perceptions of their effectiveness.

TABLE OF CONTENTS

OVERVIEW

Preparing today's students without academic basics can be compared to attempting to use a car without fuel or, in times past, a carriage without a horse. Both college-bound and noncollege-bound students need vocational as well as academic preparation to meet today's workplace demands. However, educational reforms of the 1980s starting with *A Nation at Risk* (National Commission on Excellence in Education, 1983) have, by and large, focused on strengthening the curriculum and instruction of college-bound students, with an ever increasing emphasis on academic learning. For the half of the U.S. students who do not attend college, job requirements are continually rising (The William T. Grant Commission on Work, Family, and Citizenship, 1988). For example, a *U.S. News and World Report* article notes that in 1965 an auto mechanic needed to understand 5,000 pages of service manual text to fix any automobile; today the same mechanic must be able to decipher and use 465,000 pages of technical text ("The Forgotten Half," 1989). As pointed out in the article, strengthening the academic preparation of the "forgotten half" of students is critical since the U.S. "economy will depend as much on this diverse group of less schooled workers as it will on the nation's software programmers and rocket scientists" (p. 45).

Further, *The Unfinished Agenda* (National Commission on Secondary Vocational Education, 1984) noted that increased academic requirements ignore "differences in students' interests and abilities and the needs of those high school students who do not plan to go to college and who purposefully choose vocational programs" (p. 1). As Rosenstock (1991) states, "In the 1984 hearings on the reauthorization of the Perkins Act, it was considered blasphemy to suggest that schools integrate vocational and academic education" (p. 434). The situation, however, had reversed by 1989, when, Rosenstock continues, "virtually every commentator noted the need to bring together these two parts of our educational system" (p. 434). Thus, the stage has been set for the movement to integrate vocational and academic education in our nation's schools.

The need to improve the preparation of the U.S. workforce has become abundantly clear and surfaces over and over in current literature (Carnevale, Gainer, & Meltzer, 1989). Bensen (1989) clarifies this need, stating that, "The case for integration stands on three main—and somewhat interrelated—arguments: economic necessity; findings from the field of cognitive science; and social justice with respect to the distribution of academic and

vocational learnings" (p. 3). The concept of integrating vocational and academic education is a major premise of the Carl D. Perkins Vocational and Applied Technology Education Act of 1990. The act requires that funds be used for programs that integrate vocational and academic education through coherent sequences of courses so that students achieve both occupational and academic competencies (*Regs Review*, 1991, p. R-32).

In an effort to improve the basic academic competencies of students in vocational programs, the Southern Regional Education Board (SREB)-Vocational Education Consortium is advancing, applying, and evaluating approaches that will strengthen the development of these for students in vocational programs (Bottoms & Korcheck, 1989). The Consortium includes seventeen states with more than forty pilot-site schools where teachers are using a variety of instructional intervention strategies, both in vocational and academic classrooms, to improve students' academic competence and provide them with the skills needed for employment in today's technological society. Many of the strategies require collaborative efforts between vocational and academic teachers.

PURPOSE

To date, data has not been collected to determine which of the intervention strategies implemented at the pilot sites have and have not been effective. Teachers at the sites have responded to surveys asking how they rate their students' performance on the basic competencies, how much class time they devote to the competencies, how much importance they place on reinforcing them in a vocational context, and how skilled they are at improving and reinforcing the competencies (Personal communication from G. Bottoms, Director of the SREB-State Vocational Education Consortium). This research, therefore, focuses on identifying strategies that have been implemented collaboratively between vocational and academic teachers at selected Consortium pilot sites and to determine teachers' and administrators' perceptions of the strategies. Specific research questions addressed are

- What instructional intervention strategies have been developed and used by vocational and academic teachers to achieve integration?

- What curricular intervention strategies have been developed and used by vocational and academic teachers to achieve integration?
- What collaborative efforts have been undertaken by vocational and academic teachers to achieve integration?
- What administrative practices and procedures foster collaborative relationships between vocational and academic teachers?
- Which of the strategies, efforts, practices, and procedures implemented to achieve integration do teachers and administrators perceive as effective?

PROCEDURES

To answer the research questions, structured interviews were completed at three SREB-Vocational Education Consortium pilot-site schools.

Selection of the Schools

The Consortium director shared information regarding "practices" or "strategies" implemented at all of the pilot sites during the 1988-1989 academic year. For a list of twenty-three proposed intervention strategies, the director had informally assigned a rating of 1 to 5 (1 being *limited* and 5 being *full*) for each site. The director also shared personal knowledge gained from actual site visits. From these two sources of information, three sites and three alternatives were selected. These sites were the ones perceived by the director as most effective in developing collaborative efforts between vocational and academic teachers.

The researcher contacted the three site coordinators by phone during February and March 1990, explaining the research project and establishing tentative dates for conducting the interviews. The three sites selected were in Georgia, South Carolina, and West Virginia, and all agreed to participate. Due to a statewide strike of West Virginia teachers and conflicts between the vocational and academic teachers that surfaced as a result of the strike, that site later declined to participate in the study. After this situation arose, an

alternative site in Virginia was substituted. The Virginia site was also used to field test the interview process.

Interview Site Information

At each of the pilot sites, ten individuals were interviewed over a two-day period, with all thirty interviews completed between March 6 and May 10, 1990. At the South Carolina and Virginia sites, personnel at the vocational center and one of the four home high schools were interviewed. The Georgia site was a comprehensive high school; thus all interviews were completed at the same location. The coordinator at each of the three sites provided the researcher with a detailed report of site activities that had been prepared for a Consortium pilot-site visit.

The 1988-1989 enrollment at the Georgia comprehensive high school was 1,020 with 837 of the students enrolled in vocational offerings. In 1988, 212 students graduated with 110 (52%) receiving vocational diplomas, 45 (21%) receiving college preparatory diplomas, 33 (16%) receiving general diplomas, and 24 (11%) receiving combined college preparatory and general diplomas. The overall purpose of the pilot-site project was described in the school's report as being "to identify those students who lack basic academic skills and use applied instructional strategies to overcome these weaknesses."

At the South Carolina site, total school enrollment in the county for kindergarten through twelfth grades was over 10,000 students. The vocational center and all four of the high schools were involved in the pilot-site project. For 1989, the four high schools reported 671 graduates with 265 (40%) completing college preparatory programs, 103 (15%) completing vocational programs, and 303 (45%) completing general programs. The pilot-site report listed eleven goals, which included implementing applied offerings in technology, math, communications, and science; helping teachers develop expertise needed for teaching the applied courses through intensive staff development; and having teachers emphasize the development of basic academic skills in vocational offerings.

At the Virginia site, one of the high schools and the vocational center were involved in the pilot-site project. The high school, relatively small and rural, has an enrollment in grades nine through twelve of slightly more than 300 students. In 1989, 68 students

graduated, with 34 (50%) considered to be vocational completers. The vocational center, which serves four high schools, has an enrollment of approximately 250 students. The pilot-site goals include developing programs of study for all students, adjusting curriculum and instruction to the philosophy that all students can learn given proper instruction, raising student and teacher expectations, and providing extensive staff development aimed at integrating vocational and academic education.

Interview Procedures

The interview schedule used included general information items and items that asked the interviewees to recall specific events. Each interviewee responded to items as follows:

- How long have you been in education?
- How did you first become involved/interested in participating in the pilot-site activities?
- What is your present role as a pilot-site educator?
- Describe the overall activities/strategies being used at your school to bring instruction in line with the pilot-site goals.
- Describe an event where you feel that the vocational and academic teachers were particularly effective in working together.
- Describe an event where you feel that the vocational and academic teachers were not effective in working together.

The interviews were each scheduled for fifty to sixty minutes. The researcher took notes and tape-recorded the interviews. The interviewees were advised that the tapes would not be used unless information in the written notes was unclear. All thirty of the interviewees participated willingly and responded openly to the items asked. The researcher offered encouragement for expanded responses by simply restating what the interviewees had already stated.

Two interviews were completed at the Virginia site on March 6, 1990, to field test the interview procedures. The two interviews went as planned and responses provided were on target. Further, the time allotted for them was congruent with the information sought. Thus, when the West Virginia site opted not to participate, eight more interviews were completed at the Virginia site.

For the thirty interviews at the three sites, nine academic teachers, eleven vocational teachers, three counselors, three vocational directors, two principals, one supervisor, and one remediation specialist were interviewed. From the interviews, information regarding educational experience and preparation of the interviewees was tallied. Information about pilot-site involvement was summarized. Statements were recorded on index cards from responses to the interview items on strategies implemented at the sites and descriptions of those that had been particularly effective and those that had not. A total of 129 positive and 86 negative statements were recorded. The statements were then synthesized to 57 positive and 41 negative strategies distributed among four categories: (1) instructional strategies, (2) curricular strategies, (3) cooperative efforts, and (4) administrative practices and procedures.

FINDINGS

The thirty individuals interviewed at the three sites had extensive educational experience, ranging from six to twenty-eight years. Twenty of them had fifteen or more years experience. None spoke negatively about the goals of their pilot site. Explaining their commitment to the goals, the individuals interviewed referred numerous times to the need to improve the education of students not in the academic, college-bound curriculum.

At all three sites, teachers and administrators were working together to eliminate the so-called "general curriculum." Starting in the 1990-1991 school year, students will be required to opt for either a vocational program or for a college preparatory program, with course requirements to prepare for employment and continued technical education upon graduation or for enrollment in a four-year college program. None of the interviewees expressed concern with this idea. As one teacher noted, not requiring students to follow a specific program of study in the past actually allowed them to choose an option of "no preparation" for the future.

Instructional Strategy Statements

Statements related to instructional strategies were summarized for the first research question, which asked, "What instructional intervention strategies have been developed and used by vocational and academic teachers to achieve integration?" The summarized statements were compiled into eighteen effective strategies and thirteen strategies that led to problems. They are listed in Table 1. Effective collaborative instructional themes that emerged include the following:

- Having vocational and academic teachers develop coordinated instruction where the instruction of one reinforces that of the other,
- Having vocational and academic teachers develop cooperative assignments,
- Using vocational student organization projects as a springboard for collaboration between vocational and academic teachers, and
- Having academic teachers use equipment and materials borrowed from vocational teachers to illustrate applications.

On the other hand, ineffective themes that emerged include

- Not reaching agreement between vocational and academic teachers on the specifics of the basic academic skills before they agree to reinforce one another's teaching,
- Not providing adequate planning time for the vocational and academic teachers to work in pairs or in small groups to develop cooperative instruction, and
- Not providing the vocational teachers adequate time to master procedures for teaching basic academic competencies, and not providing the academic teachers adequate instructional materials nor examples of real-life uses of the skills they teach.

Table 1

Instructional Strategies That Proved Effective and Those That Led to Problems

Effective Strategies:

1. Include basic academic skills objectives and instructional activities that develop and reinforce those skills in the lesson plans of all teachers, both vocational and academic.

2. Pretest students for basic skills needed in vocational offerings. If not in place, then either incorporate in vocational instruction or send student(s) for remedial instruction.

3. Have students in all classes, including vocational classes, provide both oral and written responses in complete sentences.

4. Establish higher expectations for students in all classes, particularly in their use of basic academic skills.

5. Assign meaningful homework on a regular basis for all students, including homework in vocational classes. Further, establish expectation that homework be completed.

6. Develop coordinated instruction between vocational and academic teachers. For example, use of spreadsheets in business classes required use of math skills which were, in turn, taught and reinforced by math teachers in math classes.

7. Have vocational teachers as speakers in academic classes where they can reinforce the need for basic academic skills in English, math, and science.

8. Use vocational student organization projects as a springboard for having vocational and academic teachers work together. Many of these projects require carefully prepared written reports which can become the basis for assignments in English classes or can be proofed and revised in English classes.

9. Have vocational and academic teachers emphasize the development of the same basic academic skills. For example, students were asked to write letters to prospective employers. English and vocational teachers then worked together to analyze errors the letters contained and then agreed on specific grammar skills that both teachers would emphasize, including subject-verb agreement, use of complete sentences, and spelling.

10. Develop cooperative assignments between vocational and academic teachers. For example, horticulture students needed to square off the location for a new greenhouse. The math teacher worked with the horticulture teacher and students at the site of the greenhouse to help them in completing calculations and measurements for determining the exact greenhouse location. In another instance, the business teacher worked with the English teacher to help students word-process term papers.

11. Use equipment borrowed from vocational laboratories to illustrate actual math and science applications in academic classes. In one instance, the industrial technology teacher helped the science teacher learn how to use solar energy equipment. The science teacher then taught basic principles of science that applied to the equipment. In other instances, math teachers taught math related to use of micrometers.

Table 1 (continued)

12. Teach basic academic skills only as they relate to actual applications in vocational classes, in an applied context. Otherwise, the teaching of the skills becomes abstract drill and practice which is not meaningful to the students. Further, students resent being assigned grades for such skills in vocational classes.

13. Have academic teachers prepare bulletin boards that illustrate vocational applications of skills taught in their classes.

14. Display calendars in vocational classes that state math and English skills, agreed upon cooperatively by the vocational and academic teachers, that are being integrated into the instruction.

15. Infuse examples of use of English, math, and science from work settings into the academic instruction, with examples supplied by the vocational teachers.

16. Have vocational teachers request help for students from academic teachers on specific applications of basic skills; for example, reading complex, technical instructions or calculating recipe quantities.

17. Use job-related topics for composition assignments in English. Further, find situations in literature that relate to real-life work experiences. For example, Mark Twain's glorified idea of riverboat work versus its reality.

18. Require students, even in machine and construction programs, to prepare written assignments. For example, place an essay question on each test.

Strategies That Led to Problems:

1. Sometimes English teachers were reluctant to accept technical materials from vocational programs as satisfactory references for term papers.

2. Agreement as to what basic skills were to be taught sometimes caused problems. For example, the business teacher wanted to use words from the state-supplied Future Business Leaders of America spelling awards program for developing spelling skills; the English teachers were reluctant to use the words due to their technical nature.

3. Achieving agreement between vocational and academic faculty as to what is acceptable use of certain basic skills can create problems. Business teachers noted that technical writing used for business letters and reports was somewhat different than writing the English teachers considered acceptable. For example, business letters may contain one-sentence paragraphs, while the English teachers considered such paragraphs unacceptable. Résumés used for business purposes are one page in length, while those prepared for English were three pages.

4. Vocational teachers feel they are not prepared to teach academics, while the academic teachers feel that they are now teaching all that they should be.

Table 1 (continued)

5. Although vocational teachers may be willing to emphasize the basic academic skills in their classes, the instructional delivery of them often creates problems. Vocational teachers need both a strong foundation in the skills and procedures for effectively integrating them into their instruction. Vocational teachers noted that inservice sessions on integration of vocational and academic education had focused, for the most part, on the needs of the academic teachers.

6. Science teachers need more help in identifying applications of what they teach in vocational programs as well as in the real world. However, science teachers expressed concern that due to the basic nature of most high school science, relevant applications may be hard to find.

7. Vocational teachers may be reluctant to loan equipment to academic teachers for a number of reasons, including the fact that the vocational teachers are responsible for the equipment and its safe use.

8. More teaching tools, including equipment and supplies, are needed by vocational and academic teachers if real-life uses of basic skills are to be taught.

9. Some vocational teachers felt that by sharing their instructional materials with academic teachers the academic teachers ended up "raiding" what they had worked hard to develop. The vocational teachers also noted that at times they felt they were being asked to develop instructional materials for the academic teachers.

10. Statewide English curriculums for literature exist and finding examples in that literature that relate to vocational education and actual job uses can prove most difficult. Further, the English teachers' commitment to the statewide English literature curriculum allows little time for teaching applied communication skills.

11. When academic teachers met with vocational teachers to help them with math skills instruction, they emphasized skills at too low a level, indicating that they did not understand the math requirements for the vocational programs.

12. Vocational teachers need to be paired one-on-one with academic teachers and vice versa. When larger groups of vocational and academic teachers work together, one or two teachers tend to dominate with trivial complaints and negativism.

13. The academic teachers felt that the vocational teachers lacked appreciation for what is involved in teaching basic skills. They failed to realize such things as reading are more than just reading words.

Curricular Strategy Statements

The second research question asked, "What curricular intervention strategies have been developed and used by vocational and academic teachers to achieve integration?" The statements related to curricular strategies were summarized for it. The nine effective strategies and ten strategies that created problems are listed in Table 2. Two effective collaborative themes that emerged were (1) having the vocational and academic teachers work together in small groups to develop programs of study, and (2) implementing applied courses in place of general courses with vocational teachers providing academic teachers with real-world application examples. Two strategies that led to problems were (1) placing students who have not performed satisfactorily in general courses in more advanced academic level courses without restructuring the instruction, and (2) simply renaming courses as "applied" without significantly changing the content or instructional procedures used in them.

Table 2

Curricular Strategies That Proved Effective and Those That Led to Problems

Effective Strategies:

1. Realign curriculum and develop plans of study that eliminate the general track. These can be developed through vocational and academic teachers, counselors, and administrators working together in small groups. The plans provide students with three options: vocational program completion with preparation for continued study at a postsecondary technical institute, a combination of vocational and academic preparation that provides job preparation as well as preparation for further study at a four-year institution, or academic preparation for continued study. Have the plans approved by the advisory committee and school board to emphasize their importance. Also, present them to local professional organizations such as the Chamber of Commerce.

2. Have students adopt one of the three plans of study—vocational, academic, or combined—as soon as possible.

3. Have academic teachers emphasize the value of combining vocational with academic preparation (e.g., vocational preparation can provide skills for employment that can finance further education).

4. Restructure general courses so that they become applied courses—courses that teach students things they will need to do in the real world, things that they can see a "reason for learning." For example, in English, use forms from job settings and have students speak before class on topics related to work.

5. Use input from the business community to structure offerings. Learn from employers what basic skills are needed on the job and then incorporate them in both vocational and academic instruction.

6. Make remedial instruction readily available to students who need it, particularly to help them meet academic skill requirements of vocational offerings.

7. Institute, schoolwide, a set period of fifteen to twenty minutes per day when all students and all teachers read. Material selected for reading is up to the individual; however, it may not be reading that is required for a particular class.

8. Base curriculum revisions on input from the business community. Survey area employers to determine use of technology in the work setting, use of basic skills in various jobs, and to get their assessment of adequacy of preparation that students they employ have received.

9. Inform students of curricular changes and reasons for them. Students perceive teachers more positively when they learn that vocational and academic teachers are working together.

Table 2 (continued)

Strategies That Led to Problems:

1. Students have not been adequately informed of value of vocational programs. For example, at one school, forty-three percent of the students who were not college bound were not in a vocational program.

2. Guidance counselors fear locking students into a "plan of study" too soon. On the other hand, "no plan of study" locks students into "no future."

3. Math teachers expressed concern that all students cannot learn complex math concepts, yet they are being asked to teach them to all students in the push to strengthen basic academic skills.

4. The education community seems reluctant to realize the necessity of meeting the needs of students not preparing for continued study through academic preparation, particularly students who will enter the workforce upon graduation or continue in postsecondary technical study.

5. Simply changing the name of a course to "applied" is not a remedy. Instructors of "applied" courses must be imaginative, willing to change, and welcome new approaches to instruction.

6. Library holdings need to be updated to support a revised curriculum. Most library holdings relate to traditional topics and are not useful in preparing reports on new technical, job-related topics.

7. The academic teachers may be overly committed to doing things the traditional way and find changes needed for cooperation between vocational and academic faculty threatening.

8. Rigorous attendance requirements at vocational centers can prohibit students at feeder schools from taking advantage of enrichment activities such as field trips.

9. Academic teachers, in particular, have traditionally relied on texts as the basis for their instruction. Getting them to rely less on the texts and more on real-world applications of the things they are teaching can prove difficult.

10. Not relating instruction to real-life uses of it, as students tell employers they have not been taught certain things when they have. The problem seems to lie in their inability to apply what they have learned.

Collaborative Effort Statements

The third research question asked, "What collaborative efforts have been undertaken by vocational and academic teachers to achieve integration?" Table 3 contains the summarized strategies, nine effective ones and six that led to problems, related to collaborative efforts between vocational and academic teachers.

The teachers were involved in a number of different cooperative efforts that proved effective, including sharing students' work, borrowing books from one another, sharing lists of academic skills taught and needed in their classes, and simply observing one another's classes. Problems that arose when collaborative efforts were undertaken were generally rooted in previous experiences and attitudes developed over time. These included the vocational teachers' feelings of inadequacy in teaching academic skills and their feeling that this instruction was the job of the academic teachers. On the academic side, the teachers expressed concern that the vocational teachers did not appreciate the difficulty of teaching in academic settings. Further, when the vocational teachers were located at a vocational center, the academic teachers felt that they had only limited opportunity to share with them and vice versa.

Table 3

Collaborative Efforts Between Vocational and Academic Teachers That Proved Effective and Those That Led to Problems

Effective Efforts:

1. Actual work completed by students in vocational classes was shared with academic teachers. Thus, the academic teachers could determine from these completed assignments just what skills are used in the vocational classes.

2. The academic teachers used planning periods as well as released time, including full days, to observe in the vocational classes. Thus, they gained first-hand knowledge of the use of academic skills in vocational classes.

3. The academic teachers borrowed books used by the vocational teachers. Likewise, the vocational teachers borrowed books used by academic teachers.

4. The vocational teachers identified 500-600 tasks that required the use of math and shared the list with the math teachers. Further, the vocational teachers prepared a chart that matched the math skills required for the vocational classes with those required by the state math curriculum.

5. The vocational teachers shared with academic teachers on a six-week basis the basic skills in math, science, and English that students will need in their classes.

6. The English teachers shared with the vocational teachers specific skills they would like to have emphasized and provided the vocational teachers with instructional materials for the skills.

7. Vocational and academic teachers worked as pairs to assure that students were being taught comparable applications of basic skills when they shared students between their classes. In other words, the teachers were teaching the same things, not conflicting information as sometimes occurs.

8. When vocational and academic teachers realize they are teaching the same students and confronting the same problems in teaching, then they shift focus from what is being taught to meeting needs of students. The dichotomy of "vocational" versus "academic" disappears. (The interviewees referred to this dichotomy a number of times as "us" versus "them.")

9. By sharing what they teach, vocational and academic teachers found that students could no longer get away with "so and so" (the other teacher) does not make us do this.

Table 3 (continued)

Efforts That Led to Problems:

1. Vocational teachers often felt that they were inadequately prepared to teach academic skills. Further, they questioned whether the delivery of such instruction was actually their job. The vocational teachers tend to ask, "Why can't English and math teachers be responsible for the development of English and math skills?"

2. In most vocational classes, not all students are weak in basic academic skills. Thus, problems in delivering instruction that emphasizes academic skills arise. What is needed is individualized help for students.

3. When vocational instruction is provided at a vocational center, on a separate site from the high schools where academic teachers are located, considerable difficulty is encountered in getting the teachers to work together.

4. Academic teachers can easily feel left out of attempts to integrate vocational and academic education. They have, generally, not been in on the grass-roots beginning of the changes and thus may question its worth.

5. Academic teachers noted that many more students have difficulty learning in the academic environment than vocational teachers realize. Thus, the academic teachers indicated a definite need for help from the vocational teachers in getting students to learn basic academic skills.

6. Both vocational and academic teachers expressed a need for the delivery of more relevant instruction in academic classes. Lack of planning time, appropriate instructional materials, and time for sharing with vocational teachers all limited the extent to which academic teachers could achieve instruction related to real-world uses.

Administrative Practices and Procedures Statements

Thirty-three strategies were summarized from the statements related to the fourth research question, which asked, "What administrative practices and procedures foster collaborative relationships between vocational and academic teachers?" Twenty-one of the strategies were effective ones, while twelve of them were ones that created problems. They are listed in Table 4.

Administrative strategies that facilitated the integration of vocational and academic education included providing extensive staff development, time for vocational and academic teachers to meet together and to observe one another's classes, and incentives for teachers to become involved in the integration efforts and to implement new strategies. In addition, administrators at the three sites effectively undertook a number of different public relations efforts to inform students, parents, and the community of changes taking place; surveyed teachers and students to learn of the impact of the changes; surveyed individuals from the business community to support changes being made; and used both formal and informal means of communication to gain support for the changes taking place. On the other hand, strategies that led to problems for administrators included not adequately monitoring inservice activities, failing to get the full commitment of all teachers and guidance counselors, and not updating teacher evaluation procedures to reflect changes the teachers were making in their instruction.

Table 4

Administrative Practices and Procedures That Proved Effective and Those That Led to Problems

Effective Practices and Procedures:

1. Establish a positive climate for the change process and involve all teachers in it.

2. All teachers must develop a feeling of ownership in the changes that are taking place. Procedures used to develop ownership on the part of the teachers included having them serve as leaders of small groups and assisting with inservice efforts.

3. Publicize to the students, parents, and community the purposes and anticipated outcomes of the cooperative efforts being undertaken by the vocational and academic teachers.

4. Let teachers know of administrative support for the changes in instruction through informal as well as formal channels of communication. For example, through informal conversations with teachers, a principal can reinforce the goals of integration simply by asking the teachers what is being done in their classes.

5. Provide for extensive staff development, with clearly defined outcome goals, that involves all vocational and academic teachers. Teachers particularly liked inservice offerings that were provided at their school sites.

6. Provide for staff development on an overtime basis. A one-shot, quick-fix approach is not effective.

7. Provide a staff development environment that is free from distractions of the day-to-day routine of school operation. A rustic retreat setting proved most conducive for establishing a climate for sharing between vocational and academic teachers.

8. Provide a special inservice day devoted to reinforcing the goals of integrating vocational and academic education—a day featuring a dynamic educator who is committed to strengthening education through the integration of vocational and academic education.

9. Divide teachers into small groups when asking them to cooperate on various aspects of integrating vocational and academic education. The teachers interviewed emphasized the importance of being able to share and plan within small groups of vocational and academic teachers working together.

10. Provide open, unstructured time for vocational and academic teachers to share in a relaxed atmosphere. Let them explore what it means to integrate vocational and academic education on their own.

11. Provide time for academic teachers to visit vocational classes while in session and for vocational teachers to visit academic classes while in session.

Table 4 (continued)

12. Provide incentives for teachers to become involved and implement innovative integration strategies. One incentive used was financial support to attend regional conferences for individuals implementing innovative integration strategies.

13. Provide as many opportunities as possible for vocational and academic teachers to meet. Regular staff meetings scheduled twice a month proved effective. At the meetings, provide time for sharing what is being done in the teachers' classes as well as for achieving long-range objectives of integration.

14. Assure that guidance counselors are involved in all stages of the change process and support the concept of integrating vocational and academic education.

15. Ask vocational and academic teachers to share class rolls. They will then be able to learn which of their students are in the others' classes.

16. Survey teachers and students to gain insight as to their perception and acceptance of the changes being implemented.

17. Ask both vocational and academic teachers to take time to ask their students what they think they are learning. The students' perspectives of what they are learning can be most enlightening.

18. Review overall plans and strategies for achieving integration of vocational and academic education with the teachers on a periodic basis, at least twice a year.

19. Consider moving classroom locations of both vocational and academic teachers so that they will have more ready access to one another. For example, a math teacher was moved to a classroom adjacent to the agriculture laboratories.

20. When vocational offerings are provided at a vocational center, designate a vocational teacher at the center and an academic teacher at each of the feeder schools to serve as site coordinators for achieving integration outcomes.

21. When vocational offerings are provided at a vocational center, designate responsible students as carriers of information between feeder schools and the vocational center, thus eliminating the delay of going through a central school office.

Practices and Procedures That Led to Problems:

1. Sometimes teachers perceived that only the vocational administrators were committed to the concept of integration. All administrators must be committed to it.

2. Students, teachers, and public groups need accurate information reflecting measurable outcomes of the integration effort. Thus, short-term measurable objectives are needed so that progress can be realistically reported.

Table 4 (continued)

3. The integration movement should not be treated as a fad. Vocational and academic teachers need adequate time to develop positive working relationships with one another.

4. Staff development contracted with outside groups such as neighboring universities caused problems when not properly directed. Teachers resented being taught things they already knew and being asked to do things that had not been tried and did not make sense. For effective staff development to occur, a hands-on, practical approach is needed.

5. When development of basic academic skills is stressed in staff development offerings, the vocational teachers often perceive of the inservice as directed more toward the academic teachers than toward them.

6. Administrative procedures may be needed to insure that actual changes in instruction are occurring as a result of inservice efforts. For example, at one school extensive inservice effort has been given to helping all teachers implement a number of different strategies for improving students' reading. However, administrative review of the teachers' lesson plans revealed that of twenty-five different strategies learned, the teachers were using only one or two of them on a regular basis in their instruction.

7. The needs of general-ability students should be emphasized in tne integration movement. It is aimed at helping general ability students improve their basic academic skills and is not a movement aimed at the college bound nor those needing extensive remedial instruction. Administrators found that academic teachers often perceived it as aimed at the latter group.

8. Failure to achieve the commitment of all teachers and guidance counselors to the changes being implemented invariably created difficulties.

9. Many vocational teachers perceived the guidance counselors as poorly informed about the vocational offerings. The guidance counselors also noted that pressures to meet the needs of college-bound students used a disproportionate share of their time.

10. Providing common planning time for vocational and academic teachers to work together can prove most difficult due to budgetary constraints.

11. Securing appropriate materials and applications examples proved difficult due to budgetary constraints and because, in many instances, the needed materials and examples do not exist.

12. Teacher evaluation procedures must be updated to reflect changes in teaching that occur due to the integration movement and increased emphasis on applied learning.

Effective Strategies

The fifth research question asked, "Which of the strategies, efforts, practices, and procedures implemented to achieve integration do teachers and administrators perceive as effective?" In discussing the other four research questions, the effective strategies were listed separately from those that led to problems; thus, the items related to this question have already been identified. Of the total strategies that were summarized from the 129 positive and 86 negative statements, 57 effective strategies and 41 strategies that led to problems were identified.

DISCUSSION AND IMPLICATIONS

Some key ideas surfaced from the information collected. First, administrators need to set the stage, but teachers need to determine the "how to" of specific integration strategies. For example, vocational teachers learned they must integrate the teaching of competencies in math, science, and language into their instruction on an ongoing basis, not as separate drill and practice. When they tried the latter, they found that their students resented the instruction and felt that they were just receiving more of the same "academics" that had already "turned them off." Further, when vocational and academic teachers share information about what they teach or plan to teach, forming small groups of two to six teachers is important. When larger groups of teachers met, sharing of ideas and planning for future integration activities became limited.

The teachers commented that they no longer perceived of themselves as "us and them," academic versus vocational teachers or vice versa. Their focus became the students and how they could best help the students learn what they needed. And the teachers, both vocational and academic, noted that they gained respect for what the others were teaching and the problems they had in teaching. The academic teachers particularly enjoyed seeing how the content of their instruction could be applied to real-life settings. In fact, many of them borrowed tools and equipment from the vocational teachers or took their students to the vocational laboratories for instruction. In addition, they wanted to know what basic competencies were required for success in the vocational offerings and found lists of the competencies prepared by the vocational teachers helpful. The vocational and academic teachers found they could reinforce one another's assignments and often gave joint

assignments. For example, writing assignments in English classes were completed on technical topics with references and resources secured from the vocational teachers.

Administrators must establish and maintain a positive climate for change, one in which all teachers develop a feeling of ownership. Carefully planned faculty meetings and inservice activities that reinforce the goals of integration are essential. Administrators must also provide open channels of communication among students, parents, teachers, and the community to gain support for the effort. The integration process must be viewed as an over-time effort and all administrators must be involved and committed to it, not just vocational administrators.

Though limited in scope and subject to biases from the perspective of the researcher as well as from those interviewed, this research can contribute significantly to the movement to integrate vocational and academic education. It provides insight at the "grass roots," school-site level as to what will and will not work when teachers work together to integrate vocational and academic education. Outcomes of the interviews provide specific examples of strategies that have been implemented and teachers' and administrators' perceptions of their effectiveness. A total of fifty-seven effective strategies and forty-one strategies that led to problems were summarized in four tables. The strategies can serve as a starting point for others contemplating changes in curriculum and instruction to achieve the integration of vocational and academic education.

REFERENCES

Bensen, C. (1989, July 17). *Testimony on integrating academic and vocational education before the Senate Subcommittee on Education, Arts, and Humanities.* Berkeley: National Center for Research in Vocational Education, University of California at Berkeley.

Bottoms, G., & Korcheck, S. A. (1989). *Improving the communications, mathematics, and science competencies of students enrolled in vocational courses.* Atlanta, GA: Southern Regional Education Board.

Carnevale, A. P., Gainer, L. J., & Meltzer, A. S. (1989). *Workplace basics: The skills employers want.* Washington, DC: The American Society for Training and Development and the U.S. Department of Labor, Employment, and Training Administration.

The forgotten half. (1989). *U.S. News and World Report, 106*(25), 45-49, 53.

National Commission on Excellence in Education. (1983). *A nation at risk: The imperative for educational reform.* (Publication No. 065-0-00-00177-2). Washington, DC: U.S. Government Printing Office.

National Commission on Secondary Vocational Education. (1984). *The unfinished agenda: The role of vocational education in the high school.* Columbus: National Center for Research in Vocational Education, Ohio State University.

Regs Review: AVA analysis of the proposed Perkins regulations. (1991, October). Alexandria, VA: American Vocational Association.

Rosenstock, L. (1991). The walls come down: The overdue reunification of vocational and academic education. *Phi Delta Kappan, 72*(6), 434-436.

The William T. Grant Commission on Work, Family, and Citizenship. (1988). *The forgotten half: Non-college youth in America.* Washington, DC: Author.