But I've Been Doing This for Years: Informal Integration of Vocational and Academic Education Pilot Test Report

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EXECUTIVE SUMMARY

This pilot study represents the first phase of a two-year study of individual teachers who provide integrated instruction for their students, with the goal of uncovering genuinely innovative tips and techniques which may be emulated by others. The pilot study sought to identify individual teachers who recognized the advantages of integrating the vocational and academic aspects of their instruction prior to the influence of state or national initiatives such as Tech Prep. By examining these "early innovators," the project is seeking to locate and describe strategies that truly work and

that lie outside of (or augment) the current body of knowledge on the subject. The instruments and procedures developed and refined in this pilot study will be used to collect data from a larger sample of teachers in several midwestern states during the second phase of the study.

The pilot study concentrated on the process of identifying the right subjects to study. A multiple-stage procedure was developed which involved (1) having state-level staff nominate exemplary vocational teachers and/or programs, (2) conducting telephone interviews with nominees to determine if they were "early" integrators along with their current level of integration, and (3) selecting a small number of subjects for further study based on telephone interview results. This identification procedure yielded three detailed interviews.

Data collection, analysis, and reporting procedures were piloted by conducting intensive on-site interviews with the three subjects in the late fall of 1993. The interview guides were developed by project staff and focused primarily on teaching methods used to achieve integration. Interviews were audiotaped, and the tapes were transcribed and content analyzed. Narrative reports were developed around the following organizers: (1) teacher background (with integration); (2) their overall view of integration (e.g., why it should be done, what its function is, perceived benefits); (3) how integration is achieved in their classrooms (and labs), (4) the level of support they have received and how they garnered support, and (5) their perceived evidence of the success of their efforts.

Two themes emerged via the analysis of interview data. One focuses on the adaptation of supervisory techniques used by a teacher through over twenty years of industry experience, the other on the ability and willingness to ferret out existing information from a variety of sources and adapt it for instructional use.

INTRODUCTION

In 1983, the National Commission on Excellence in Education (NCEE) produced a report, *A Nation at Risk*, which was very critical about the quality of education in American schools. Among the issues raised by the report was concern that schools no longer produced graduates who met the challenges of the changing workplace. Vocational education came under criticism for producing graduates who were trained for specific jobs that no longer existed. A common theme in the report, and other commentaries in support of it, was that schools must yield graduates who could adapt to the changing workplace and face the competitive challenge being posed by other nations. The vocational community reacted to the NCEE's report by producing their own report, *The Unfinished Agenda* (National Commission on Secondary Vocational Education [NCSVE], 1984), providing strong points in defense of vocational education with appropriate solutions. One of NCSVE's recommendations was to integrate vocational with academic education because the former provided an applied setting that would make learning more meaningful to students. The NCSVE report stated the following:

What is really required today are programs and experiences that bridge the gap between the so-called "academic" and "vocational" courses. The theoretical and empirical bases as well as the practical and applicative aspects of academic courses and vocational courses must be made explicit and meaningful. (p. 14)

From a vocational education standpoint, the major initiative to come out of the reform movement was the integration of vocational and academic education. The primary aim of integration was to strengthen vocational education through applied academics to improve the reading, writing, and computational skills of noncollege-bound students. For college-bound students, vocational education would complement academic education by providing an applied environment that

would make learning more realistic.

Several approaches have been used in implementing integration of vocational and academic education in secondary schools. Grubb, Davis, Lum, Plihal, and Morgaine (1991) used interview and observation techniques to identify the following eight "models" of integration:

1. The infusion of academic content into existing vocational courses by vocational teachers
2. The infusion of academic content into vocational courses by combinations of vocational and academic teachers
3. The use of vocational applications to illustrate concepts and principles within academic courses
4. The alignment and modification of the content of both the vocational and academic curricula
5. Independent senior-year projects which incorporate skills learned in vocational and academic coursework
6. Occupationally oriented academies, or schools-within-schools
7. Occupationally oriented high schools
8. Occupational clusters replacing traditional academic departments within a high school; a combination of occupational clusters and academic departments in a matrix structure

Roegge, Galloway, and Welge (1991) interviewed vocational teachers and observed classes in ten Illinois schools. They found a variety of individual and collaborative strategies being employed such as cross-teaching, consulting (i.e., providing expertise on content and/or applications to other teachers), student consulting (i.e., students providing assistance to other students), and various formal and informal "content alignment" strategies.

Schmidt, Finch, and Faulkner (1992) analyzed the results of over 100 interviews with school personnel to classify vocational and academic integration activities into six themes:

1. Cooperative efforts (vocational and academic teacher collaboration)
2. Curriculum strategies (building integrated curricula)
3. Instructional strategies (integrated instruction)
4. Administrative practices and procedures (supporting integration)
5. Student outcomes (changes resulting from integration)
6. Teacher outcomes (changes resulting from integration)

For several years, schools in the Southern Regional Education Board (SREB) consortium have employed and evaluated integration approaches involving the incorporation of academic content in vocational courses, administrative policies to encourage integration, applied instructional approaches, collaboration, and counseling (Bottoms, Presson, & Johnson, 1992).

The prevailing opinion appears to be that more complex and formal integration approaches have the best potential for creating and sustaining meaningful reform (Grubb
et al., 1991). As practitioners seek to introduce integration strategies, they have often encountered resistance as well as frustration in attempting to implement this rather nebulous concept.

Statement of the Problem

Among vocational education practitioners, a common response to calls for integration is, "but I've been doing this for

years." What do they mean by "this?" It has often been suspected that "this" means business as usual--an effort to find and justify integration in the status quo. But they may also be referring to an "infusion" strategy--that is, incorporating academic content into their vocational instruction (Grubb et al., 1991). The infusion strategy is believed to have limited capacity to stimulate broader reform and has, therefore, been largely passed over in recent integration efforts. There is no reason to doubt, however, that valuable insights into actually "integrating in the classroom" may be gained from those who practice infusion. Further, there is evidence to suggest that teachers often go beyond infusion and interact and collaborate with one another, on their own, to integrate vocational and academic instruction (Roegge et al., 1991). In search of large treasures, small individual gems are sometimes overlooked.

Purpose of the Study

The purpose of this pilot study (Phase I) was twofold. The primary purpose was to test and thereby refine instruments and procedures for use in a multistate study of informal, teacher-initiated integration to be conducted during the second year of the project (Phase II). In addition to testing instruments and procedures, data gathered from Illinois teachers would comprise the initial dataset for Phase II. Both phases of the study seek to examine individual teachers who have successfully integrated vocational and academic instruction on their own rather than as a part of a larger school, state, or national initiative.

This study is framed in previously cited description and classification of integration done by Grubb et al. (1991) and Schmidt et al. (1992). The study focused specifically on two elements of those earlier NCRVE works, namely the "infusion of academic content into vocational courses" model(s) identified in the Grubb study, and the "instructional strategies" theme identified in the Schmidt study. Within this framework, the objectives of the study follow:

- To develop criteria and definitions for identifying and selecting an appropriate sample, and use them to formulate sampling instruments and procedures.
- To refine qualitative data collection instruments and strategies.
- To refine methods for summarizing, analyzing, and presenting the data.
- To report initial results from Illinois sites.

METHODOLOGY

This pilot study tested methods and procedures for exploring teacher-initiated integration efforts, employing qualitative interview and observation methodologies designed to provide detailed descriptions of how integration is accomplished in classrooms. Patton (1990) identifies "clarifying a model or treatment" (p. 107) as an appropriate application of qualitative methodologies. This study examined the so-called infusion model of vocational and academic integration in detail.

Sample Identification

Finding the right people to interview is critical to a descriptive, qualitative study of this nature and was therefore a

major focus of the pilot study. The following multiple-stage process for identifying the sample was developed:

- Staff from the Secondary Programs and Services Section, Illinois State Board of Education/Department of Adult, Vocational and Technical Education were asked to identify what they considered to be the top ten secondary programs in the state in agriculture, business education, health occupations, home economics, and industrial education. A total of 49 teacher/program nominations were secured through consensus among the ISBE consultants in each of the occupational areas (a copy of the initial contact letter is in Appendix A). Though the study's purpose was mentioned in the letter, state staff were not asked to select teachers based on integration but, rather, on a perception of overall program quality.
- The teachers who were nominated via this process were then interviewed by telephone to determine the extent and type of vocational and academic integration they practice in their programs. The structured interviews were conducted using procedures and instruments similar to those used by Roegge et al. (1991). The process was as follows: (1) teachers were contacted by letter to inform them of their nomination and alert them to forthcoming telephone contact; (2) teachers were contacted by telephone to set up times for interviews (this sometimes took several calls); and (3) the telephone interviews were conducted, each lasting 10-15 minutes. These initial telephone interviews served two purposes: (1) to select the most appropriate teachers to participate in the in-depth interviews, and (2) to provide focus to the in-depth interviews (see Appendix B for the "Site Selection Guide"). Follow-up calls were made as necessary to clarify information gathered in the interviews.
- Results of the telephone interviews were examined by project staff and faculty from the Department of Vocational and Technical Education, University of Illinois at Urbana-Champaign. Based on this examination, two primary criteria were used to select sites for further examination. These were (1) the degree to which integration was instruction-based (as opposed to curriculum-based) and (2) the length of the time the teachers had been using integration in their teaching.

Three sites were selected for the pilot study based on the data obtained on the telephone interviews. The programs selected for examination in the pilot study were in the areas of technology education, home economics, and vocational agriculture.

Instrument Development

The focus of qualitative research is detailed or "thick" description. In this case, the aim is to describe what individual teachers do and how they do it in terms of integrating vocational and academic content via instructional techniques. For the pilot study, an instrument was developed which was semistructured, focusing on major anticipated themes while allowing for these (or alternative themes) to emerge during the course of the interview. The on-site teacher interview instrument, therefore, was developed and structured very broadly around the following organizers: (1) nature (general description) of the integration activities; (2) focus (e.g., was integration being accomplished primarily through the teaching method, instructional materials, applications such as lab activities, work-based learning experiences, special projects, or a combination of the above); (3) the implementation of the integration strategy and its acceptance into the school culture; and
(4) the evaluation of integrated learning. These guides were adapted from protocols used in previous studies (e.g., Grubb et al., 1991; Roegge et al., 1991).

The instrument was researcher designed and borrowed in style from an instrument developed by Schmidt et al. (1992). The draft was examined by faculty and graduate students in the Department of Vocational and Technical Education at

the University of Illinois at Urbana-Champaign for relevance, consistency, and clarity of questions. The instrument contained open-ended questions that were expected to help in leading the discussions with teachers during the interview process (see Appendix C).

On-Site Interviews

The pilot study interviews were conducted during November of 1993. Though the intent was to follow the interview guides rather closely, it was discovered that a more unstructured approach succeeded in allowing the subjects to tell their stories from their own perspective. Though the aforementioned interview guides were used, the format remained largely unstructured, and the interviewers only referred to the guides if the interviewees failed to address specific points. The interviews were recorded on audiotape, averaging approximately three hours in length. Interviewer notes supplemented the tapes, and program documentation was also collected at the time of the site visits.

Content Analysis and Reporting

The audiocassettes from the site interviews were transcribed and typed out for content analysis. Narrative reports were written from the data collected in the interviews and through observations. When all narratives were completed, they were content-analyzed to identify any existing commonalties in nature, focus, implementation, acceptance, and evaluation methods.

RESULTS

The purpose of this pilot study was to develop and refine methods for exploring individual teacher initiatives regarding the implementation of classroom integration strategies. This purpose was accomplished by using instruments and procedures to interview a small sample of teachers in Illinois. The remainder of this section reports the findings of the pilot study.

Analysis of Telephone Interviews

A list of 49 teachers was obtained from the Illinois State Board of Education. Forty-six interviews were completed. Table 1 shows the summary of the results from the interviews.

Table 1
Summary of Results from Telephone Interviews with Illinois Teachers

Vocational Program	Number of Schools Contacted	Number of Interviews Held	Teacher-Initiated Integration	Tech Prep or Other Formal Program	0-2 years Integration Experience	3-4 years Integration Experience	5-10 years Integration Experience	>10 years Integration Experience
Agriculture	10	10	6	4	1	3	4	2
Business	10	10	7	2	-	3	3	4
Health	10	10	5	3	2	4	-	3
Home Economics	10	9	6	4	4	2	-	3
Industrial	9	7	3	4	1	2	2	1
Total	49	46	27	17	8	14	9	13

Twenty teachers indicated that their integration activities were self-initiated. However, it was observed that nearly all of the business teachers who integrated in their teaching did so because of the structure of their programs. For example, written and oral communication skills are an inherent part of job search skills instruction (e.g., application and résumé writing, interviewing). Computational skills are a necessary component of accounting. A typical response from a business instructor on why he or she initiated integration was that it was "just part of the coursework. . . ." This implied that the business education curriculum was inherently integrated and that no purposeful innovation (particularly one that centered on instruction) had taken place to initiate or improve integration.

Nearly half of the nominated teachers had been integrating for four years or less, mostly as part of Tech Prep or because of its influence. Seventeen teachers indicated that their programs were part of the Tech Prep initiative. Some teachers, however, indicated that even though their programs were now part of Tech Prep, they had been integrating vocational and academic content in their instruction prior to the emergence or influence of Tech Prep.

Thirteen teachers had more than ten years experience with vocational and academic integration, with one teacher claiming to have been integrating for twenty and another for twenty-four years respectively. Teachers cited various reasons for initiating integration in their instruction. There did not seem to be one universal reason for initiating integration.

The following are quoted examples of reasons given by teachers who had been using vocational and academic integration strategies for a long time. Shown in parentheses is the number of years the teacher had been integrating:

- "It just seemed to be the right thing to do." (9 years)
- "Agricultural science has always been this way." (34 years)
- "Just part of the coursework. . . ." (23 years)
- "Always felt education should be a total experience." (20 years)
- "It is important." (10 years)
- "Have to use biology and other topics in order to teach home economics." (29 years)
- ". . . important to real life, the class must have aspects of life in it. . . . Problem solving is important especially with math. Bring all topics together. Use analogies." (8 years)

- ". . . wanted to implement what they do in industry because I worked in industry for years. Very hands on, applications based." (10 years)

Teachers in business (and to a lesser extent in agriculture) seem to have been using integration in their instruction as a requirement of their courses. Agriculture teachers stated that using biology content is a necessary component of their instruction, while business teachers included math and communication as part of their instruction without considering this process as unique or as innovative teaching. However, in programs such as home economics, technology, and health occupations, teachers needed to make a deliberate effort to introduce academic subject content in their instruction. In these disciplines, skill components appear to have traditionally been taught separately.

Case Study Narratives

Of the three interviews conducted, two are reported here. They are labeled "Real-World Experience" and "Whatever It Takes," respectively, to denote the central theme embodied by each. The two are reported in narrative style and include the following sections: Background, Overall View of Integration, How Integration Was Accomplished, Support for Integration, Evidence of Success, and Summary.

Case 1: Real-World Experience

Background

The setting was most unremarkable. The industrial education program was housed on the ground floor of an older, multiple-story school building on the main thoroughfare through the town (of about 8,500 citizens). Upon entering the room, the immediate impression was one of a sense of disorganization. Tables were arranged in a loose circle in the center of the room, and the walls were bordered with cabinets and shelves piled high with reference manuals and equipment in various states of disassembly. An adjoining room was overflowing with used electronic components salvaged by the teacher. There was a quiet buzz of activity as students moved about working on projects. The atmosphere was very informal and seemingly unstructured.

The primary focus of this case was the teacher, who for the sake of anonymity is referred to as Paul. Paul was a unique individual who appeared to have "done it all" in his life. He spent twenty years in private industry as an electrician, aerospace technician, electrical contractor, surveyor, and business consultant. He has been both an employer and an employee. In the early 1980s, he began teaching technical courses part-time at a nearby state university. While he was teaching, he also earned a Master's degree in Vocational/Technical Education and applied for a position as a teacher of industrial education at the local high school, a position which he held for fifteen years. He also continued to operate an independent consulting business, and on weekends he taught other secondary teachers how to implement and use the Principles of Technology course. Paul was addressed as "Chief" by his students.

Overall View of Integration

Paul saw nothing special, new, or unusual about integration or his own involvement with it. To him it was a natural outgrowth of the subject matter. Electronics requires mastery of certain aspects of mathematics. It also requires knowledge of various laws and theorems from physics and chemistry. When viewed through the lens of his vast work experience, these "integrated" components were actually a natural part of the course content. Paul also taught Principles of Technology, which is a purposefully integrated physics course, but again, he did not view the application of physics principles as anything worthy of special attention--it was just the proper way to learn the principles. From his own experiences in industry, Paul was very much a proponent of "learning by doing." He claimed that much of what he learned as an electrical contractor was learned via on-the-job experience. Also, not having spent his formative career years within the academic culture, he did not hold a traditionalist's view of "academic" vs. "vocational" tracks (nor did he speak in educational jargon, which was refreshing). He was focused on what he believed students needed to succeed in the workplace, and that is what he sought to provide for in his classes. It is this researcher's opinion that this would hold true regardless of his subject matter specialty.

How Integration Was Accomplished

The integration that occurred in Paul's program stemmed from the subject matter and, more importantly, the teaching approach which he employed. He epitomized the "teacher-as-facilitator" genre because, as he said during the interview, "I've run a business for ten years, and I know what it is to get production." In his view, a teacher "gets production" by allowing (or forcing) the students to be active participants in the teaching/learning process.

His electronics course was totally project-oriented. Students were assigned to project teams of two to five persons. The basic instructional format which was used faithfully is as follows: (1) project pretest, (2) review and recording of project learning objectives, (3) guided team research of project learning objectives, (4) mini-lecture and recording of lecture notes, (5) team consensus on proposed solutions to project questions, (6) team lab work to determine actual answers to project questions, (7) project posttest for group grade, and (8) project examination for individual grade. The focal point for all class activities was the Daily Work Journal. The impetus for the journal came, not surprisingly, from Paul's business experience. As an electrical contractor, he supervised up to three different crews on different jobs simultaneously. By requiring each crew to keep a journal, and keeping one himself, he was better able to coordinate supply needs, crew schedules, and so on. The student journals themselves were nothing more than a common composition book, which were, according to Paul, "$1.17 at Wal-Mart, if you buy 100 of them they give you a reduction in price, and they always have engineering conversions in the back, everything they need. . . ." All student work was recorded in a journal, following very specific guidelines developed and copyrighted by Paul. Students were required to write at least three complete statements of conclusion at the completion of each project.

The basic format outlined above was printed on a display board on the wall of the classroom. This format, along with the prescribed guidelines for recording journal information, was the first thing the students learned in Paul's classes. Steps 1 and 2 were completed by the entire class together. From that point, each team was on its own until the project was completed. When a team had completed its independent research of the project objectives, Paul provided feedback and delivered mini-lectures of pertinent content. He opined that it was easier to lecture directly, across-the-table, to a small group rather than to an entire class. Teams were required to complete eight projects during the electronics course. If a team finished early, the students were able to work on "special projects" for the class, school, or community. For

example, one student had installed conduit and wired additional lighting for the school auditorium; another had built a computer control for a neighborhood light display.

A key component of Paul's instructional strategy was organizing all student activities to be conducted in teams. Whether his students were working in the laboratory or making presentations about their program it was always done in teams. Paul said of this strategy, "Everything I do is teams. . . . Two, three, four, or five is a team and then I have to work with these teams everyday to see how well they mesh together." Working in teams was an important way to improve interpersonal skills among the students. It was also a reflection of the modern workplace where problem solving in teams is considered to be more effective. Inevitably, when people work together differences are bound to occur. Paul explained how he builds student teams and how conflicts are handled:

I pick them at random then I see how it works . . . I will force for two or three weeks, I'll say look, if you can't get along with any of them, what are you going to do on the job . . . If I got a problem child, then I've got to try them with another team.

While the primary source of student motivation was the activity-oriented approach, two other motivational tools were used by Paul. One was the portfolio, which each student was required to keep. Though portfolio evaluation is in vogue right now, Paul claimed that his motivation for requiring them was that he himself kept one for all of his twenty years of business experience. Ring binders and plastic page jackets were provided through Tech Prep funding. In their portfolios, students accumulated information related to career planning, their curriculum/course of study, results of student assessments, and student-produced materials. One portfolio which was reviewed also contained letters to the student from a number of colleges expressing interest in having the student apply.

The other motivational tool which doubled as a public relations/marketing strategy was public presentations. Paul had been approached by a number of professional organizations, agencies, conferences, media outlets, and individual schools to make presentations about the program. Rather than making the presentations himself, he established a "traveling team" of students. These students (usually in small groups) presented and demonstrated the project work they had completed in class, their portfolios, or journals. According to Paul

. . . it's ridiculous for me to go to a workshop and stand up there and say "now this is what I do, what I do, what I do." The kids take portfolios and journals and labs and they tell them what they do. They don't want to hear it from me, I'm boring.

Students worked very hard for the opportunity to be on the traveling team. They were chosen based primarily on their work attitude, and the teams consisted of students of all ability levels. Paul took the researchers to the self-contained behavioral disordered room and introduced us to a behavioral-disordered student who had made a presentation the previous evening. The student spoke very excitedly about the presentation. It was obvious that he had never had this kind of opportunity before.

Paul's method of involving his students with everyday activities was evident when this research team visited with him. The interview was conducted right in the classroom with all the clutter of students working on their projects in the background. From time to time Paul would shout out instructions to groups of students. When an interview question touched on a particular part of his teaching, rather than tell you what he does, he would bring out students to respond by showing you their journals, portfolios, or describing their experiences directly.

Support for Integration

The support that Paul has received for his program resulted largely from the fact that, from early on, he has been active and even aggressive in seeking publicity and support. After he implemented his project-oriented teaching approach, he was eager for others to see it. Administrators were hesitant to endorse his techniques at first because they were so different from the usual "stand-and-deliver" lecture approach. The academic teachers "just thought he was standing around doing nothing all day." Their approval was won partly through persistence--"I kept asking the principal to come down and said we want to give you a one-hour presentation on what we do. He got tired of coming down"--and partly through success. Once his methodology was established and he felt confidence in it, Paul began encouraging his students to enter their projects in school science fairs and competitions, and they began winning. This, he reported, validated his approach and got others to sit up and take notice. He continued to work almost daily at developing relationships with academic teachers. He succeeded in convincing an English teacher to implement applied communications. He also convinced the biology teacher to try applied biology/chemistry. The teacher subsequently reported that he was going to use applied teaching in all of his courses.

Another event which greatly influenced acceptance and support, and which also occurred because of the teaching approach and its success, was the awarding of a Principles of Technology pilot site grant. This brought the program to the attention of the entire community. Since that time, Paul has taken every opportunity to publicize his program through print and television outlets, as well as through live presentations (discussed earlier).

Evidence of Success

While no "hard" evidence was presented of increased achievement levels or the like, several examples point to an approach that was succeeding. Among these were the following: virtually no discipline problems, expanding enrollment, success in competitions, requests of others to visit the program, identification by the state as an exemplary program, requests to make presentations, requests to teach other teachers in applications-based methods, the inquiry letters from colleges in one student's portfolio, and the respect of peers and administration.

Summary

The key to success in this case appears to be the extent and--perhaps more importantly--the nature of Paul's work experience. Twenty years in the workplace was certainly beyond the norm for high school teachers, regardless of their field. What was striking, however, was that a large portion of the work experience was supervisory and entrepreneurial in nature. This raises further issues. Because of his entrepreneurial nature, was Paul better able to visualize how he wanted his class to perform and point them in the appropriate direction? Was he more willing to go out on a limb with his instructional technique, either in the hope of finding something better or something to market? Was he better at facilitating learning because of his supervisory experience? In other words, does the limited degree of control a supervisor exercises over his or her workers better prepare them to be facilitators? One of the issues always raised in regard to applications-based instruction is that teachers are resistant to relinquish control over their students. Paul appeared to regard the degree of control he exercised over his class as sufficient and certainly tighter than what he experienced in the workplace, even though, by traditional education standards, it seemed very loose indeed. Paul

seemed to have empowered students in his class to take responsibility for the learning.

Case 2: Whatever It Takes

Background

Case 2 was a two-teacher home economics program in a school of approximately 650 students in a town of 10,000. Again, the physical setting indicated nothing out of the ordinary. In contrast to Paul's classroom, this one had orderly rows of tables and chairs--a very traditional arrangement. As the interview took place after school hours, student activity was not observed but was discussed and is examined later in this report.

Both of the home economics teachers were interviewed simultaneously. This turned out to be most appropriate because the two appeared to work in concert most of the time. This case study, however, does not focus on the private sector experience of the teachers, but on the way they complemented one another and on their resourcefulness in gathering, developing, and/or adapting instructional materials and other resources to make their teaching more integrated and effective. For the sake of anonymity, they are referred to as Cheryl and Diane. Cheryl was the lead teacher in the department, with twenty years of experience. Diane, who had fourteen years of experience, had been a free-lance artist and an art teacher before becoming a home economics teacher.

Overall View of Integration

Like Paul, Cheryl and Diane viewed vocational and academic integration as a necessary function of their particular subject area and had been consciously integrating their instruction for many years. Unlike Paul, they both were more cognizant of and active in the broader "integration movement." It also appeared that they had, in the past, held to a more traditional educator's view of separate "vocational" and "academic" curricula and were more content-driven. They sought out and received grants for integrated curriculum development, and had attended several state and national conferences, both as members of the audience and as presenters. In fact, it was this participation which appeared to have been their initial impetus for finding and gathering curriculum materials related to integration and adapting them for inclusion into their program. Through this process they also found that some desired topics had not been covered; therefore, they began to develop their own curriculum materials. Therein lays the major difference between Cheryl and Diane's integration and Paul's. While Paul's was more tied to instructional methodology, Cheryl and Diane's was more a matter of curriculum development.

Cheryl and Diane began integrating to meet a specific need--lack of ability by students to write coherently. Both were distressed by the spelling, grammar, and sentence structure they were seeing in written work, so they began to emphasize these skills more in their curricula. Some of their concerns with weaknesses in their students came through contact with employers, something both teachers viewed as important.

How Integration Was Accomplished

Cheryl and Diane emphasized the curricular aspects of integration as opposed to teaching methods, particularly the development of integrated curricula. Both women emphasized the importance of finding high-quality "canned" materials and using them with as little modification as possible, due to the constraint of time. As Cheryl put it, "High school education does not allow think time. Four minutes between classes, we both are teaching six different preps a day . . ." This lack of "think time" was what led them to begin writing for small curriculum development grants. The grants allowed the district to buy some of their time so that they were free to "think" and develop integrated materials of their own.

Due to the curricular emphasis, Cheryl and Diane's integration seemed more purposeful and straightforward, and perhaps a bit less natural, than Paul's. The infusion of academics into various topics in the food science and marketing areas was made plain to the students, who were told that they were performing a certain mathematical operation (e.g., a mathematical operation that they must be able to master in order to calculate nutrient content). The food science course had been developed to the point that students received science credit for it and could use it as a prerequisite for Biology 2 (instead of Biology 1). It was interesting to note, however, that not many students chose this option. Most of the students who took the food science course followed a home economics sequence, while "college prep" students opted for Biology 1.

Cheryl had recently begun to cross-teach certain units with the biology teacher in the nutrition area. They had coordinated their instructional schedules so that complementary topics occurred more or less simultaneously. Then they exchanged classes to do "short lectures" on specific topics. For example, the biology teacher lectured both classes on the structure and function of lipids and triglycerides, then Cheryl taught them about fat content in the diet.

Another approach which was used frequently was simulation. Teams of students set up companies which developed and marketed a product. The teams developed business plans and product ideas, and then made formal marketing presentations to school administrators seeking official permission to carry on with their plan. In another scenario, students were teamed, placed on a "desert island," and given a certain number of days to develop an economy. In both instances, students were totally responsible for both the learning process and the outcomes. Students learned problem-solving, interpersonal, and communication skills.

In addition to keeping up with current developments in the broader integration movement, both teachers had made a practice of keeping in regular contact with local employers. These contacts served several purposes such as recruiting contacts for work-based learning sites and guest speakers and building political support for the program. The major purpose related to integration was to elucidate from employers what skills were needed to perform jobs in their businesses.

Support for Integration

Both Cheryl and Diane reported that the school administration was very supportive of their activities. They reported that when they had reached out to other teachers to pursue collaborative integration efforts, they had met with mixed reactions. Cheryl and Diane were persistent, however, and both reported very positive working relationships with and reactions from fellow teachers, once the ice had been broken. It appears that the key ingredients here were persistence

along with a focused intent to do what was best for the students whether or not it had popular support. Also, their willingness to compete for grants and their subsequent success in winning them had given them added incentive by providing much needed "think time" and had also helped produce positive publicity for their programs and the school.

An important point, however, was that Cheryl and Diane would have done these same things regardless of whether or not they received any support at all. They both gave the very strong impression that once they locked onto something which they felt was good for students, they went after it full speed, with or without support. While they appreciated support, they did not require it to carry on, nor were they daunted in the least by the lack of it.

Evidence of Success

Again, the evidence was of a rather squishy nature and seemed to deal more with students' enthusiasm and motivation to learn rather than achievement in any specific area. Diane reported that students responded enthusiastically to "being in charge" during the simulations. Their approach seemed to be popular with students, as both were teaching full class loads in a school of less than 700 students.

Summary

It was reported earlier that the administration was supportive of Cheryl and Diane's efforts to integrate. But why wouldn't they be? These two teachers had taken it upon themselves to provide the very best for their students, whatever it takes. They had, of their own volition, upgraded themselves professionally through extensive reading, inservice, contact with business and industry, contact with other teachers, and exhaustive search and review of curricular materials. They were secure and flexible enough to go outside of their own discipline if the need called for it. They had spent a considerable amount of their own money to purchase materials when the funds were not available. They had not hesitated to reach out to colleagues whenever they felt that collaboration would be beneficial to their students. In short, they appeared to embody the label, "consummate professional."

IMPLICATIONS

The primary purpose of this pilot study was to test and thereby refine instruments and procedures for use in a multistate study of informal, teacher-initiated vocational and academic integration to be conducted during the second year of the project. In addition to testing instruments and procedures, data gathered from Illinois teachers would comprise the initial dataset for the larger study. The topic of integration has been studied rather extensively in recent years, though the focus has typically been on schoolwide, statewide, or national initiatives. This study, on the other hand, sought to ferret out self-developed initiatives which otherwise go unnoticed beyond the walls of the individual classroom. To do so required careful identification of the subjects to be studied, thus the intent and purpose of this pilot study.

Though intensive and time-consuming, the multiple-stage process used to identify the pilot sites proved an effective means for identifying the subjects. Personnel from the Illinois State Board of Education responded promptly to the request to identify exemplary programs and/or teachers in each vocational subject area, providing names, addresses, and

telephone numbers of the schools/programs and individuals. The telephone interviews with the nominees were very time-consuming, often requiring two or more calls to set up and complete the interviews. All respondents, however, were receptive to the intent of the study and unfailingly cordial and thorough in the interviews.

As a result of the interviews, the telephone interview instrument will be modified slightly for the larger study. As a result of efforts to gather as much information as possible upon which to base the decision whether or not to examine the teacher more closely, it was found that the instrument lacked sufficient focus. After analyzing the data from the interviews, it was decided that selection for further study would be based primarily on the length of the teacher's tenure and the number of years she or he had been integrating, along with the nature of the integration. Several extraneous items were subsequently removed from the final telephone interview instrument. For the expanded study, and for future studies of this nature, it is highly recommended that sample selection interview efforts be tightly focused on the specific variable(s) of concern.

Another area which was solidified based on the pilot test was the degree of structure of the on-site interviews. It was originally planned for the interviews to be highly structured, but it was decided prior to the actual interviews to audiotape the interviews as a safeguard against missing any important information. This decision proved fortuitous. The interviewees, with minimal prompting or probing, were very expansive in their descriptions of their backgrounds and experiences with integration. Much of the flavor of the results would have been lost in a more structured setting. Thus, it was decided to audiotape all interviews, transcribe the tapes, and perform content analysis on the transcripts.

The initial analysis of the tape transcripts was done by hand according to preset organizers. Due to the time and difficulty encountered, a computerized analysis tool is being examined for use in the larger study. Also, the organizers were modified slightly based on the results of the interviews.

In anticipation of the expanded study, the findings provide useful direction. Based on the findings of this study, future research in this area should focus on teaching methodologies used to foster integration. Every attempt should be made to locate and examine individuals like Paul in Case 1. The approaches and activities he employed to accomplish integration also facilitated problem-solving and teaming abilities in his students. His classroom was truly "different" in many respects and reflected much of the current writing on application-based instruction and integration methods. It is these types of experiences which can contribute more substantively to practice. Another reason for increasing the focus of the selection process is Case 3, which was not reported. Though the telephone interview gave this program the appearance of being innovative, the on-site interview revealed that, while it was a solid program, essentially nothing remotely extraordinary was happening in terms of integration or innovative instruction. This again emphasizes the importance of focusing the selection specifically on a few components or variables.

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APPENDIX A:
LETTER TO ILLINOIS STATE BOARD OF EDUCATION

February 24, 1993

Kathleen Nicholson-Tosh, Manager
Secondary Programs and Services
Department of Adult, Vocational and Technical Education
Illinois State Board of Education
100 North First Street
Springfield, IL 62777

Dear Ms. Nicholson-Tosh:

The National Center for Research in Vocational Education has funded a research project, under my direction, to examine "informal" integration of vocational and academic education by secondary school teachers. The intent of the study is to identify and describe classroom techniques used by vocational teachers to incorporate academic content into their teaching. The study is currently being piloted in Illinois and will encompass several midwestern states.

I write to ask your assistance in identifying pilot sites for us to study in Illinois. Could you and/or appropriate staff members identify what you consider to be the top 10 programs in Illinois in each of the areas of Agriculture/Horticulture, Home Economics, Health Occupations, Business Education, and Industrial/Technology Education? We will then conduct telephone interviews with teachers in your recommended programs, and eventually select 2-3 teachers for in-depth on-site interviews. The only caveat I would make at this time is to emphasize that we are looking for *informal* integration. In other words, I am seeking teachers who integrate their instruction of their own volition and not as part of a larger requirement or project such as a Tech Prep initiative.

Either I or a member of my staff will follow up with you by telephone soon in order to provide any clarification you may require and/or listen to any suggestions you might have. I regret having to intrude on your already busy schedule, but would greatly appreciate your assistance.

Thank you very much for your attention.

Best regards,

Chris A. Roegge
Assistant Professor and Project Director

APPENDIX B:
SITE SELECTION INTERVIEW GUIDE

NCRVE Integration Project
Site Selection Interview Guide

Name of Instructor: _____

Name of School: _____

Address & Telephone: _____

Date Contacted: _____

Introduction:

Hello, my name is _____ and I am calling on behalf of Professor Chris Roegge of the University of Illinois. You recently received a letter from the Illinois State Board of Education explaining the research that Professor Roegge is conducting for the National Center for Research in Vocational Education, and that your program had been nominated as one of the ten best in Illinois. I would like to take about ten minutes of your time to ask you for some more information on how you integrate vocational and academic instruction.

We are interested in learning how teachers combine vocational and academic content within their teaching. For example, a Home Economics or Agriculture teacher may blend biology content into their lessons. We are particularly interested in teachers who do this informally, that is, in the course of their normal teaching rather than as part of a Tech Prep program or any other formal activity.

1. Do you currently do anything like I have just described?

1a. If so, could you give me a brief description or example?

2. What are some examples of "academic" topics which you include in your instruction?

3. Why did you choose to integrate your instruction?

4. How long have you been integrating your instruction?

5. What types of instructional materials do you use (commercial vs. self-developed)? If they use self-developed materials, request an example.

6. Have you received any recognition for your integrated teaching?

7. Who else (if anyone) in your school is doing anything similar to this?

8. What differences have your use of these integrated methods made in your students?

Additional Comments:

Initial Impressions:

APPENDIX C:
ON-SITE INTERVIEW GUIDE

Vocational and Academic Integration
On-Site Interview Guide

1. Date & Time: _____

2. Vocational Program: _____

3. Interviewee Name: _____

4. School Name & Location: _____

5. Interviewer: _____

Directions

Mr./Mrs./Dr._____, the purpose of this research project is to study teachers who have successfully integrated vocational and academic subject matter in their own classes. Much has been made of more complex integration projects and activities, but we feel that many worthwhile individual integration activities have been overlooked. That is why we are here. One of the major reasons you were chosen for this interview is that you have indicated that you have been "integrating" in your teaching for ____ years. This obviously predates the "integration movement," therefore, we view you as a pioneer in this area.

Above all else, we want you to speak your mind freely and without reservation. With that in mind, I would like to assure that your responses will be kept confidential. Would you mind if we recorded the interview?

With your permission, I'll turn on the recorder now.

First of all, I will ask you some general questions about vocational/academic integration:

6. How aware are you of the so-called "integration movement?" Do you keep up with the current writing on the subject? Do you consider yourself a part of this "movement"?

7. What is your overall opinion of integration? Do you see it as good or bad? What potential benefit does it have for (you/your students/your program/vocational education in general)? What major problems do you see with it?

8. How important is integration to instruction in your discipline? How much integration do you feel is necessary in your discipline?

Briefly summarize respondent comments to this point.

Now, let's talk more specifically about your own experience with integration.

9. Why have you attempted to integrate your courses? Can you recall any specific person, event, or decision that initiated your integration?

10. Specifically, how do you integrate your own classes? (prompt for teaching materials used, projects, and teaching methodology: *What, Why, and How*)

Collect any materials available.

11. How do others impact on the way you integrate? How dependent are you on others to facilitate your integration work?

a. administrators

b. other teachers

c. students

12. How has the integration movement affected what you do (e.g., recognition, acceptance, invitations to inform others, and so on)?

13. What difficulties have you encountered along the way?

14. How well has your integration process worked? Can you provide examples of specific student successes as an outcome of your integration process?

15. Right now, what do you most need to help you succeed with integration?

16. Do you have anything else you would like to tell us?

Thank you very much. We would like to confirm some information about your background and teaching experience.

17. Teaching Experience: _____ years 18. Administration: _____ years

19. Work Experience in Teaching Area: _____ years

20. Education (highest qualification): _____

Many thanks for finding the time to talk to us. The information you have provided will greatly assist in our understanding of teacher-initiated programs that successfully integrate vocational and academic subject matter.

We have enjoyed talking with you.