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ABSTRACT

A project to further the integration of vocational and academic education in Ohio used focus groups and surveys to obtain information on the needs of academic and vocational teachers for curriculum to assist them in this integration. Focus groups at nine secondary schools involved administrators and vocational and academic teachers. Their responses indicated the following: communication and having common planning time was important; curriculum materials were needed that provided academic applications for different trade areas; teachers would like books of lesson plans or a state curriculum for academics as they relate to different occupational areas; teachers favor externships; problems in teaching applied academics included too many preparations and no experience in the vocational areas; and barriers to integration were scheduling, class size, and attitudes toward career preparation. The high school survey was mailed to 1,242 secondary teachers, administrators, and teacher educators (47.7% responded). Findings indicated the following: high support for integration; need for common planning time; need for preservice programs; preference for integrated student projects, computer software, teacher resource guides, sample curriculum, and student workbooks; and important outcomes from teacher externships. Responses to almost identical surveys mailed to 477 adult basic and literacy education teachers (120 respondents) were highly comparable to those of the high school survey. (Eleven tables are appended.) (YLB)

NEEDS ASSESSMENT ON INTEGRATION OF ACADEMIC AND VOCATIONAL LEARNING

Catherine Ashmore
Morgan Lewis
Paula Kurth

Submitted to:

Division of Vocational and Adult Education
Ohio Department of Education
Center on Education and Training for Employment
1900 Kenny Road
Columbus, Ohio 43210-1090

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FOREWORD

The Center on Education and Training for Employment (CETE) is pleased to submit to the Division of Vocational and Career Education, Ohio Department of Education, this report of its needs assessment for the integration of academic and vocational education. The study was one phase of a state-wide project directed by the Division.

The needs assessment collected data through focus groups and mail surveys from instructors, administrators, and teacher educators. These data indicated widespread support for the concept of integration, but also identified several major obstacles to broader implementation.

The study was conducted in cooperation with staff from the Division of Vocational and Adult Education. Those most closely involved were Joe Elk and James Pinchak. Several CETE staff members contributed to the study. Deborah Bingham-Catri is the director for the CETE components of the overall project. Catherine Ashmore organized and led the focus groups and wrote the summary of the discussions. She also developed the questionnaires for the mail surveys. Morgan Lewis and Robert Maniman designed and conducted the statistical analysis of the data from the mail surveys, and Morgan Lewis wrote the chapters presenting the results. Paula Kurth assisted in all phases of the study and wrote the executive summary and the findings and recommendations chapter. Janet Ray was the word processor operator of the final manuscript.

On behalf of all the CETE staff, I wish to express our appreciation for the fine cooperation we received from the Division staff and from the hundreds of educators—academic and vocational; secondary, postsecondary, and adult—who provided the data that made the study possible.

Darrell L. Parks
Interim Executive Director
Center on Education and Training
for Employment

EXECUTIVE SUMMARY

The Division of Vocational and Adult Education of the Ohio Department of Education was awarded a grant to further the integration of vocational and academic education in Ohio. The grant contains several components, one of which is to develop curriculum material(s) for use in secondary and adult education vocational programs.

To better inform project staff on the needs of academic and vocational teachers in Ohio for curriculum that would assist them in integrating vocational and academic education, focus groups and surveys were used to obtain information. Focus groups involved administrators and vocational and academic teachers. Surveys were mailed to instructors (secondary and adult), administrators, and teacher educators.

Highlights from Focus Groups

The focus groups dealt with several topics:

- What makes the integration of vocational and academic education work?
- What are your curriculum needs/wants?
- What curriculum is currently available to you?
- Is team teaching working and, if so, how/why?
- What do you see student internships consisting of?
- How do you feel about teacher externships?
- What problems do you see with applied academics?
- What is role of teacher education in integrated vocational and academic education?
- What barriers to integration have you encountered?

Responses to the first four topics indicated that–

- communication and having common planning time is important,
- curriculum materials are needed that provide academic applications for different trade areas (e.g., a science textbook that pulls together chemistry, metallurgy, and physics for machine trades),
- some teachers want assistance in determining what should be included in, for example, communications,
- some teachers would like to see groups of academic teachers who teach in the same trade area brought together to work on curriculum-related activities,
- teachers would find books of lesson plans helpful and others would like a state curriculum for academics as they relate to the different occupational areas, and
- team teaching is looked upon favorably by those who have done it.

Regarding student workplace experiences, teachers were more familiar with the concepts of job shadowing, early placement, and cooperative education. Some of the logistical problems they experience with implementing these programs are probably similar to what they will find with

SWEs. Responses to teacher externships in which academic and vocational teachers would go out to worksites in teams was looked upon favorably.

Some of the problems in teaching applied academics included the following:

- Academic teachers have too many preparations.
- Academic teachers may have many new applied preparations each year.
- Generally, academic teachers do not have experience in the vocational area(s) they are paired with.
- Academic teachers are selected to teach applied academics using criteria such as seniority.
- It is difficult to meet the requirements of the vocational area and the state model.

Also, focus group participants report that academic teachers receive no training relative to vocational education, what vocational schools are like, or how to integrate academics and vocational subjects.

Barriers to integration mentioned during the focus groups include scheduling, class size, and attitudes toward career preparation. Also mentioned as barriers were physical proximity, both as it relates to classrooms and offices.

Highlights from Surveys

The high school survey was mailed to 1242 secondary teachers, administrators (including supervisors), and teacher educators. The percent of usable returns was 47.7.

The data from the high school survey were analyzed a number of ways for analysis. Findings include:

- Ratings indicated that support for integrating academic and vocational education is high, teachers want access to curriculum materials developed by other teachers across the state, teachers need common planning time so that they can work together as teams, and preservice programs focused on vocational and academic integration are needed by academic teachers.

- All groups support integration of academic and vocational instruction. Teachers educators, administrators, and academic instructors indicated more support for the concept than did vocational instructors; administrators also had higher scores than instructors who teach both vocational and academic material.

- Vocational teachers were less likely than administrators to indicate need for (1) a staff person to assist in securing worksite placements, (2) training for externships, and (3) planning time for teachers to work together.

- Administrators saw more need for instructional materials and professional development than the three groups of instructors, and teacher educators saw more needs in these areas than vocational instructors.

- The types of instructional materials preferred are integrated student projects, computer software, teacher resource guides, sample curriculum, and student workbooks.

- Summer was the preferred time for teacher externships by a slight margin and one week was the most popular choice for length.

- Outcomes of teacher externships that were viewed as important included seeing the relationships between academic and occupational skills, creating relationships with potential employers for student internships, learning new processes, learning to work together as a team, learning new occupational skills, updating existing occupational skills, obtaining resources and teaching materials for the classroom, and learning new management skills.

- One-fifth of the high school respondents reported that their schools offer their students an internship early in the vocational program that helps students focus on the applications of academics in the workplace.

- Regarding student workplace experiences (SWEs), the highest responses indicated that the length of the experience depends on the program, the time of year depends on the program, that a placement person should shoulder the primary responsibility for securing the SWE, and vocational teachers should visit the student's work site twice and academic teacher should visit once.

- Attitude, increase in self-motivation, career awareness, and awareness of academic requirements were all seen as important criteria in the evaluation of a student's workplace experience.

To provide a perspective on the integration of vocational education with Adult Basic and Literacy Education (ABLE), questionnaires that were almost identical to those used in the high school survey were mailed to 477 ABLE administrators and instructors. A second mailing was not used in this survey. Responses were received from 120 (25.1 percent) of those contacted.

The results from the high school and ABLE surveys were compared, and, in most cases, both the demographics and responses were highly comparable. The one major difference in the demographics was that a much higher proportion of ABLE respondents identified themselves as administrators. The responses to the items in the different sections of the questionnaires yielded very similar patterns. As with the high school survey, the ABLE respondents indicated strong support for integration, and the differences among items were almost entirely in the strength of support.

Conclusions

Although the members of the focus groups talked about the problems they were encountering, they all seemed positive toward the concept of integration of academic and vocational education. The survey reinforced many of the positions expressed in the focus groups.

CHAPTER 1

INTRODUCTION

The many education reform documents published during the past decade have made consistent recommendations about the role and function of vocational education. First, the role of vocational education should be to make youth employable. Second, employability can be accomplished best when vocational education complements academic education. Third, academic and vocational curricula should be integrated and their coequal importance recognized. And fourth, students should see the connection between academic skills they are required to learn and the world of work in which they will be required to apply those skills. Vocational education helps students realize the links holding their total education together and makes their academic instruction more meaningful (Education Testing Service, 1991; National Commission on Secondary Vocational Education, 1984; The Secretary's Commission on Achieving Necessary Skills, 1991; Wade & Williams, 1988; William T. Grant Foundation Commission on Work, Family, and Citizenship, 1988).

For these reasons, the Division of Vocational and Adult Education of Ohio Department of Education, the Vocational Instructional Materials Laboratory at The Ohio State University, and Upjohn Institute are working together under a grant from the U.S. Department of Education to create, develop, and implement a comprehensive model for the integration of academic and vocational education. Ohio's Work SITE (student internship teacher externship) Learning plan has as its main objective to substantially increase the correlated academic usage in secondary, full-time adult, and Tech Prep occupational programs. The following are the main objectives:

- Models for teacher externships will be formalized.
- Models for student internships will be developed.
- The following products will be developed for statewide dissemination: (1) an operational manual for replication purposes, (2) an operational model for teacher externships, (3) an operational model for student internships, and (4) a curriculum product(s).

The curriculum product(s) will be developed based on the findings from the focus groups, needs assessment, a curriculum product search, and recommendations from a panel of experts. The developed materials will be pilot tested and then revised and disseminated statewide.

Conduct of Focus Groups

During December 1995 and early 1996, focus groups were held at 9 different secondary schools throughout Ohio and involved both administrators (including supervisors) and teachers (academic, vocational, and adult). The purpose of the focus groups was to get a feel for what was occurring in the way of academic and vocational integration and what obstacles teachers and administrators were encountering. These meetings were helpful in formulating some of the questions that later appeared on the needs assessment questionnaire. The information gathered from the focus groups is presented in Chapter 2.

Needs Assessment Survey

The needs assessment survey was mailed to 1242 secondary and adult teachers/instructors, administrators (including supervisors), and teacher educators. The return rate was 48 percent. More detailed information regarding the development of and the information gathered from the surveys is presented in Chapter 3.

A separate survey, using an almost identical questionnaire, was sent to adult educators. In this survey, the focus was the integration of vocational programs with Adult Basic and Literacy Education (ABLE). The findings from the secondary and adult surveys are compared in Chapter 4. The final chapter of the report compares the major findings from the focus groups and the two surveys. The conclusions arising from these comparisons are discussed and recommendations offered.

CHAPTER 2

FOCUS GROUP RESEARCH ON INTEGRATION OF ACADEMIC AND VOCATIONAL LEARNING

As part of a project to increase the use of applied academics in Ohio, a needs assessment was conducted during Spring 1996. To help develop questions for a written needs assessment survey, nine focus groups were held in December 1995 and January and February 1996. Because the survey was intended to be mailed to randomly selected vocational and applied academic teachers and administrators, these groups comprised the member of the focus groups.

In Ohio, academic subjects are deemed correlated when they are integrated with a specific vocational program. In general, both academic and vocational teachers seem to like the concept.

A number of topics were discussed. Of special interest were the following:

- What makes integration of vocational and academic education work?
- What are the curriculum needs for integrated academic and vocational education?
- What is needed to make team teaching possible?
- What do teachers and administrators think about student internships?
- Are vocational and academic teachers participating in externships?
- What special problems do applied academics teachers experience?
- What is needed in regards to teacher education?
- What are other barriers to integrating academic and vocational education?

This chapter presents the findings from the focus groups.

What Makes Vocational and Academic Integration Work?

Focus group participants believed that communication is the key factor to the success of vocational and academic integration. Integration works best where there is a real partnership and communication between academic and vocational teachers. Communication can be fostered by–

- mutual respect, which improves communication,
- time to map out teaching plans for the coming year,
- common planning periods for teams of vocational and academic teachers,
- being able to visit in each others' classrooms, and
- academic teachers attending advisory committee meetings.

With teachers assigned heavier teaching loads, the opportunity for common planning periods and opportunities for vocational and academic teachers to observe in each others' classrooms, integrating vocational and academic education becomes more difficult.

What Are the Curriculum Needs for Integrating Vocational and Academic Education?

According to focus group participants, teachers were often selected to teach applied academics for reasons other than their expertise. This creates definite needs for curriculum. The following needs were noted:

- Textbooks for applied academics
- Time to develop curriculum in cooperation/coordination with vocational teachers
- Access to curriculum developed by other Ohio applied academics teachers
- Curriculum that reflects the uniqueness of each program (e.g., machine trades needs chemistry, metallurgy, and physics)
- Current curriculum
- Curriculum that is not "dummied down"
- Clarification of what material is taught where (a particular problem between communications and employability classes)

A major curriculum problem is seen as the conflict between what a student must know according to state-mandated standards versus what a student must know for the occupation. Another is that vocational students vary widely in academic abilities.

Teachers expressed the desire meet with their colleagues and learn what others in similar situations are doing to meet the needs of students. One suggestion was made to pull teachers together to do OCAPs for applied subjects. Teachers also expressed a desire for books of lesson plans that are related to programs and joint projects.

What is Needed to Make Team Teaching Possible?

Teachers view team teaching as having more than one teacher in the classroom at a time. They were enthusiastic about team teaching. In the past, when the Options Program was implemented, more opportunity existed for team teaching than is currently available. Because academic teachers must, in most cases, rely on the vocational teacher to help them relate the academic theory to the vocational application, team teaching is seen as a valuable tool.

For their part, vocational teachers like to have the academic teacher work with them in their lab period. Many academic teachers use their planning period this way, if it is possible, that is, if they are free when their students are in the lab setting. Academic teachers would like their schedules to be planned so they have time to team teach in the lab. Lack of time seems to be the major barrier to team teaching. Teachers feel rushed for time and believe that students suffer as a result.

What teachers seem to be saying, then, is that they need time to coordinate with each other so that team teaching is possible.

What Do Teachers and Administrators Think about Student Internships?

In general, teachers and administrators like the idea of internships for students. Most schools used some type of internship for the vocational students. However, none used an internship that oc-

curred early in the school year for level one students that focused on academics as they are used in the workplace.

The major concern expressed in the focus groups was that students are not always as mature as the teachers would like for them to be that early in their program. However, when it was explained that students would not be participating but, rather, observing, the idea gained acceptance.

Because strong connotations are attached to the term "internship," project staff decided to term this type of student internship a "student workplace experience" to differentiate it from traditional internships.

Are Vocational and Academic Teachers Participating in Externships?

Some vocational programs already use externships, but few externships seem to involve academic teachers. Some teachers believe a week or two working in the field would be valuable, but others think a day would be enough. Expectations of an externship involving academic and vocational teachers going out as a team are not clear. Some academic teachers believe that they would have to learn the entire job so that they could apply the academic concepts to the occupation.

Although academic and vocational teams of teachers are not currently doing externships, teachers were enthusiastic about the concept. They saw it as a way to further team teaching. The opinions regarding length of experience and whether it is best scheduled during the school year or during the summer varied.

What Special Problems Do Applied Academic Teachers Experience?

Academic teachers selected to teach applied academics face two major problems: lack of professional preparation and serving multiple vocational programs. Lack of continuity in teaching assignments ranks third.

Academic teachers need opportunities to learn about the industry. They feel overloaded and unprepared to provide applied course work. Also, they often feel that they are not meeting the expectations of their academic discipline if they teach applied subjects for regular credit. When given the choice, academic teachers generally choose to teach the academic students, making the applied courses the responsibility of the lowest in seniority/least experienced teachers in the schools.

And, again, applied academic teachers feel that they must teach to both the state standards and the occupational requirements.

What Is Needed in Regards to Teacher Education?

As mentioned in an earlier discussion, most future teachers preparing to teach academic classes do not have any prior experience with vocational education as students themselves or in their professional preparation. Focus group participants indicated that the university-based teacher educators who prepared them for teaching did not prepare them to integrate vocational and academic education. Teachers in the focus groups also indicated that they did not feel prepared to work with students with special needs who comprise a portion of vocational student enrollment.

Under current conditions, first year applied academic teachers need extra help in learning how to conduct an applied class in a vocational school or correlate it with vocational education programs in a comprehensive high school. They also need additional preparation to teach students with special needs.

Vocational teachers are discouraged by the length of time it takes them to obtain a bachelor's degree.

What Are Other Barriers to Integrating Vocational and Academic Education?

In this section we discuss barriers, other than those we have already identified, as challenges to the future success of integration of vocational and academic education in Ohio.

Administrators often have different problems than the teachers because of the pressures of school boards, community opinion, state requirements, and financial resources. In the focus groups where teamwork was visible, the administrators had made a large effort to work cooperatively with the teachers.

Teachers said that home school teachers discourage students from taking vocational education yet have had no experience with what they are talking about. This was also true of parents and school administrators. The attitude that all students' goals should be to attend college still exists in spite of the reality of careers of the future.

It was felt that students need to start planning much earlier for their career choices so that they can take the right courses early in their high school years. If all teachers and students better understood the potential outcomes of vocational programs there would be greater support for this concept.

Student motivation is often blocked by the personal problems they bring with them to school. They need more counseling outside of the classroom. The academic teachers, especially did not feel they had time or preparation to help students with their personal problems.

Facilities need to be more conducive to integration ... including locating of offices, teaching space in the labs, and access to computers and other equipment. It was felt that schools need to make better use of computers to teach applied academics but the lack of access is the major problem.

Getting and keeping good applied academics teachers is difficult. Many schools move them around arbitrarily to suit the schedules. The academic teachers need to feel supported by the vocational teachers who can establish their credibility with the students and contribute materials and ideas for their curriculum. In return, the vocational teachers need to feel that they are respected by the academic faculty. There is a risk in trying any new program concepts which can be minimized when all the school staff support each other as a team.

Summary

Comments from the focus group meetings provided excellent resources to develop the questionnaire for the mailed survey throughout Ohio. We suspected that we had already learned what the responses to our questions would be, but we could not anticipate how strongly Ohio educators felt about these subjects. They definitely support integration of vocational and academic education; want curriculum, especially for the academic teachers; and like the idea of team teaching, but do not always know how to make it work and/or have the time to make it work.

Both internships for students and externships for teachers were positively received, although teachers are already very active in providing many types of student internships. The lack of vocational experiences for academic teachers through teacher education was seen as a major problem. More support from administrators and school boards was seen as critical to making integration of these programs viable. Finally, the image of vocational education was seen as a barrier to the success of the program, and mutual respect between vocational and academic instructors was viewed as essential.

CHAPTER 3

MAIL SURVEY OF KEY GROUPS INVOLVED IN INTEGRATION AT THE SECONDARY LEVEL

The focus groups provided opportunities for extended discussions of current efforts to integrate academic and vocational learning. To determine if the opinions expressed were representative of the key groups who took part in these meetings, a mail survey was conducted with selected samples from each of the groups. This chapter discusses the results of the survey of integration at the secondary level. The following chapter discusses the survey of integration at the adult level.

After briefly describing the conduct of the survey, the chapter is organized by the main sections of the questionnaire. Different types of items were used in these sections to obtain information on varying aspects of integration. The chapter presents the results from the separate sections and, where appropriate, compares results related to similar topics across sections.

Developing the Survey

The questions included in the survey were developed with the assistance of project staff and an outside panel whose members possessed expertise in evaluation, vocational and academic integration, and testing. The questions required respondents to use a five-point scale to rate their level of agreement with statements, rate their level of preference for various options, rate the relative importance of items, and check preferences. A few open-ended, short-answer questions were also included. The last page of the survey requested demographic data.

The questionnaire was printed on buff-colored paper and saddle-stitched into booklet form. Each page of the booklet was 8 1/2" by 7". There were eight pages, including one page to collect demographic data.

When this initial stage of survey development was completed, the questionnaire was field-tested with teachers and administrators at several schools, and changes were made as needed. This testing revealed that almost all the respondents were choosing only the two highest (favorable) rating points and avoiding the middle (undecided) and lower ratings. As a result, the scale was revised so that the second and third rating points reflected varying degrees of support and only the lowest point reflected lack of support.

The questionnaire, a cover letter signed by Ohio's Director of Vocational and Adult Education, and a return, postage-paid envelope were mailed to vocational and applied academics teacher, administrators and vocational supervisors, and teacher educators. The vocational and applied academics teachers were randomly selected from the populations of teachers whose positions were funded as applied academics units and administrators and vocational supervisors were randomly selected from JVSDs. Because the number of vocational teacher educators was small, all vocational teacher educators were sent surveys.

Conducting the Survey

The questionnaire was designed to obtain information on dimensions of integration that had been identified in the focus groups. These included perceptions of the desirability of integration; effectiveness of current efforts; preferences for possible policies, practices, and instructional materials;

and criteria and outcomes for teacher externships and student internships. A copy of the text of the survey is included in the appendix.

The questionnaires were mailed to a randomly selected sample of 1,242 instructors, administrators, and teacher educators. One follow-up mailing was made to encourage responses. A total of 593 usable responses were obtained. Table 3.1 presents the number mailed and the number of questionnaires returned from each of the groups.

TABLE 3.1
NUMBER OF QUESTIONNAIRES MAILED AND USABLE RESPONSES RECEIVED BY GROUP

Group	Number Mailed	Number Returned	Percent Returned
Instructors (a)	779	334	42.8
Administrators	395	210	53.2
Teacher Educators	68	43	63.2
Other/No answer	--	6	.1
Total	1242	593	47.7

(a) The original mailing was to 585 identified as vocational instructors and 194 identified as academic instructors. On the returned questionnaires, 230 reported themselves as vocational instructors, 65 as academic instructors, and 39 answered that they taught both.

Teacher educators were the most likely to return their questionnaires, administrators next, and instructors least likely. Slightly more than half (56 percent) of the respondents were males. Two-thirds of the respondents had been in education 15 years or longer, and one-fourth had more than 25 years of experience. Among the vocational instructors, the service areas most heavily represented were Trades and Industry (27 percent), Business (20 percent), and Agriculture (13 percent). Among the academic instructors, the courses most frequently taught were Employability (20 percent), English (16 percent), and Mathematics (13 percent). Appendix Table 1 presents the full demographic characteristics of the respondents.

Comparisons Across Key Groups

The first step in the analysis was to determine if there were significant differences across the groups with regard to the various facets of integration reflected in the questionnaire. Because of the large number of items and their diverse nature, comparison of individual items would have been tedious and some significant differences would have occurred simply by chance.

To base the comparisons on larger aggregations, the first 33 items, those in section A of the questionnaire, were grouped with regard to the aspects of integration they addressed. Two

methods were used to make these grouping. An empirical grouping was made using factor analysis which determines if there are identifiable patterns in the responses to the separate items. A subjective grouping was made by sorting the items into those that appeared to be most similar. Table 3.2 presents the wording of the 33 items ranked by their mean ratings. The means are based on a five-point rating of level of agreement with the items. The five points were defined as follows:

1 = none, 2 = moderate, 3 = high, 4 = very high, 5 = highest

Factor analysis begins with the matrix of intercorrelations among the items. This matrix is presented in Appendix Table 2. The maximum likelihood method was used. Three analyses were conducted extracting four, five, and eight factors. The factors emerging from the three analyses were rotated to yield patterns of loadings that maximized the uniqueness, or independence, of each factor. These analyses yielded similar, but far from identical, factors. The rotated loadings for the five factor solution are shown in Appendix Table 3. The subjective groupings of the items are shown in Appendix Table 3A. A comparison of the two tables indicates many similarities between the groups developed by the two methods.

The first factor in all three of the analyses had its highest loadings on how vocational and academic teachers should work together, its next highest loading on items involving workplace experiences, and one item on block scheduling. In the four factor solution, several additional items relating to teacher preparation, instruction materials and other resources had fairly high loading on the first factor. In the five and eight factor solutions, these aspects emerged as separate factors.

In all three analyses, the second factor had high negative loadings on items 5 and 3. These items had the second and third highest mean ratings of all 33 and reflect overall support for integration. (See the wording of the items in Table 3.2.) The fourth factor in the five and eight factor solutions also had negative loadings. Two items (23 and 28) concerned the need for a staff person to coordinate workplace experiences and teacher externships. The other two items with high negative loadings on this factor (24 and 29) involved teachers' need for training for externships and teachers' need for planning time to work together.

The explanation of these structures is that respondents with relatively lower ratings on these items tended to give relatively higher ratings to the items with high loadings on the positive factors. Stated another way, respondents who were slightly less positive about the value of integration and the need for a staff person, still tended to endorse teachers working together, preparation for integrated instruction, and workplace experiences. The analysis of variance, discussed in the next section, indicates that it was mainly the vocational instructors who tended to be a little less positive than administrators and, in some cases, teacher educators.

The third factor, a positive one, involves perceptions of the effectiveness of current efforts at integration. The three items with the highest loading (12, 6 and 20) all begin with the phrase "My perception is . . ."

In the five-factor solution, the fifth factor relates primarily to instructional materials and professional development needed to improve integration. This factor included item 13 which is concerned with access to the best curriculum materials developed by other teachers. When the responses of the five groups are combined, this item had the highest mean rating, 4.39.

TABLE 3.2
LEVEL OF AGREEMENT WITH ITEMS IN SECTION A RANKED BY MEAN RATINGS

Item	Mean	SD
Teachers need access to the best curriculum materials developed by other teachers across the state. (13)	4.39	0.93
I support the integration of academic and vocational education. (5)	4.36	0.99
Students need integrated academic and vocational education. (3)	4.29	0.96
Teachers need planning time to work together as teams. (29)	4.27	0.97
Academic teachers need preservice programs focused on integrating academic and vocational education. (8)	4.22	0.98
Applied academic teachers need to spend time observing their students in the vocational labs. (14)	4.18	1.02
Curriculum materials based on the OCAP developed for academic classes. (9)	4.08	1.09
Workplace experience that focuses on the way academics are used in the workplace is important for vocational students. (19)	4.04	1.01
The Ohio Department of Education must provide leadership for the integration of academic and vocational programs. (4)	4.02	1.14
Teachers need professional development programs to improve their team teaching skills. (22)	3.96	1.11
Team teaching by academic and vocational teachers is needed in applied academics. (27)	3.90	1.16
Applied academic teachers need to participate in externships in the workplace. (18)	3.90	1.14
Vocational students prefer learning academic subjects through applied academic classes rather than as uncorrelated subjects. (25)	3.89	1.18
Materials are needed to help prepare students for workplace experience. (21)	3.88	1.05
Academic and vocational teachers need to go through externships as teams. (15)	3.86	1.17
Vocational students need some kind of internship. (17)	3.80	1.06
A chart is need that shows the relationship of academic competencies to OCAP competencies. (10)	3.78	1.25
A staff person is needed to help coordinate workplace experiences. (23)	3.75	1.25
I am willing to enroll in a workshop that would upgrade my skills in integrating vocational and academic education. (32)	3.72	1.31
Vocational teachers need additional education on integrating vocational and academic education. (2)	3.63	1.19
Applied academics work well in joint vocational schools. (26)	3.48	1.43
Vocational teachers support the integration of vocational and academic education. (1)	3.44	1.10
Teachers need training to prepare for externships. (24)	3.44	1.23
A staff person is needed to help the teacher coordinate teacher externships. (28)	3.40	1.33
Most school administrators support the integration of vocational and academic education. (11)	3.34	1.20
Most academic teachers with whom I work support the integration of vocational and academic programs. (7)	3.30	1.18
Block scheduling would be helpful in teaching applied academics. (33)	3.18	1.48
My perception is that vocational students who receive applied academics instruction experience fewer problems in the workplace than vocational students who do not receive applied academics. (20)	3.14	1.28
Teachers are able to find workplace experiences for their students. (31)	3.07	1.15
My perception is that students who receive applied mathematics instruction as part of their vocational program have higher math scores than vocational students who attend regular math classes. (12)	3.07	1.32
My perception is that students who receive applied English/communications instruction as part of their vocational program have higher reading scores than vocational students who attend regular English classes. (6)	2.82	1.34
Applied academics work well in high schools other than joint vocational schools. (30)	2.80	1.48
Teachers are able to find their own externship site. (16)	2.71	1.25

Note: 1 = None, 2 = Moderate, 3 = High, 4 = Very High, 5 = Highest; N = 593. Missing answers were not used in calculating means. The number in parentheses after the item is the number of the item in the questionnaire.

Analysis of Variance

The factor loadings from the five factor structure were used to calculate factor scores for each of the respondents. Multiple regression was used with the factor score as the dependent variable and each of the 33 items as the independent variables. For the subjective groupings, the ratings for each of the items in the groups were summed. Analysis of variance was then used to test differences among these scores for the five groups. Table 3.3 presents a summary of the findings from these analyses and Appendix Tables 4 to 8 have the full statistics.

TABLE 3.3
SUMMARY OF ANALYSIS OF VARIANCE OF GROUPED ITEMS FROM SECTION A FOR FIVE RESPONDENT GROUPS

Grouped Items	F	P	Groups with Significant Differences
Factor 1	2.18	.07	None
Teacher externship	1.73	.14	None
Factor 2	13.11	<.01	VOC<TE, AD, AC AD>Both
Attitude toward integration	4.53	<.01	AD>Both, VOC
Factor 3	5.11	<.01	AD>TE
Effectiveness by school	5.22	<.01	AD>TE, VOC
Perception student outcomes	5.73	<.01	AD>Both, VOC
Factor 4	8.67	<.01	AD>VOC
Administrative support	2.74	<.03	AD>VOC
Factor 5	15.16	<.01	AD>VOC, Both, AC TE>VOC
Perception training needs	17.22	<.01	AD>VOC, Both, AC TE>VOC,AC
Perception curriculum needs	3.15	.01	AD>AC

Note: AC = Academic instructors, AD = Administrator; Both = Instructors of academics and vocational, TE = Teacher educators, VOC = Vocational instructors. df = 586 or 587; Turkey-HSD used to test difference between paired groups

The general pattern is for administrators to have the highest factor scores; *i.e.*, significantly higher agreement with the items than other groups. The significant differences shown in Table 3.3 can be summarized as follows:

1. None of the groups differed significantly on factor 1 or the subjective grouping of items, labeled *teacher externships*, similar to factor 1.

2. On factor 2 teacher educators, administrators, and academic instructions indicated more support than vocational instructors. Administrators also had higher scores than instructors who teach both vocational and academic material. On the subjective grouping, labeled *attitudes toward integration*, administrators were higher than vocational teachers and those who taught both vocational and academics.

3. On factor 3 administrators indicated significantly more agreement than teacher educators. Two of the subjective grouping involved perceptions of the effectiveness of current integration activities. On the one labeled *effectiveness by school*, administrators were higher than teacher educators and vocational teachers. On the one labeled *perceptions of students outcomes*, administrators were higher than vocational teachers and teachers who taught both vocational and academics.

4. On factor 4 and the subjective grouping labeled *administrative support*, administrators gave higher ratings than vocational teachers.

5. On factor 5 and the subjective grouping labeled *perceptions of training needs*, Administrators saw more need for instructional materials and professional development than the three groups of instructors. Teacher educators saw more needs in these areas than vocational instructors on the factor scores and more need than both vocational and academic instructors on the subjective grouping. On the subjective grouping labeled *perceptions of curriculum needs*, administrators were higher than academic instructors.

Overall, the patterns of differences among groups in both the factor scores and subjective groupings are highly similar.

This rather extensive listing of the statistically significant differences should not lead to the conclusion that vocational teachers do not support integration. In almost all cases, the differences are in degree of agreement with the items. Appendix Table 9 presents the mean ratings for each of the 33 items by respondent groups. A rating of three was defined as high agreement. For the five groups combined, only three of the items (6, 30 and 16) had means lower than three. Items 6 and 30, refer to the effectiveness of current applied academics.

The lowest mean, 2.71, was for 16, "Teachers are able to find their own externship site." It is of interest that this was one of only three items where vocational instructors had the highest means. One of the others on which the vocational instructors were highest was 31: "Teachers are able to find workplace experiences for their students." The means on 16 and 31 reflect the closer ties vocational instructors have with the workplace. The final item on which the vocational teachers had the highest average agreement was 1: "Vocational teachers support the integration of vocational and academic education."

The two largest differences in mean rating across the groups were between vocational instructors and teacher educators, and both relate to the need for additional education/professional development for teachers. Not surprisingly, teachers educators were much more likely to see the need for such activities than vocational instructors:

Item 2: "Vocational teachers need additional education on integrating vocational and academic education." Mean ratings: teacher educators, 4.30; vocational instructors, 3.16.

Item 22: "Teachers need professional development programs to improve their team teaching skills." Mean ratings: teacher educators, 4.64; vocational instructors, 3.59.

For both of these items, the means for the vocational instructors still reflect high agreement with the items. On 22, the mean indicates that over half of the vocational instructions rated their level of agreement as very high.

The analysis of the scores should not lead one to conclude that vocational instructors do not support integration. The analysis does indicate, however, that on some aspects of integration vocational instructors are relatively less supportive than some of the other groups, especially administrators.

Comparisons Across Sections A and C

Highest ranking items. As indicated by the factor analyses, section A of the questionnaire asked the respondent their extent of agreement with items that related to several different components of integration. Section C repeated 18 components and asked for two types of responses. First, the respondents rated the relative importance of the components on a five-point scale. After they had made these ratings, they were asked to select the four that they considered most important to integration.

A comparison of the results from sections A and C indicates that there was a high degree of consistency, or internal reliability, in the respondents' answers on the highest ranking items. Table 3.4 presents the five items from sections A and C with the highest mean ratings and the five items from section C listed most frequently as most important to integration. Appendix Tables 10 and 11 contain the full results for section C.

There is no item in section A directly comparable to item 42—Mutual respect between academic and vocational teachers—but this was clearly the aspect of integration considered most important in both the rating and listing responses in section C. The other three high ranking items in the two sections are very comparable. The highest mean in A, item 13, and the second ranking mean in C, item 46, both are concerned with instructional materials. Item 3 in A is similar to item 51 in C. Items 29 and 44 both refer to planning time to work together.

TABLE 3.4
COMPARISON OF FIVE HIGHEST RANKING ITEMS IN SECTION A RATINGS AND SECTION C RATINGS AND LISTING OF MOST IMPORTANT ITEMS

Section and Items	Mean	SD
Section A, Ratings		
Teachers need access to the best curriculum materials developed by other teachers across the state. (13)	4.39	0.93
I support the integration of academic and vocational education. (5)	4.36	0.99
Students need integrated academic and vocational education. (3)	4.29	0.96
Teachers need planning time to work together as teams. (29)	4.27	0.97
Academic teachers need preservice programs focused on integrating academic and vocational education. (8)	4.22	0.98
Section C, Ratings		
Mutual respect between academic and vocational teachers (42)	4.49	1.11
Instructional materials (46)	4.10	1.05
Common planning time (44)	4.08	1.66
Correlated academic and vocational programs (51)	4.07	1.16
Teaching schedules (35)	4.00	1.11
Section C, Listed as Most Important	Number	Percent
Mutual respect between academic and vocational teachers (42)	225	37.9
Common planning time (44)	217	36.6
Correlated academic and vocational programs (51)	159	26.8
Instructional materials (46)	148	25.0
Inservice for teachers (43)	146	24.6

Note: 1 = None, 2 = Moderate, 3 = High, 4 = Very High, 5 = Highest. All statistics are based on 593 respondents. Missing answers were not used in calculating means. The number in parentheses after the item is the number of the item in the questionnaire.

Lowest ranking items. On the average, respondents expressed high or very high agreement with all but three of the items in section A and rated all of the items in section C as of high or very high importance. Nevertheless, on a relative basis some of the items were rated as less important than others. Table 3.5 shows the five lowest ranking items from section A and the two parts of section C.

TABLE 3.5
COMPARISON OF FIVE LOWEST RANKING ITEMS IN SECTION A RATINGS AND SECTION C RATINGS AND LISTING OF MOST IMPORTANT

Sections and Items	Mean	SD
Section A, Ratings		
Teachers are able to find workplace experiences for their students. (31)	3.07	1.15
My perception is that students who receive applied mathematics instruction as part of their vocational program have higher math scores than vocational students who attend regular math classes. (12)	3.07	1.32
My perception is that students who receive applied English/ communications instruction as part of their vocational program have higher reading scores than vocational students who attend regular English classes. (6)	2.82	1.34
Applied academics work well in high schools other than joint vocational schools. (30)	2.80	1.48
Teachers are able to find their own externship site. (16)	2.71	1.25
Section C, Ratings		
Externships for vocational teachers (47)	3.69	1.21
Facilities (37)	3.65	1.11
Externships for academic teachers (38)	3.64	1.19
Use of OCAPs (36)	3.63	1.14
Block scheduling (41)	3.25	1.36
Section C, Listed as Most Important	Number	Percent
Content flexibility (48)	77	13.0
Externships for vocational teachers (47)	65	11.0
Facilities (37)	63	10.6
Use of OCAPs (36)	62	10.5
Block scheduling (41)	58	9.8

Note: 1 = None, 2 = Moderate, 3 = High, 4 = Very High, 5 = Highest. All statistics are based on 593 respondents. Missing answers were not used in calculating means. The number in parentheses after the item is the number of the item in the questionnaire.

There was less agreement between sections A and C in the lowest ranking items, because the items with the lowest mean ratings in A had no direct counterparts in C. The lowest ranking A items have already been discussed.

The ratings and listings in section C showed a high level of agreement. Four of the same items were ranked lowest in both parts of the section. The mean rating for the importance of content flexibility, item 48, ranked eighth, but the ranking of this item by the percentage who listed it as

most important was fourteenth. Externships for academic teachers ranked sixteenth on mean ratings but tenth in the percentage who listed it as most important.

Once again, it should be noted that the items with low rankings in section C suggest relative importance. All of the items in this section received average ratings of high or very high importance.

Specific Instructional Materials

Section D of the questionnaire focused on 10 different types of instructional materials for use in integrating vocational and academic education. The respondents rated their preferences using the same five-point scale used in sections A and C. Table 3.6 lists the mean ratings given these 10 types ranked from highest to lowest.

TABLE 3.6
TYPES OF INSTRUCTIONAL MATERIALS PREFERRED
RANKED BY MEAN RATINGS

Format of Materials	Mean	SD
Integrated student projects (56)	4.05	1.04
Computer software (62)	3.85	1.15
Teacher resource guides (53)	3.74	1.13
Sample curriculum (54)	3.66	1.09
Student workbooks (55)	3.55	1.19
Interactive CD-ROM (61)	3.53	1.26
Printed materials (60)	3.47	1.13
Chart connecting academic skills to vocational programs (57)	3.46	1.29
Videotapes (58)	3.39	1.11
Slides (59)	2.32	1.13

Note: 1 = None, 2 = Moderate, 3 = High, 4 = Very High, 5 = Highest. All statistics are based on 593 respondents. Missing answers were not used in calculating means. The number in parentheses after the item is the number of the item in the questionnaire.

Once again, almost all of the types received average ratings of high or higher. Integrated student projects ranked highest, one-fifth of a point above computer software. This rating together with those for teacher resource guides and sample curriculum were consistent with the high ranking items in sections A and C. Slides ranked lowest, a full-rating point below videotapes.

Section E asked the respondents to write in the kinds of instructional materials that should be developed to assist academic teachers in addressing OCAP competency attainment. The instructions for this section reminded the respondents that it was not possible to develop program-specific materials (emphasis in the questionnaire). Exhibit 3.1 quotes some typical responses.

EXHIBIT 3.1
INSTRUCTIONAL MATERIALS THAT SHOULD BE DEVELOPED TO ASSIST ACADEMIC TEACHERS IN ADDRESSING OCAP COMPETENCY ATTAINMENT

- A guide that shows primary academic areas to be integrated (specifics) "How To's" with examples from various occupational areas of how to implement the instruction.
- Curriculum outlines, student projects and workbooks.
- Videos, models.
- None: Put them in the training areas and let the student show them what they are doing.
- Academic attachers need materials showing the diverse application of their of their area of expertise to the work environment. They need a variety of work experience rather than materials.
- Generic materials for applying academics to specific vocational programs will probably not be very beneficial. Could OCAPs with common academic cores be grouped together with materials prepared for the groupings?
- Written and computer software materials.
- An integrated list of skills as they apply in general to programs and specifically to particular areas of the programs.
- PC software.
- Don't bother unless it is program specific especially in Math!
- Time should be provided for academic teachers to develop their own instructional materials. In other words, use the grant money for externships and work load reduction.
- Course of study guide.
- Math and English.
- The OCAP curriculum I now use is fine. It is a matter of setting goals and working as a team in order to cover the material.

About half of the respondents (48 percent) did not complete section E. Among those that did, guides with specific "How to" suggestions were frequently mentioned. Despite the reminder that program-specific materials were not possible, some of the respondents still indicated that these were the kind of materials that were needed. Several said the primary need was for academic teachers to spend time in the training areas and in the workplace.

Overall, respondents were quite consistent in the ways they responded to sections A through E. The highest ranking needs in each section refer to sample materials and guides and correlated (integrated) programs with the time required to plan them. The highest ranking item in section C—

mutual respect—did not have comparable items in the other sections. If vocational and academic teachers had the time to plan and conduct integrated programs, it is likely that such respect would develop.

Externships and Internships

The focus groups had identified externships for teachers and internships for students as two techniques that had untapped potential for contributing to the integration of academic and vocational learning. Separate sections of the questionnaire focused on these two approaches. Section F asked about the best schedule and desired outcomes for an externship, and Section G asked several questions about existing internships.

Externships for teachers. The questions on the schedule for externships asked about the preferred time of year and length. Table 3.7 shows that summer was the preferred time, but not by as large a margin as might have been expected. A little more than one-third of the respondents selected the summer, and the same proportion said both summer or school year or that it did not matter. A somewhat lower proportion chose the school year.

TABLE 3.7
BEST SCHEDULE FOR TEAMS OF ACADEMIC/VOCATIONAL TEACHERS TO DO EXTERNSHIPS

Time of Year	Number	Percent
Summer	207	34.9
School year	173	29.2
Both	119	20.1
It doesn't matter	85	14.3
No answer	9	1.5
Length		
One week	149	25.1
Two weeks	114	19.2
1-2 days	113	19.1
Once a week for a month of more	101	17.0
It doesn't matter	56	9.4
One month or more	45	7.6
No answer	15	2.5

Note: N = 593

The answers with regard to preferred length also were distributed across four of the possible alternatives (Table 3.7). One week was the most popular option, selected by a fourth of the respondents. Almost equal percentages chose two weeks, one or two days, and one day a week for a month or more. Longer periods, one month or more, were endorsed by only 8 percent.

Eight possible outcomes of externships were listed in the questionnaire and the respondents were asked to rate these as to relative importance on the same five-point scale used in other sections. After they had completed the ratings, the respondents were asked to select the two outcomes they considered most essential. Table 3.8 has both the mean ratings and the percentage of respondents that selected each of the outcomes as most essential.

TABLE 3.8
IMPORTANCE OF TEACHER EXTERNSHIP OUTCOMES RANKED BY MEAN RATINGS AND NUMBER LISTING AS MOST ESSENTIAL

Ratings	Mean	SD
See relationships between academic and occupational skills (69)	4.22	0.98
Create relationships with potential employers for student internships (70)	4.21	0.97
Learn new processes (67)	4.16	0.99
Vocational and academic teachers learn to work together as a team (72)	4.14	1.05
Learn new occupational skills (66)	4.12	1.03
Update existing occupational skills (65)	4.12	1.03
Obtain resources and teaching materials for the classroom (71)	4.05	1.01
Learn new management skills (68)	3.73	1.11
Listed as Most Essential	**Number**	**Percent**
Vocational and academic teachers learn to work as a team (72)	229	38.6
See relationships between academic and occupational skills (69)	223	37.6
Update existing occupational skills (65)	161	27.2
Create relationships with potential employers for student internships (70)	159	26.8
Obtain resources and teaching materials for the classroom (71)	123	20.7
Learn new occupational skills (66)	111	18.7
Learn new processes (67)	67	11.3
Learn new management skills (68)	22	3.7
No response (0)	91	7.7

Note: 1 = None, 2 = Moderate, 3 = High, 4 = Very High, 5 = Highest. All statistics are based on 593 respondents. Missing answers were not used in calculating means. The number in parentheses after the item is the number of the item in the questionnaire.

All of the outcomes were considered important. All except "Learn new management skills" had average ratings of "very high" or above. From among these important outcomes, items number 69 and 72 emerged as the most essential. These are the outcomes most clearly related to integration: seeing relationships between academic and occupational skills and learning to work together as a team. Almost identical numbers, over one-third of the respondents, selected both of these outcomes. The next two most frequently listed outcomes were selected by a little over one-fourth.

Internships for students. Section G on internships constituted a considerable proportion, about one-fifth, of the questionnaire. The first question in this section asked about the kinds of internship experiences currently being offered. (Teacher educators were instructed to skip this

question.) The results (Table 3.9) indicate that virtually all high schools (99 percent), as represented by the teachers and administrators responding to this survey, have some type of internship.

Seven different types of internships were listed in the questionnaire. The sum of the percentage of respondents indicating their schools have these types was 330 percent. This means the average high school represented in this survey offers over three types of internships. The most frequent type, offered by almost nine out of ten high schools, is early placement for vocational students. A little less than two-thirds of the high schools also offer shadowing and cooperative education

TABLE 3.9
TYPES OF INTERNSHIPS CURRENTLY USED IN RESPONDENTS' HIGH SCHOOLS

Types	Number	Percent
Early Placement	481	87.5
Shadowing	347	63.1
Cooperative education	340	61.8
Community projects	222	40.4
School-to-work	182	33.1
Youth apprenticeship	127	23.1
Workplace experience	112	20.4
None	7	1.3

Note: N = 550, teacher educators were instructed to skip this question.

The least frequent internship is workplace experience with a specific academic focus. This type is relatively new and was defined in the questionnaire as follows:

> A type of internship early in the vocational program that helps a student focus on the applications of academics in the workplace. This is not the same as early placement, co-op, apprenticeship, etc.

One-fifth of the high school respondents reported their schools offer such experiences. This proportion was almost as high as that of schools with youth apprenticeships.

A series of questions was then asked about the criteria for an optimal workplace experience of the type defined above. Teacher educators responded to these questions. Table 3.10 presents the answers to these questions.

TABLE 3.10
OPTIMAL STUDENT WORKPLACE EXPERIENCE

Criteria	Number	Percent
Preferred Length of Experience		
It depends on the program	232	39.1
2-4 weeks	129	21.8
1 week	109	18.4
1 or 2 days	63	10.6
Other	33	5.6
No response	27	4.6
Time of Year		
It depends on the program	262	44.2
March - May	117	19.7
September - November	108	18.2
December - February	51	8.6
June - August	30	5.1
No response	25	4.2
Primary Responsibility for Securing Workplace Experience		
Placement person	242	40.8
Teacher	226	38.1
Other	72	12.1
Student	29	4.9
No answer	20	3.4
Outside agency	4	0.7
Vocational teachers should visit student's work site		
Twice	303	51.1
Other	124	20.9
Once	114	19.2
No response	25	4.2
Only when there are problems	20	3.4
Never	7	1.2
Academic teachers should visit student's work site		
Once	201	33.9
Twice	198	33.4
Other	61	10.3
Never	44	7.4
Only when there are problems	29	4.9

Note: N = 593

The dominant answer with regard to the preferred length for workplace experience with an academic focus was "It depends on the program." This option was endorsed almost twice as often as any of the others. Those who did indicate a specific preference were fairly evenly divided between one week and two to four weeks. About one in ten endorsed one to two days and one in twenty some other length.

An almost identical distribution of answers was found with regard to time of year for the experience. Twice as many respondents chose "It depends" as chose any other option. Those who chose a specific time were evenly divided between March-May and September-November. Almost one in ten selected December-February and one in twenty June-August.

Answers as to who should have the primary responsibility for securing workplace experiences were primarily divided between placement person and teacher. Very few though the student or an outside agency should be responsible, but a fairly high 12 percent specified someone other than these four options.

The answers on how often vocational and academic teachers should visit a student's workplace experience work site were somewhat surprising, given that the focus is application of academics. A majority (51 percent) of the respondents thought a vocational teachers should visit twice, but only one-third thought academic teachers should visit that often. An even more surprising 10 percent thought that an academic teacher should never visit. These answers suggest that some of the respondents were thinking of *workplace experience* in the generic sense and not in the specific way it was defined in the questionnaire.

The final question on workplace experience for academic application also suggests some of respondent were thinking of such experience in the broad sense. This question presented four criteria by which a student's workplace experience could be evaluated and asked the respondents to prioritize them by assigning the ranks 1-4. Table 3.11 has the distribution of the rankings and the mean ranking for the criteria.

Awareness of academic requirements, the emphasis of workplace experience as defined in the questionnaire, was the criterion most often ranked last. Its mean ranking is the lowest, a full ranking place below the mean of the criterion "Attitude."

The answers on how often teachers should visit and the criteria for evaluation suggest caution in interpreting the results in Tables 3.10 and 3.11 as applying only to workplace experience for academic applications. These results suggest at least some of the respondents answered in terms of a broader concept of workplace experience.

TABLE 3.11
MOST IMPORTANT CRITERIA TO EVALUATE A STUDENT'S WORKPLACE EXPERIENCE

Criteria	Number	Percent	Mean	SD
Attitude				
First Priority	256	43.2	1.91	.89
Second Priority	139	23.4		
Third Priority	88	14.8		
Last Priority	61	10.3		
No response	49	8.3		
Increase in Self-Motivation				
First Priority	88	14.4	2.52	.96
Second Priority	190	32.0		
Third Priority	161	27.2		
Last Priority	105	17.7		
No response	49	8.3		
Career Awareness				
First Priority	129	21.8	2.61	1.11
Second Priority	104	17.5		
Third Priority	164	27.7		
Last Priority	151	25.5		
No response	45	7.6		
Awareness of Academic Requirements				
First Priority	80	13.5	2.91	1.07
Second Priority	108	18.2		
Third Priority	130	21.9		
Last Priority	227	38.3		
No response	48	8.1		

Note: N = 593. Missing answers were not used in calculating means.

Correlated Periods

The final section of the questionnaire addressing integration was H, and only academic teachers (including those teaching both academic and vocational) were asked to complete it. As presented in Table 3.12, these teachers reported teaching an average of 3.74 correlated periods this academic year.

For almost half of the teachers who responded, the correlated programs they are teaching this year are the same as those they taught last year. For one out of ten, half or more of their programs are

different. For the rest, either this is their first year of applied academics or less than half of their programs are different than last year.

TABLE 3.12
APPLIED ACADEMIC COURSES TAUGHT THIS YEAR AND LAST AND NUMBER OF MIXED VOCATIONAL PROGRAMS

Correlated Periods			Vocational Program Changed			Mixed Vocational Programs		
Periods	Number	Percent	Amount	Number	Percent	Periods	Number	Percent
1	17	16.4	First year	6	5.8	1	25	24.0
2	15	14.4	None	43	41.4	2	9	8.6
3	9	8.6	Under 25%	10	9.6	3	14	13.5
4	10	9.6	25-50%	24	23.1	4	4	3.8
5	23	22.1	51-75%	4	3.8	5	3	2.9
6	17	16.4	75-99%	2	1.9	6	2	1.9
7	3	2.9	All	4	3.8	7	0	0.0
NA	10	9.6	NA	11	10.6	0	37	45.2
Total	104	100.0	Total	104	100.0	Total	104	100.0
Mean		3.74						1.10
SD		1.91						3.15

Note: Academic teachers and teachers of both academic and vocational only. Missing answers were not used in calculating means.

It is not usual practice to mix students from different vocational programs in the same academic class. Almost half of the teachers reported they had no periods with students from different programs. This figure is somewhat suspect, because it probably contains the 10 or 11 teachers who did not answer the other questions in this section. If 10 of the responses in the zero category are actually "no" answers, 40 percent, not 45, actually reported no classes with students from different programs. Calculated with or without possible "no" answers, over two-thirds of applied academic teachers have either no or just one period with students from different vocational programs.

CHAPTER 4

SURVEY OF INTEGRATION IN ADULT VOCATIONAL AND ABLE PROGRAMS

In addition to the survey of integration of vocational and academic learning at the secondary level, a mail survey was conducted of integration of vocational education and Adult Basic and Literacy Education (ABLE) in adult programs. The questionnaire used in the adult survey was almost identical to the form used in the secondary survey in most of its sections. The main difference was that wherever the word *academic* appeared in the secondary form it was replaced by *ABLE* in the adult form.

Section H was entirely different in the secondary and adult questionnaires, and a few of the items in other sections also had different wording. All items with different wording are noted in the discussion of the results.

In general, the results from the adult survey were quite similar to those from the secondary survey: virtually all respondents were supportive of integration and gave high to very high average ratings to most items. As with the secondary survey, the analysis focused on items that were relatively higher and lower.

When almost all the answers are positive, the best reflection of degree of support is the rank of the items. Consequently, this chapter compares the rank of the items in the several sections of the questionnaires in the two surveys. The chapter, like the one on the secondary survey, is organized by the sections of the questionnaire. The items in Section A of the adult questionnaire, however, were not factor analyzed. There were 120 respondents to the adult survey, an inadequate number for a factor analysis of 33 items.

The 120 responses to the adult survey were obtained from an initial sample of 477, a response rate of 25.1 percent. Only one mailing was made to the adult sample. This sample had been selected from a list of administrators and teachers of vocational and adult basic literacy programs . On the returned questionnaires, almost three out of four, 71 percent, described themselves as administrators. Only 17 percent said they were adult vocational teachers, and 8 percent said they were ABLE teachers. The low instructor rate may be due to the fact that so many of these instructors are part-time staff.

The demographics of the respondents to the adult survey were very similar to those to the secondary survey. Over half, 58 percent, of the respondents were male, two-thirds had 16 years or more experience in education, and one-quarter had over 25 years.

Agreement with Various Aspects of Integration

The 33 items in section A of the questionnaire refer to many different aspects of integration. The respondents were asked to indicate their level of agreement with these items on a five-point scale. Despite the diversity in these items, the ones with the highest and lowest ranking mean ratings were identical in the two surveys. Table 4.1 presents the means for each of the items in the two surveys. To conserve space, the items in most tables in this chapter are abbreviated. The full wording of the items is presented in the tables in Chapter 3 and in the questionnaires in the Appendix.

TABLE 4.1
ADULT AND SECONDARY RESPONDENTS MEAN RATINGS TO ITEMS IN SECTION A BY DIFFERENCE IN RANK ORDER OF MEANS

Items	Adult Mean	Adult SD	Adult Rank	Secondary Mean	Secondary SD	Secondary Rank	Difference
Same Rank Order							
Access curriculum (13)	4.39		1	4.34		1	-
Professional development (22)	3.96		10	3.90		10	-
Teachers find externships (16)	2.76		33	2.71		33	-
Rank Order Differs .5 to 2.0							
I support (5)	4.08		3	4.36		2	1
Students need (3)	4.06		4	4.29		3	1
Joint vocational schools (26)	3.43		22	3.48		21	1
Administrators support (11)	3.29		26	3.34		25	1
Academic teachers support (7)	3.19		27	3.30		26	1
Other than JVS (30)	2.94		31.5	2.80		32	-0.5
Teachers find workplace (31)	2.94		31.5	3.07		29.5	2
Rank Order Differs 2.5 to 5.0							
Workplace that focuses (19)	3.98		5.5	4.04		8	-2.5
Academic teachers need training(8)	3.93		9	4.08		5	4
Chart OCAPs (10)	3.77		12	3.78		17	-5
Student internships (17)	3.69		13	3.80		16	-3
Willing to enroll (32)	3.54		16.5	3.72		19	-2.5
Teacher training (24)	3.47		20	3.44		22.5	-2.5
Staff coordinate externships (28)	3.22		27	3.40		24	3
Rank Order Differs 5.5 to 10.0							
Dept of Ed leadership (4)	4.09		2	4.02		9	-7
Material workplace (21)	3.96		7	3.88		14	-7
Planning time (29)	3.68		14	4.27		4	10
Teacher externship teams (15)	3.44		21	3.86		15	6
Staff coordinate workplace (23)	3.40		24	3.75		18	6
Vocational teachers support (1)	3.11		30	3.44		2.5	7.5
Rank Order Differs 10.5 to 20.0:							
Voc teachers need education (2)	3.94		8	3.63		20	-12
Perceptions re workplace (20)	3.54		16.5	3.14		25	-11.5
Curriculum based on OCAPs (9)	3.53		18	4.08		7	11
Acad teachers externships (14)	3.51		19	4.18		6	13
Team teaching (27)	3.42		23	3.90		11.5	11.5
Teacher externships (18)	3.37		25	3.90		11.5	13.5
Students prefer (25)	3.17		29	3.89		13	16
Items Without Similar Wording:							
Our students would benefit from integration of ABLE and Vocational education	3.98		5.5				
My perception is that students who receive ABLE as part of their vocational programs have better chances in the workplace than vocational students who don't participate in ABLE (12)	3.81		11				
Scheduling is a problem in integrating ABLE and adult vocational programs (33)	3.55		15				

Note: n Adult = 120, Secondary = 593. Missing answers were not used in calculating means.

The items in Table 4.1 are grouped by the differences in the ranks of their mean ratings. The means of the three items in the first grouping have identical ranks, and the means themselves differ by less than one-tenth of a rating point. Both the adult and secondary respondents gave their highest ratings to item 13—"Teachers need access to the best curriculum materials"—and their lowest ratings to item 16—"Teachers are able to find their own externship sites."

The rankings of the means in the second grouping were also very similar, differing by only 0.5 to 2 ranking places. (The decimals are caused by items with identical means whose rankings are averaged.) The adult and secondary respondents gave ratings that ranked high to items concerning their own support and students' need for integration. They were more skeptical about support from other teachers and administrators, the effectiveness of current efforts, and the ability of teachers to find workplace experiences for their students.

The items on which the adult and secondary respondents differed the most are shown in the fifth grouping. The ranks of these means differed by more than 10 places. The respondents to the adult survey saw more need for teacher education in integration (item 2) and rated ABLE instruction as leading to fewer problems in the workplace (item 20). The respondents to the secondary survey gave higher ratings to items related to teacher activities—observing students in vocational labs (item 14), externships (item 16), team teaching (item 27)—to the need for curriculum materials based on OCAPs (item 9), and to students' preferences for learning academic subjects through applied academics (item 25).

Table 4.1 also presents three items from section A whose wording was considerably different in the two questionnaires. Because of the differences, the means for these items are not compared with the items with the same numbers in the secondary questionnaire.

Importance to Integration

Section C of both questionnaires asked the respondents first to rate on a five-point scale the importance to integration of 18 items and then to select the four items they considered most important. Table 4.2 compares the five items rated highest and lowest by the respondents to the adult survey to the ratings received by these same items in the secondary survey. Table 4.2 also compares the five items listed most and least often as most important in the adult survey to the listings they received in the secondary survey.

Item 42—"Mutual respect between academic/ABLE teachers and vocational teachers"—received the highest mean ratings in both surveys. The two surveys also yielded similar rankings for items 46 and 51. In the adult survey, however, items 45 and 49 ranked considerably higher than in the secondary survey. These items referred to the importance of business partnerships and workplace experience.

TABLE 4.2
FIVE HIGHEST AND FIVE LOWEST RANKING ITEMS IN SECTION C MEAN RATINGS AND LISTED AS MOST IMPORTANT, ADULT AND SECONDARY RESPONDENTS

Items	Adult		Secondary		Difference
	Mean	Rank	Mean	Rank	
Five Highest Mean Ratings:					
Mutual respect (42)	4.40	1	4.49	1	--
Partnership with business (45)	4.28	2	3.99	6	-4
Instructional Materials (46)	4.20	3	4.10	2	1
Correlated programs (51)	4.18	4	4.97	4	--
Workplace experience (49)	4.12	5	3.87	12	-7
Five Lowest Mean Ratings:					
Facilities (37)	3.78	13.5	3.65	15	-1.5
Externships/voc teachers (47)	3.78	13.5	3.69	14	-0.5
Team teaching (40)	3.77	15	3.88	11	4
Preservice education (34)	3.75	16	3.79	13	3
Use of OCAPs (36)	3.57	17	3.63	17	--
Externships Acad/ABLE	3.46	18	3.64	16	2
Items Listed as Most Important	**Percent**	**Rank**	**Percent**	**Rank**	**Difference**
Five Most Frequent:					
Partnership with business (45)	40.0	1	23.1	7	-6
Inservice teachers (43)	36.8	2	24.6	5	-3
Correlated programs (51)	39.2	3	26.8	3	--
Instructional materials (46)	21.7	4	25.0	4	--
Computers (39)	20.0	5	14.8	11	6
Five Least Frequent:					
Use of OCAPs (36)	12.5	14	10.5	17	-3
Teaching schedules (35)	10.8	15.5	18.4	9	6.5
Student schedules (41)	10.8	15.5	9.8	18	-2.5
Integrated projects (50)	10.0	17	18.4	8	-9
Externships ABLE/Academics (38)	7.5	18	17.0	10	8

Note: n Adult = 120, Secondary = 593. Missing answers were not used in calculating means.

Among the lowest rated items, the biggest difference was on item 40. The respondents to the secondary survey tended to rate team teaching as more important than the respondents to the adult survey did.

The second part of section C, the listing of the four items most important to integration, produced the largest differences between the two surveys. Once again item 45, business partnerships, ranked much higher in the adult than in the secondary survey. The adult respondents also listed inservice for teachers and computers as most important more often than the secondary respondents.

Among the items listed least frequently, the respondents to the two surveys differed most on teaching schedules, integrated projects, and externships for academic/ABLE teachers. The respondents to the secondary survey were more likely to list these as most important than the respondents to the adult survey.

Even though these were the biggest differences found between the two surveys, the largest was only 17 points. This was between the percentages listing business partnerships as being most important to integration. The other differences ranged from 5 (item 39) to 12 (item 43) percentage points.

Preference for Instructional Materials

For the most part, the adult and secondary surveys yielded similar, but not identical, ratings of preferences for instructional materials. The respondents rated their preference on the same five-point scale used in other sections of the questionnaire. The ratings of nine of the ten types of materials averaged between high and very high. Table 4.3 compares the mean ratings from the two surveys.

TABLE 4.3
FORMAT OF INSTRUCTIONAL MATERIALS PREFERRED BY ADULT AND SECONDARY RESPONDENTS

Format of Materials	Adult		Secondary		Difference
	Mean	Rank	Mean	Rank	
Computer software (62)	3.90	1	3.85	2	-1
Teacher guide (53)	3.88	2	3.74	3	-1
Sample outline (54)	3.87	3	3.66	4	-1
Integrated projects (56)	3.86	4	4.05	1	3
Student workbooks (55)	3.70	5	3.55	5	--
Chart connecting (57)	3.61	6	3.46	8	-2
Printed materials (60)	3.59	7	3.47	7	--
Interactive CD-Rom (61)	3.58	8	3.53	6	2
Videotapes (58)	3.46	9	3.39	9	--
Slides (59)	2.48	10	2.32	10	--

Note: n Adult = 120, Secondary = 593. Missing answers were not used in calculating means.

Respondents to the secondary survey gave integrated student projects the highest average ratings while among the adult respondents it ranked fourth. This comparison, however, overestimates the difference between the two surveys. The average ratings among the top four ranking items in the adult survey are almost identical, differing by only .04 of a rating point.

One type of materials, slides, was clearly the least preferred in both surveys. Its average rating was more than a full point below the next lowest.

Externships and Internships

The adult survey asked the same questions about externships for teachers and internships for students as were asked in the secondary survey. For the teachers, these questions asked about scheduling and importance of outcomes. For the students, the questions were about existing internships, the criteria for an optimal workplace experience, and the criteria that should be used to evaluate the experience.

Externships for Teachers

Summer was the preferred time for externships in both surveys, but the respondents in the adult survey were more likely than those in the secondary survey to say time of year did not matter. Table 4.4 presents the preference both for time of year and length of the externship.

TABLE 4.4
BEST SCHEDULE FOR TEAMS OF TEACHERS TO DO EXTERNSHIPS
ADULT AND SECONDARY RESPONDENTS

Preferences	Adult		Secondary		Difference
	Percent	Rank	Percent	Rank	
Time of Year					
Summer	32.5	1	34.9	1	0
It doesn't matter	24.2	2	14.3	4	-2
School year	21.7	3	29.2	2	1
Both	17.5	4	20.1	3	1
No answer	4.2	1.5			
Length:					
-2 days	29.2	1	19.1	3	-2
Once a week for a month or more	22.5	2	17.0	4	-2
One week	16.7	3.5	25.1	1	2.5
Two weeks	16.7	3.5	19.2	2	1.5
It doesn't matter	6.7	5	9.4	5	--
One month or more	4.2	6	7.6	6	--
No answer	4.2	2.5			

Note: n Adult = 120, Secondary = 593. Missing answers were not used in calculating means.

The respondents to the adult survey preferred shorter externships than the respondents to the secondary survey. In the adult survey, the highest ranking options were one or two days or once a

week for a month or more. In the secondary survey, the highest options were one week and two weeks. Periods of one month or longer were preferred by very few respondents.

The second set of items about externships listed eight possible outcomes and asked respondents to rate their importance on the five-point scale, and to select the two they considered most important. As shown in Table 4.5, respondents to both surveys gave average ratings of very high to all but one of the outcomes.

TABLE 4.5
IMPORTANCE OF TEACHER EXTERNSHIPS
OUTCOMES RANKED BY MEAN RATINGS AND NUMBER LISTING
AS MOST ESSENTIAL ADULT AND SECONDARY RESPONDENTS

Outcomes	Adult		Secondary		Difference
	Mean	Rank	Mean	Rank	
Mean Ratings:					
Relationships for student internships (70)	4.29	1	4.21	2	-1
Relationships academic and occupational (69)	4.27	2	4.22	1	1
Learn new processes (67)	4.23	3	4.16	3	--
Learn new skills (66)	4.15	4	4.12	5.5	-1.5
Learn work together (72)	4.09	5	4.14	4	1
Update existing skills (65)	4.06	6	4.12	5.5	0.5
Management skills (68)	4.00	7	3.73	8	-1
Obtain resources (71)	3.99	8	4.05	7	1
Items Listed as Most Essential	Percent	Rank	Percent	Rank	Difference
Relationships for student internships (70)	40.0	1	26.8	4	-3
Relationships academic and occupational(69)	37.5	2	37.6	2	--
Update existing skills (65)	27.5	3	27.2	3	--
Learn work together (72)	22.5	4	38.6	1	3
Learn new skills (66)	19.2	5	18.7	6	-1
Obtain resources (71)	16.7	6	20.7	5	1
Learn new processes (67)	12.5	7	11.3	7	--
Management skills (68)	5.0	8	3.7	8	--

Note: n Adult = 120, Secondary = 593. Missing answers were not used in calculating means.

The main differences in these items were in the percentages listing items 70 and 72 as the most important outcomes. Item 70 reads: "Create relationships with potential employers for student internships." Four out of ten in the adult survey listed this as the most important outcome

compared to a little over one-fourth of the secondary survey. These proportions were just about reversed on item 72, the outcome listed most often in the secondary survey: "Vocational and academic teachers learn to work together as a team."

Internships for Students

Student internships are not as frequent in adult schools as they are in secondary schools. Table 4.6 presents the percentages from both surveys reporting their schools offer the kinds of internships listed.

TABLE 4.6
TYPES OF INTERNSHIPS CURRENTLY USED
ADULT AND SECONDARY RESPONDENTS

Types	Adult		Secondary		Difference
	Percent	Rank	Percent	Rank	
Cooperative education	44.2	1	61.8	3	-2
Early placement	42.5	2	87.5	1	1
Shadowing	40.0	3	63.1	2	1
Community projects	24.2	4	40.4	4	--
Workplace experience	22.5	5	20.4	7	-2
Apprenticeship	21.2	6.5	23.1	6	0.5
School-to-work	21.2	6.5	33.1	5	1.5

Note: n Adult = 120, Secondary = 593. Missing answers were not used in calculating means.

Secondary schools are more than twice as likely as adult schools to offer early placement and more likely to offer other internships—except workplace experience and apprenticeships—as well. For these last two types, the percentages are about the same in the two surveys.

The definition of workplace experience used in the adult survey was identical to that used in the secondary survey, and the respondents were referred to that definition to answer the items in section G. This definition limits workplace experience to a placement that "helps a student focus on application of academics in the workplace."

In Chapter 3, it was noted that the respondents may have been referring to workplace experience more broadly than it was defined in the questionnaire. This may be true of the adult survey also for the ranks of the answers in the two surveys are virtually identical (Table 4.7).

TABLE 4.7

OPTIMAL STUDENT WORKPLACE EXPERIENCE ADULT AND SECONDARY RESPONDENTS

Criteria	Adult Percent	Adult Rank	Secondary Percent	Secondary Rank	Difference
Preferred Length of Experience					
It depends on the program	40.8	1	39.1	1	--
2-4 weeks	26.7	2	21.8	2	--
1 week	12.5	3	18.4	3	--
Other	8.3	4	5.6	5	-1
1 or 2 days	2.5	5	10.6	4	1
No response	9.3		4.6		
Time of Year					
It depends on the program	61.7	1	44.2	1	--
March - May	15.0	2	19.7	2	--
September - November	7.5	3	18.2	3	--
December - February	4.2	4	8.6	4	--
June - August	3.3	5	5.1	5	--
No response	8.3		4.2		
Primary Responsibility for Securing Workplace Experience					
Placement person	44.2	1	40.8	1	--
Teacher	30.8	2	38.1	2	--
Other	13.3	3	12.1	3	--
Student	1.7	4	4.9	4	--
Outside agency	0.8	5	0.7	5	--
No answer	9.2		3.4		
Vocational teachers should visit student's work site					
Twice	61.7	1	51.1	1	--
Other	20.8	2	20.9	2	--
Once	8.3	3	19.2	3	--
Only when there are problems	2.5	4	3.4	4	--
Never	0.5	5	1.2	5	--
No response	9.2		4.2		
Academic teachers should visit student's work site					
Twice	47.5	1	33.4	2	-1
Once	22.5	2	33.9	1	1
Other	13.3	3	10.3	3	--
Never	5.8	4	10.1	4	--
Only when there are problems	1.7	5	4.9	5	--
No response	9.2		7.4		

Note: n Adult = 120, Secondary = 593. Missing answers were not used in calculating means.

The only differences of any magnitude in Table 4.7 refer to the time of the year for workplace experience and the number of times academic/ABLE teachers should visit the student's work site. Almost two-thirds of the adult survey said that the time of the year for workplace experience

should depend on the program. This was also the most frequent answer in the secondary survey, but it was given by a little less than half of the respondents. On the number of times the work site should be visited, the respondents in the adult survey were more likely to support two visits. The respondents to the secondary survey were equally divided between one and two visits.

There was a question in section G concerning the criteria to be used to evaluate workplace experience. The answers to this question imply that the respondents were thinking of workplace experience in a broad sense and not specifically in terms of focusing on applications of academics in the workplace. The four criteria presented in Table 4.8 were listed in the questionnaire and the respondents were asked to rank them in priority order.

The means of the ranks assigned to the criteria of attitude and increase in self-motivation where essentially identical in the two surveys. The respondents to the adult survey gave awareness of academic requirements a higher average ranking than did the respondents to the secondary survey. In both surveys, however, the defined purpose of workplace experience ranked well below other criteria.

TABLE 4.8
MOST IMPORTANT CRITERIA TO EVALUATE A STUDENT'S WORKPLACE EXPERIENCE ADULT AND SECONDARY RESPONDENTS

Criteria	Adult		Secondary		Difference
	Mean	Rank	Mean	Rank	
Attitude	1.91	1	1.91	1	--
Increase in self-motivation	2.51	2	2.52	2	--
Awareness of academic requirements	2.72	3	2.91	4	-1
Career awareness	2.88	4	2.61	3	1

Note: n Adult = 120, Secondary = 593. Missing answers were not used in calculating means.

Collaboration of Vocational and ABLE Teachers

Section H of the questionnaire was different in the two surveys. In the adult survey, it was concerned with collaboration of adult vocational and ABLE teachers. Only adult vocational teachers were asked to complete this section, but some respondents who did not describe themselves as adult teachers also completed this section. In the personal characteristics section of the questionnaire, only 20 respondents reported they were vocational teachers, but as many as 39 respondents answered the questions in section H. Their answers are shown in Table 4.9.

Over three-fourths of the respondents to section H said that they have ABLE support for their programs, but almost the same proportion reported that academic competencies are taught by vocational teachers as part of the vocational program. A little over one-third said that vocational and ABLE teachers collaborate on appropriate competencies.

TABLE 4.9
ADULT VOCATIONAL TEACHERS REPORT OF COLLABORATION WITH ABLE

Type of Collaboration	Percent Reporting	N
Have ABLE support (91)	78.9	38
Vocational and ABLE teachers collaborate on appropriate competencies (92)	77.8	37
Academic competencies taught by vocational teacher as part of program (inclusion) (93)	74.4	39
Academic competencies taught by vocational teacher are based on OCAPs (94)	73.3	30(a)
Participation of students in ABLE is voluntary	82.4	34
Percent of students who participate in ABLE		
None	13.5	
1 to 25%	73.0	
26% or more	13.5	37

(a) Answered only by teachers who reported they teach academic competencies.

Eight out of ten of the respondents said that participation of students is voluntary. The most frequent estimate of the percentage of students who participate in ABLE was in the range of 1 to 25 percent. Almost three-fourths of the respondents to this section gave this estimate.

CHAPTER 5

FINDINGS AND RECOMMENDATIONS

Responses received from the focus groups and questionnaire indicated a favorable disposition to the concept of integrating academic and vocational education. The focus groups and questionnaire also served as vehicles for educators to express their needs regarding academic and vocational integration.

Findings and Recommendations

Findings regarding inservice: Academic teachers already in the secondary schools felt unprepared by their teacher education program to teach applied academics and special needs students.

> *Recommendation:* A professional development program to support the integration of academic and vocational education should be developed and delivered in a workshop format with teams of academic and vocational teachers participating. Workshops could be held regionally and last for several days. Teams of academic and vocational teachers could also work together to develop and experience externships that focus on integration of academic and vocational subjects.

Findings regarding preservice and traditional teacher preparation programs: Based on statements made in the focus groups, teachers are not receiving instruction in methods of integrating academic and vocational education prior to entering the classroom.

> *Recommendation:* Teacher educators should consider how best to include this knowledge into all teacher preparation, whether through inclusion in existing courses or the creation of a new course.

Findings regarding student workplace experiences: Although most vocational programs already use student internships, the majority of them are shadowing, cooperative education, and early placement. An early internship experience that focuses on the relationship of academics to specific vocational programs currently is not widely used.

> *Recommendation:* Workplace experiences focused on the application of academic skills should be used to assist students in recognizing the connection between academics and life. The experiences could take place over a period of a few weeks in the Autumn of the first year of a vocational program (Level 1 students). This should not be handled as a mass field trip but should be a guided experience in which students can observe alone or in pairs.

Findings regarding common planning time: Focus group participants and survey respondents indicated that common planning time for academic and vocational teachers to work together to plan teaching schedules and develop lesson plans is wanted. Focus group participants, who included administrators, indicated that very little common planning time was occurring in their schools, not because they did not deem it important but because they could not afford the extra costs that the attendant scheduling would entail. Coordinating projects and general instruction is difficult, as a result. Common planning is especially important for new teachers. Teachers would like to work together as a team.

Recommendation: Opportunities for teachers to meet for lesson-plan development and coordination should be provided throughout the school year, with a meeting prior to the beginning of the school year so that overall plans can be made.

Findings regarding curriculum: Teachers stated that they had searched for academic textbooks that would cover, for example, the combinations of sciences that are used in a particular occupation. Furthermore, academic teachers felt that they were being pulled in different directions; that their academic departments expected them to cover the traditional curriculum and that the state curriculum models for math, science, and communications also had to be taught. Teachers were unsure how to coordinate and accommodate all expectations. For these reasons, some wanted a state curriculum for academics as they relate to the different occupational areas. Communications teachers, in particular, expressed some concerns about an overlap between what they have been teaching and what employability teachers are now covering. Teachers also requested lesson plans to give them examples.

Recommendation: Some of these problems would most efficiently and appropriately be resolved at the state level. For example, the match between state curriculum models and occupational application of those standards might be handled at the state level. Sample lesson plans could be developed by teachers and dissemination coordinated at the state level. A reference list of textbooks, with annotations could be coordinated and disseminated at the state level.

Other problems, such as coordinating which course covers particular material, may be best resolved at the local level.

Implementation Issues

Many of the recommendations require financial support. State funding is one possible source of funds. Obtaining grants is one way of funding the development of initiatives. Although grants are of limited duration, the cost of updating and maintaining efforts, such as those discussed above, may be lower than initial development.

The issue of common planning time for a vocational-academic team currently appears to be beyond the budget of most schools. The resolution of this issue lies with both the local school and the state.

Teacher educators will need to take leadership in developing new courses or including vocational-academic integration in existing courses. Their support of this initiative is crucial in the preparation of academic teachers.

APPENDIX TABLE 1

Demographic Description of Respondents

	Number	Percent
Years in Education		
1-5 Years	66	11.13
6-10 Years	68	11.47
11-15 Years	66	11.13
16-20 Years	126	21.25
21-25 Years	102	17.20
26-30 Years	109	18.38
Over 30 Years	44	7.42
No Answer	12	2.02
TOTAL	593	100.00
Gender		
Male	334	56.32
Female	250	42.16
No Answer	9	1.52
TOTAL	593	100.00
Current Position		
Vocational Instructor	230	38.79
Academic Instructor	65	10.96
Both Voc & Acad Instr	39	6.58
Administrator	210	35.41
Teacher Educator	43	7.25
Other	1	0.17
No answer	5	0.84
Vocational Instructors		
Agriculture	42	12.57
Business	68	20.36
Family & Consumer Science	35	10.48
Marketing	9	2.69
T&I	91	27.25
Health	20	5.99
Other	12	3.59
Academic Instructors		
English	52	15.57
Employability	66	19.76
Math	43	12.87
Science	27	8.08
Social Studies	7	2.10
Other	16	4.79

NOTE: Total teachers responding = 334

APPENDIX TABLE 2

Product-Moment Correlation Matrix for 33 Items in Section A

Correlations between variables A1 to A33.

Correlations:	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11
A1	1.0000	.0109	.3562**	.1620**	.3470**	.2706**	.3096**	.0504	.1008*	.0247	.2349**
A2	.0109	1.0000	.3507**	.4348**	.3651**	.2049**	.1203*	.3341**	.2369**	.2826**	.1212*
A3	.3562**	.3507**	1.0000	.4148**	.7786**	.3273**	.3133**	.2552**	.2350**	.2090**	.2627**
A4	.1620**	.4348**	.4148**	1.0000	.4455**	.1841**	.1457**	.4383**	.3683**	.3843**	.1215*
A5	.3470**	.3651**	.7786**	.4455**	1.0000	.3168**	.3627**	.2524**	.2179**	.2112**	.2750**
A6	.2706**	.2049**	.3273**	.1841**	.3168**	1.0000	.2967**	.1212*	.1715**	.1976**	.1824**
A7	.3096**	.1203*	.3133**	.1457**	.3627**	.2967**	1.0000	.0317	.1043*	.0749	.4512**
A8	.0504	.3341**	.2552**	.4383**	.2524**	.1212*	.0317	1.0000	.4921**	.3918**	.0861
A9	.1008*	.2369**	.2350**	.3683**	.2179**	.1715**	.1043*	.4921**	1.0000	.5417**	.1580**
A10	.0247	.2826**	.2090**	.3843**	.2112**	.1976**	.0749	.3918**	.5417**	1.0000	.1592**
A11	.2349**	.1212*	.2627**	.1215*	.2750**	.1824**	.4512**	.0861	.1580**	.1592**	1.0000
A12	.1944**	.1732**	.2927**	.1448**	.3085**	.6645**	.3414**	.1529**	.2096**	.2193**	.2251**
A13	.0751	.2628**	.1995**	.3618**	.2348**	.0595	.2334**	.2743**	.3185**	.2611**	.1523**
A14	.0694	.2124**	.2501**	.2286**	.2566**	.1508**	.1866**	.3492**	.3439**	.2899**	.1809**
A15	.0356	.3008**	.2780**	.3406**	.2910**	.1809**	.0829	.3787**	.3794**	.3414**	.0960
A16	.1655**	-.0424	.0342	.0156	.0139	.0992*	.1737**	.0342	.1218*	.0469	.1514**
A17	.1625**	.2608**	.2551**	.2394**	.2963**	.1742**	.0974*	.2612**	.3103**	.2857**	.1083*
A18	.0318	.2098**	.2092**	.2594**	.2179**	.0845	.0625	.3458**	.2718**	.3105**	.1283*
A19	.1161*	.2713**	.3239**	.3222**	.3442**	.2024**	.1486**	.2976**	.3320**	.3533**	.1324**
A20	.2138**	.2655**	.4066**	.2337**	.4139**	.5318**	.3258**	.1172*	.2520**	.2002**	.2527**
A21	.1286**	.3551**	.2604**	.4230**	.2431**	.2290**	.1684**	.3164**	.3566**	.3772**	.1589**
A22	.0705	.4919**	.2964**	.4449**	.3407**	.1720**	.0801	.3662**	.2964**	.3588**	.1035*
A23	.0598	.2319**	.1655**	.2662**	.1990**	.1776**	.0859	.3106**	.2653**	.2537**	.0662
A24	.0116	.4527**	.2073**	.4334**	.2605**	.2147**	.0543	.3673**	.3167**	.3381**	.1294**
A25	.2255**	.1824**	.3563**	.2742**	.3553**	.3468**	.2403**	.2464**	.2950**	.2164**	.1588**
A26	.3013**	.1791**	.3914**	.2361**	.4262**	.3369**	.4059**	.1340**	.2698**	.1386**	.2723**
A27	.1104*	.2609**	.2495**	.3152**	.2851**	.1988**	.1648**	.3510**	.2659**	.2709**	.1530**
A28	.0684	.2970**	.1841**	.3317**	.2346**	.1865**	.0580	.3166**	.2787**	.2797**	.0465
A29	.1117*	.2477**	.2413**	.2200**	.2804**	.1264*	.1250*	.3097**	.2797**	.2503**	.0653
A30	.1823**	.0872	.1881**	.0592	.1570**	.2527**	.1214*	.0642	.1482**	.1009*	.0978
A31	.2026**	.0571	.1316**	.0635	.1287**	.2106**	.2325**	.0945	.1796**	.0986*	.1585**
A32	.1444**	.3744**	.3735**	.3336**	.4124**	.2114**	.1636**	.3253**	.3407**	.3179**	.1810**
A33	.1794**	.2259**	.3021**	.2708**	.3415**	.2696**	.1434**	.2405**	.2358**	.2271**	.1321**

APPENDIX TABLE 2 - Continued

Correlations:	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22
A1	.1944**	.0751	.0694	.0356	.1655**	.1625**	.0318	.1161*	.2138**	.1286**	.0705
A2	.1732**	.2628**	.2124**	.3008**	-.0424	.2608**	.2098**	.2713**	.2655**	.3551**	.4919**
A3	.2927**	.1995**	.2501**	.2780**	.0342	.2551**	.2092**	.3239**	.4066**	.2604**	.2964**
A4	.1448**	.3618**	.2286**	.3406**	.0156	.2394**	.2594**	.3222**	.2337**	.4230**	.4449**
A5	.3085**	.2348**	.2566**	.2910**	.0139	.2963**	.2179**	.3442**	.4139**	.2431**	.3407**
A6	.6645**	.0595	.1508**	.1809**	.0992*	.1742**	.0845	.2024**	.5318**	.2290**	.1720**
A7	.3414**	.2334**	.1866**	.0829	.1737**	.0974*	.0625	.1486**	.3258**	.1684**	.0801
A8	.1529**	.2743**	.3492**	.3787**	.0342	.2612**	.3458**	.2976**	.1172*	.3164**	.3662**
A9	.2096**	.3185**	.3439**	.3794**	.1218*	.3103**	.2718**	.3320**	.2520**	.3566**	.2964**
A10	.2193**	.2611**	.2899**	.3414**	.0469	.2857**	.3105**	.3533**	.2002**	.3772**	.3588**
A11	.2251**	.1523**	.1809**	.0960	.1514**	.1083*	.1283*	.1324**	.2527**	.1589**	.1035*
A12	1.0000	.1245*	.2249**	.2234**	.1005*	.1501**	.1359**	.1940**	.5305**	.2066**	.1356**
A13	.1245*	1.0000	.2775**	.3118**	.1257*	.2380**	.2178**	.3278**	.2400**	.3909**	.3832**
A14	.2249**	.2775**	1.0000	.5065**	.1708**	.2811**	.4960**	.3625**	.2695**	.2361**	.2925**
A15	.2234**	.3118**	.5065**	1.0000	.1078*	.3676**	.6021**	.4436**	.2662**	.3260**	.4700**
A16	.1005*	.1257*	.1708**	.1078*	1.0000	.1022*	.1348**	.0529	.1777**	.0890	-.0027
A17	.1501**	.2380**	.2811**	.3676**	.1022*	1.0000	.3803**	.4592**	.1699**	.2703**	.3250**
A18	.1359**	.2178**	.4960**	.6021**	.1348**	.3803**	1.0000	.4810**	.1654**	.2425**	.3654**
A19	.1940**	.3278**	.3625**	.4436**	.0529	.4592**	.4810**	1.0000	.2976**	.4202**	.3648**
A20	.5305**	.2400**	.2695**	.2662**	.1777**	.1699**	.1654**	.2976**	1.0000	.3683**	.2410**
A21	.2066**	.3909**	.2361**	.3260**	.0890	.2703**	.2425**	.4202**	.3683**	1.0000	.4169**
A22	.1356**	.3832**	.2925**	.4700**	-.0027	.3250**	.3654**	.3648**	.2410**	.4169**	1.0000
A23	.1824**	.1914**	.2291**	.3146**	-.0137	.2855**	.2965**	.3182**	.1201*	.2795**	.2993**
A24	.2044**	.2641**	.2955**	.4212**	-.0233	.2575**	.3038**	.3223**	.2058**	.4363**	.5211**
A25	.4200**	.2088**	.3084**	.2297**	.1041*	.2253**	.2493**	.2515**	.4234**	.2622**	.2365**
A26	.3913**	.2718**	.1903**	.1327**	.1300*	.1476**	.1164*	.1533**	.4736**	.2556**	.1675**
A27	.2161**	.2477**	.4547**	.4337**	.0807	.2272**	.4312**	.3768**	.2453**	.3031**	.3911**
A28	.1751**	.1726**	.2845**	.4109**	-.0741	.2411**	.3363**	.3364**	.1738**	.3511**	.3196**
A29	.1483**	.3156**	.3932**	.4063**	.0327	.2084**	.3519**	.3684**	.1571**	.3081**	.3626**
A30	.2728**	.1208*	.1221*	.1370**	.1148*	.1602**	.1473**	.1812**	.2325**	.1672**	.1092*
A31	.2171**	.1039*	.2242**	.1877**	.3538**	.2419**	.2206**	.2382**	.1694**	.1318**	.1481**
A32	.2057**	.2920**	.3599**	.4654**	.0413	.2465**	.3017**	.3673**	.2909**	.3603**	.4481**
A33	.2162**	.1937**	.2888**	.3337**	.0522	.2769**	.3171**	.3206**	.2615**	.2147**	.3150**

APPENDIX TABLE 2 - Continued

Correlations:	A23	A24	A25	A26	A27	A28	A29	A30	A31	A32	A33
A1	.0598	.0116	.2255**	.3013**	.1104*	.0684	.1117*	.1823**	.2026**	.1444**	.1794**
A2	.2319**	.4527**	.1824**	.1791**	.2609**	.2970**	.2477**	.0872	.0571	.3744**	.2259**
A3	.1655**	.2073**	.3563**	.3914**	.2495**	.1841**	.2413**	.1881**	.1316**	.3735**	.3021**
A4	.2662**	.4334**	.2742**	.2361**	.3152**	.3317**	.2200**	.0592	.0635	.3336**	.2708**
A5	.1990**	.2605**	.3553**	.4262**	.2851**	.2346**	.2804**	.1570**	.1287**	.4124**	.3415**
A6	.1776**	.2147**	.3468**	.3369**	.1988**	.1865**	.1264*	.2527**	.2106**	.2114**	.2696**
A7	.0859	.0543	.2403**	.4059**	.1648**	.0580	.1250*	.1214*	.2325**	.1636**	.1434**
A8	.3106**	.3673**	.2464**	.1340**	.3510**	.3166**	.3097**	.0642	.0945	.3253**	.2405**
A9	.2653**	.3167**	.2950**	.2698**	.2659**	.2787**	.2797**	.1482**	.1796**	.3407**	.2358**
A10	.2537**	.3381**	.2164**	.1386**	.2709**	.2797**	.2503**	.1009*	.0986*	.3179**	.2271**
A11	.0662	.1294**	.1588**	.2723**	.1530**	.0465	.0653	.0978	.1585**	.1810**	.1321**
A12	.1824**	.2044**	.4200**	.3913**	.2161**	.1751**	.1483**	.2728**	.2171**	.2057**	.2162**
A13	.1914**	.2641**	.2088**	.2718**	.2477**	.1726**	.3156**	.1208*	.1039*	.2920**	.1937**
A14	.2291**	.2955**	.3084**	.1903**	.4547**	.2845**	.3932**	.1221*	.2242**	.3599**	.2888**
A15	.3146**	.4212**	.2297**	.1327**	.4337**	.4109**	.4063**	.1370**	.1877**	.4654**	.3337**
A16	.0137	-.0233	.1041*	.1300*	.0807	-.0741	.0327	.1148*	.3538**	.0413	.0522
A17	.2855**	.2575**	.2253**	.1476**	.2272**	.2411**	.2084**	.1602**	.2419**	.2465**	.2769**
A18	.2965**	.3038**	.2493**	.1164*	.4312**	.3363**	.3519**	.1473**	.2206**	.3017**	.3171**
A19	.3182**	.3223**	.2515**	.1533**	.3768**	.3364**	.3684**	.1812**	.2382**	.3673**	.3206**
A20	.1201*	.2058**	.4234**	.4736**	.2453**	.1738**	.1571**	.2325**	.1694**	.2909**	.2615**
A21	.2795**	.4363**	.2622**	.2556**	.3031**	.3511**	.3081**	.1672**	.1318**	.3603**	.2147**
A22	.2993**	.5211**	.2365**	.1675**	.3911**	.3196**	.3626**	.1092*	.1481**	.4481**	.3150**
A23	1.0000	.4973**	.2341**	.1702**	.2963**	.6353**	.3970**	.1256*	.0766	.2664**	.2777**
A24	.4973**	1.0000	.2892**	.1579**	.3806**	.5687**	.3561**	.1091*	.1159*	.3378**	.2620**
A25	.2341**	.2892**	1.0000	.5741**	.2870**	.2740**	.2893**	.2063**	.2094**	.2937**	.3272**
A26	.1702**	.1579**	.5741**	1.0000	.2303**	.1693**	.1803**	.1567**	.2091**	.2562**	.2636**
A27	.2963**	.3806**	.2870**	.2303**	1.0000	.4416**	.4405**	.1009*	.2273**	.4261**	.3520**
A28	.6353**	.5687**	.2740**	.1693**	.4416**	1.0000	.4458**	.0791	.0442	.3518**	.2964**
A29	.3970**	.3561**	.2893**	.1803**	.4405**	.4458**	1.0000	.1758**	.1587**	.3783**	.3686**
A30	.1256*	.1091*	.2063**	.1567**	.1009*	.0791	.1758**	1.0000	.2198**	.1036*	.1459**
A31	.0766	.1159*	.2094**	.2091**	.2273**	.0442	.1587**	.2198**	1.0000	.1671**	.1648**
A32	.2664**	.3378**	.2937**	.2562**	.4261**	.3518**	.3783**	.1036*	.1671**	1.0000	.3862**
A33	.2777**	.2620**	.3272**	.2636**	.3520**	.2964**	.3686**	.1459**	.1648**	.3862**	1.0000

Minimum pairwise N of cases: 525 1-tailed Signif: * - .01 ** - .001

APPENDIX TABLE 3

Rotated Five Factor Structure Matrix For Items in Section A

Items	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
A14	.71188	-.29330	.27130	-.27332	.45494
A18	.69045	-.23398	.15891	-.35614	.44867
A15	.66159	-.27481	.20915	-.43640	.52945
A27	.51726	-.29275	.25266	-.44727	.46174
A31	.41340	-.12780	.30539	-.00423	.17471
A33	.39446	-.31827	.24576	-.33556	.37214
A17	.39152	-.26061	.17806	-.23662	.37620
A16	.32698	-.03514	.24450	.13091	.06349
A5	.24531	-.95256	.38532	-.25161	.40908
A3	.25442	-.84531	.40360	-.22597	.44866
A1	.14379	-.39295	.32868	-.00525	.10601
A12	.25325	-.31360	.80408	-.14767	.24657
A6	.19133	-.32709	.76511	-.16084	.25073
A20	.32666	-.40637	.65560	-.13425	.39798
A26	.24042	-.41024	.50799	-.14932	.34878
A25	.34819	-.35227	.48843	-.26218	.41863
A7	.21675	-.37263	.46880	-.03354	.19333
A11	.21519	-.29211	.33472	-.06198	.21500
A30	.19758	-.15919	.30063	-.11299	.15957
A28	.25651	-.24781	.17578	-.83873	.45129
A23	.24265	-.18310	.19774	-.72188	.41274
A24	.26328	-.25483	.22692	-.68582	.59459
A29	.50855	-.28553	.15828	-.51044	.41509
A4	.16189	-.46393	.18669	-.38610	.70499
A21	.26822	-.24512	.26331	-.38594	.64639
A22	.34862	-.32842	.15025	-.41742	.63781
A8	.34053	-.26832	.14410	-.30590	.60651
A9	.38042	-.19787	.27012	-.24013	.58497
A2	.15820	-.40200	.20196	-.38480	.56890
A10	.30514	-.18564	.24030	-.27595	.56043
A19	.51326	-.32783	.22251	-.35127	.54579
A13	.31144	-.22111	.16494	-.21897	.53360
A32	.43151	-.43082	.25001	-.36315	.50922
Sum of Squared Loading	4.52	4.42	4.07	4.15	6.88

NOTE: Maximum likelihood method used with five factors specified, oblimin rotation of factor matrix, df = 373

APPENDIX TABLE 3A

Analysis of Key Groups of Survey Items

	Question	Mean	SD
Section 1: Attitudes About Integration of Vocational and Academic Education			
A-5	I support the integration of academic and vocational education	4.36	0.99
A-3	Students need integrated academic and vocational education	4.29	0.96
A-4	The Ohio Department of Education must provide leadership for the integration of academic and vocational programs	4.02	1.14
A-1	Vocational teachers support the integration of vocational and academic education	3.44	1.10
A-11	Most school administrators support the integration of vocational and academic education	3.34	1.20
A-7	Most academic teachers with whom I work support the integration of vocational and academic programs	3.30	1.18
	* * * * * * * *		
Section 2: Perceptions of Training Needs			
A-8	Academic teachers need preservice programs focused on integrating academic and vocational education	4.22	0.98
A-22	Teachers need professional development programs to improve their team teaching skills	3.96	1.11
C-43	Inservice for teachers (Relative Importance)	3.91	1.17
C-34	Preservice education	3.74	1.22
A-32	I am willing to enroll in a workshop that would upgrade my skills in integration vocational and academic education	3.72	1.31
A-2	Vocational teachers need additional education on integrating vocational and academic education	3.63	1.19
A-24	Teachers need training to prepare for *externships*	3.44	1.23
	* * * * * * * *		
Section 3: Perceptions of Curriculum Needs			
A-13	Teachers need access to the best curriculum materials developed by other teachers across the state	4.39	0.93
C-46	Instructional materials (Relative Importance)	4.10	1.05
A-9	Curriculum materials based on the OCAP competencies need to be developed for academic classes	4.08	1.09
C-51	Correlated academic and vocational teachers	4.07	1.16
D-56	Integrated student projects (Format Preferences)	4.05	1.04
C-50	Integrated student projects	3.96	1.09
C-48	Content flexibility	3.94	1.06
C-39	Computers	3.89	1.09
A-21	Materials are needed to help prepare students for workplace experience	3.88	1.05
D-62	Computer software	3.85	1.15

APPENDIX TABLE 3A (Continued)

Question		Mean	SD
Section 3 (Continued):			
A-10	A chart is needed that shows the relationship of academic competencies to OCAP competencies	3.78	1.25
D-53	Teacher resource guides	3.74	1.13
D-54	Sample curriculum outlines	3.66	1.09
C-36	Use of OCAPs	3.63	1.14
D-55	Student Workbooks	3.55	1.19
D-61	Interactive CD-ROM	3.53	1.26
D-60	Printed materials	3.47	1.13
D-57	Chart connecting academic skills to vocational programs	3.46	1.29
D-58	Videotapes	3.39	1.11
D-59	Slides	2.32	1.13
	* * * * * * * * *		
Section 4: Perceptions of Needs Related to Workplace Experience/Student Internships			
A-19	*Workplace experience* that focuses on the way academics are used in the workplace is important for vocational students	4.04	1.01
C-49	Workplace experience (Relative Importance)	3.87	1.11
A-17	Vocational students need some kind of internship	3.80	1.06
A-23	A staff person is needed to help coordinate *workplace experience*	3.75	1.25
A-31	Teachers are able to find *workplace experiences* for their students	3.07	1.15
	* * * * * * * * *		
Section 5: Perceptions of Needs for Teacher Externships			
F-69	See relationships between academic and occupational skills (Outcomes)	4.22	0.98
F-70	Create relationships with potential employers for student internships	4.21	0.97
F-67	Learn new processes	4.16	0.99
F-72	Vocational and academic teachers learn to work together as a team	4.14	1.05
F-65	Update existing occupational skills	4.12	1.03
F-66	Learn new occupational skills	4.12	1.03
F-71	Obtain resources and teaching materials for the classroom	4.05	1.01
A-18	Applied academic teachers need to participate in *externships* in the workplace	3.90	1.14
A-15	Academic and vocational teachers need to go through *externships* as teams	3.86	1.17
F-68	Learn new management skills (Outcomes)	3.73	1.11
C-47	*Externships* for vocational teachers	3.69	1.21
C-38	*Externships* for academic teachers	3.64	1.19
A-16	Teachers are able to find their own *externship* site	2.71	1.25

APPENDIX TABLE 3A (Continued)

	Question	Mean	SD
Section 6: Needs Related to Administrator Support			
C-42	Mutual respect between academic and vocational teachers	4.49	1.11
A-29	Teachers need planning time to work together as teams	4.27	0.97
A-14	Applied academic teachers need to spend time observing their students in the vocational labs	4.18	1.02
C-44	Common planning time	4.03	1.16
C-35	Teaching schedules	4.00	1.11
A-27	Team teaching by academic and vocational teachers is needed in *applied academics*	3.90	1.16
C-40	Team teaching	3.88	1.12
C-37	Facilities	3.65	1.11
A-28	A staff person is needed to help the teacher coordinate teacher *externships*	3.40	1.33
C-41	Block scheduling	3.25	1.36
A-33	Block scheduling would be helpful in teaching *applied academics*	3.18	1.48
	* * * * * * * * *		
Section 7: Perceptions About Schools in General			
A-26	*Applied academics* work well in joint vocational schools	3.48	1.43
A-30	*Applied academics* work well in high schools other than joint vocational schools	2.80	1.48
	* * * * * * * * *		
Section 8: Perceptions About the Role of Business			
C-45	Partnerships with business (Relative Importance)	3.99	1.09
	* * * * * * * * *		
Section 9: Perceptions About Student Outcomes			
A-25	Vocational students prefer learning academic subjects through applied academic classes rather than as uncorrelated subjects	3.89	1.18
A-20	My perception is that vocational students who receive *applied academics* instruction experience fewer problems in the work-force than vocational students who do not receive *applied academics* instruction	3.14	1.28
A-12	My perception is that students who receive applied mathematics instruction as part of their vocational program have higher math scores than vocational students who attend regular math classes	3.07	1.32
A-6	My perception is that students who receive applied English/communications instruction as part of their vocational program have higher reading scores than vocational students who attend regular English classes	2.82	1.34

APPENDIX TABLE 4

Factor One - Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	6.9442	1.7360	2.1824	.0696
Within Groups	582	462.9553	.7955		
TOTAL	586	469.8994			

Group	Count	Standard Mean	Standard Deviation	Error	95 Pct Conf Int for Mean
Grp 1	230	-.0686	.9522	.0628	-.1923 To .0551
Grp 2	65	-.14485	.9829	.1219	-.3920 To .0951
Grp 3	39	.0278	1.1414	.1828	-.3422 To .3978
Grp 4	210	.1337	.7054	.0487	.0378 To .2297
Grp 5	43	-.1227	.9760	.1388	-.4231 To .1777
TOTAL	587	-.0026	.8955	.0370	-.0752 To .0700

Perceptions of Needs for Teacher Externships - Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	41.0687	10.2672	1.7315	.1415
Within Groups	569	3373.9000	5.9295		
TOTAL	573	3414.9686			

APPENDIX TABLE 5

Factor Two - Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	43.2693	10.8173	13.1137	.0000
Within Groups	582	480.0861	.8249		
TOTAL	586	523.3554			

Group	Count	Standard Mean	Standard Deviation	Error	95 Pct Conf Int for Mean
Grp 1	230	.2993	1.1091	.0731	.1552 To .4434
Grp 2	65	-.1312	.8390	.1041	-.3391 To .0766
Grp 3	39	.2519	1.2098	.1937	-.1403 To .6440
Grp 4	210	-.2740	.6292	.0434	-.3595 To -.1884
Grp 5	43	-.2775	.5974	.0911	-.4614 To -.0936
TOTAL	587	.0011	.9450	.0390	-.0755 To .0777

Attitudes About Integration of Vocational and Academic Education Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	309.2707	77.3177	4.5265	.0013
Within Groups	558	9531.3367	17.0812		
TOTAL	562	9840.6075			

APPENDIX TABLE 6

Factor Three - Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	16.1868	4.0467	5.1143	.0005
Within Groups	582	460.5058	.7912		
TOTAL	586	476.6925			

Group	Count	Standard Mean	Standard Deviation	Error	95 Pct Conf Int for Mean
Grp 1	230	-.0044	.9429	.0622	-.1269 To .1181
Grp 2	65	-.1378	.9469	.1175	-.3725 To .0968
Grp 3	39	-.2581	1.0298	.1649	-.5919 To .0757
Grp 4	210	.1627	.7395	.0510	.0621 To .2633
Grp 5	43	-.3978	1.0345	.1578	-.7162 To -.0794
TOTAL	587	-.0051	.9019	.0372	-.0782 To .0680

Effectiveness by School - Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	71.5559	17.8890	5.2170	.0004
Within Groups	514	1762.4904	3.4290		
TOTAL	518	1834.0462			

Perceptions About Student Outcomes - Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	303.5495	75.8874	5.7258	.0002
Within Groups	535	7090.6931	13.2536		
TOTAL	539	7394.2426			

APPENDIX TABLE 7

Factor Four - Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	27.3807	6.8452	8.6675	.0000
Within Groups	582	459.6367	.7898		
TOTAL	586	487.0175			

Group	Count	Standard Mean	Standard Deviation	Error	95 Pct Conf Int for Mean
Grp 1	230	.2168	.9674	.6382	.0911 To .3424
Grp 2	65	.0465	.9210	.1142	-.1817 To .2747
Grp 3	39	.0030	.8025	.1285	-.2572 To .2631
Grp 4	210	-.2751	.7825	.5400	-.3816 To -.1687
Grp 5	43	.1119	.9588	.1462	-.1831 To .4070
TOTAL	587	.0000	.9116	.0376	-.0739 To .0739

Needs Related to Administrative Support - Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	124.0723	31.0181	2.7440	.0279
Within Groups	538	6081.5852	11.3041		
TOTAL	542	6205.6575			

APPENDIX TABLE 8

Factor Five - Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	46.7952	11.6988	15.1565	.0000
Within Groups	582	449.2273	.7719		
TOTAL	586	496.0225			

Group	Count	Standard Mean	Standard Deviation	Error	95 Pct Conf Int for Mean
Grp 1	230	-.3068	1.0071	.0664	-.4377 To -.1760
Grp 2	65	-.0420	.9038	.1121	-.2659 To .1820
Grp 3	39	-.1752	.9924	.1589	-.4969 To .1465
Grp 4	210	.3179	.6941	.0479	.2235 To .4124
Grp 5	43	.2467	.7955	.1213	.0019 To .4916
TOTAL	587	-.0047	.9200	.0380	-.0793 To .0699

Perceptions of Training Needs - Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	996.5594	249.1399	17.2217	.0000
Within Groups	561	8115.7727	14.4666		
TOTAL	565	9112.3322			

Perceptions of Curriculum Needs - Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	112.5865	28.1466	3.1485	.0141
Within Groups	569	5086.7671	8.9398		
TOTAL	573	5199.3537			

APPENDIX TABLE 9

Level of Agreement With Items in Section A By Key Groups, Ranked By Mean Ratings

Question	Total		Vocational Instructor		Academic Instructor		Academic & Vocational Instructor		Administrator		Teacher Education	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
13	4.39	0.93	4.38	0.93	4.51	0.93	4.18	1.11	4.43	0.84	4.34	1.06
5	4.36	0.99	4.02	1.16	4.49	0.86	4.10	1.19	4.66	0.68	4.70	0.62
3	4.29	0.96	4.03	1.10	4.37	0.90	4.03	1.14	4.57	0.69	4.45	0.78
29	4.27	0.97	4.26	1.02	4.42	0.91	4.38	0.98	4.21	0.94	4.36	0.91
8	4.22	0.98	4.02	1.10	4.02	1.00	4.10	1.15	4.48	0.67	4.39	1.00
14	4.18	1.02	4.13	1.09	3.98	1.10	4.21	0.97	4.28	0.89	4.20	1.12
9	4.08	1.09	3.99	1.18	4.18	1.12	3.79	1.16	4.25	0.90	3.84	1.24
19	4.04	1.01	3.93	1.09	4.05	1.09	3.85	1.05	4.21	0.80	4.00	1.22
4	4.02	1.14	3.74	1.30	3.91	1.11	3.87	1.28	4.30	0.84	4.32	0.99
22	3.96	1.11	3.59	1.22	3.75	1.12	3.90	1.13	4.29	0.87	4.64	0.68
27	3.90	1.16	3.80	1.25	3.82	1.21	4.10	1.10	3.97	1.05	4.00	1.15
18	3.90	1.14	3.65	1.19	3.69	1.31	3.82	1.22	4.20	0.95	4.07	1.07
25	3.89	1.18	3.80	1.24	3.72	1.22	3.82	1.13	4.11	1.00	3.57	1.39
21	3.88	1.05	3.74	1.13	.378	1.16	4.08	1.12	4.00	0.89	3.93	0.99
15	3.86	1.17	3.58	1.26	3.80	1.27	3.90	1.22	4.16	0.91	3.91	1.28
17	3.80	1.06	3.67	1.14	3.77	0.99	3.69	1.18	4.01	0.90	3.68	1.22
10	3.78	1.25	3.56	1.33	3.83	1.22	3.44	1.41	4.04	1.09	3.98	1.08
23	3.75	1.25	3.59	1.34	3.52	1.29	3.77	1.27	4.10	1.01	3.34	1.35
32	3.72	1.31	3.58	1.39	3.95	1.06	3.82	1.15	3.83	1.16	3.41	1.78
2	3.63	1.19	3.16	1.23	3.65	1.21	3.28	1.20	4.07	0.95	4.30	0.87
26	3.48	1.43	3.42	1.43	3.62	1.34	3.13	1.60	3.64	1.40	3.07	1.39
1	3.44	1.10	3.69	1.13	2.91	0.96	3.51	1.28	3.40	1.01	3.18	0.98
24	3.44	1.23	3.13	1.31	3.17	1.23	3.44	1.19	3.83	0.98	3.61	1.32
28	3.40	1.33	3.20	1.41	3.40	1.32	3.31	1.20	3.71	1.15	3.00	1.45
11	3.34	1.20	3.21	1.33	3.40	1.08	3.21	1.34	3.57	1.01	2.93	1.18
7	3.30	1.18	3.27	1.20	3.69	1.15	2.82	1.30	3.38	1.05	2.75	1.28
33	3.18	1.48	2.96	1.50	3.23	1.45	2.92	1.67	3.47	1.38	3.07	1.42
20	3.14	1.28	3.02	1.29	3.22	1.53	2.77	1.39	3.35	1.10	2.91	1.41
31	3.07	1.15	3.25	1.13	2.49	1.17	3.15	1.00	3.08	1.09	3.00	1.26
12	3.07	1.32	2.94	1.33	2.92	1.50	2.74	1.31	3.34	1.18	2.84	1.41
6	2.82	1.34	2.82	1.35	2.35	1.27	2.33	1.38	3.07	1.27	2.70	1.32
30	2.80	1.48	2.54	1.53	2.71	1.50	3.10	1.68	3.10	1.33	2.59	1.34
16	2.71	1.25	3.05	1.34	2.35	1.22	2.82	1.34	2.51	1.03	2.32	1.16
	n=593		n=230		n=65		n=39		n=210		n=44	

NOTE: 1 = None, 2 = Moderate, 3 = High, 4 = Very High, 5 = Highest

APPENDIX TABLE 10

Importance of Items to Integration of Academic and Vocational Education Ranked By Mean Ratings

	Mean	SD
Mutual respect between academic and vocational teachers (42)	4.49	1.11
Instructional materials (46)	4.10	1.05
Common planning time (44)	4.08	1.66
Correlated academic and vocational programs (51)	4.07	1.16
Teaching schedules (35)	4.00	1.11
Partnerships with business (45)	3.99	1.09
Integrated student projects (50)	3.96	1.09
Content flexibility (48)	3.94	1.06
Inservice for teachers (43)	3.91	1.17
Computers (39)	3.89	1.09
Team teaching (40)	3.88	1.12
Workplace experience (49)	3.87	1.11
Preservice education (34)	3.79	1.71
Externships for vocational teachers (47)	3.69	1.21
Facilities (37)	3.65	1.11
Externships for academic teachers (38)	3.64	1.19
Use of OCAPs (36)	3.63	1.14
Block scheduling (41)	3.25	1.36

NOTE: 1 = None, 2 = Moderate, 3 = High, 4 = Very High, 5 = Highest; n = 593. The number in parentheses after the item is the number of the item in the questionnaire.

APPENDIX TABLE 11

Items Listed as Most Important to the Integration of Vocational and Academic Education in Rank order of Percent Listing

Item	Number	Percent
Mutual respect between academic and vocational teachers (42)	225	37.9
Common planning time (44)	217	36.6
Correlated academic and vocational programs (51)	159	26.8
Instructional materials (46)	148	25.0
Inservice for teachers (43)	146	24.6
Team teaching (40)	145	24.4
Partnerships with business (45)	137	23.1
Integrated student projects (50)	109	18.4
Teaching schedules (35)	109	18.4
Externships for academic teachers (38)	101	17.0
Computers (39)	88	14.8
Workplace experience (49)	86	14.5
Preservice education (34)	82	13.8
Content flexibility (48)	77	13.0
Externships for vocational teachers (47)	65	11.0
Facilities (37)	63	10.6
Use of OCAPs (36)	62	10.5
Block scheduling (41)	58	9.8

NOTE: n = 593. The number in parentheses after the item is the number of the item in the questionnaire.

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