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AUTHOR Heaviside, Sheila; And Others
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ABSTRACT

In fall 1992, the National Assessment of Vocational Education Teacher Survey gathered data on the context of vocational education in public secondary schools through questionnaires sent to 2,071 vocational and academic secondary teachers. Response was 93 percent (1,924 teachers). Almost all teachers taught full time and had a significant amount of teaching experience. Class size was slightly lower and class length was somewhat longer in vocational courses. Vocational courses differed by the activities and teaching methods used during class. Homework was much more likely to have been assigned during a 5-day period in academic courses; vocational course students were about twice as likely to have used some kind of instrument, tools or equipment, and computers. Large proportions of both groups of teachers planned to include written examinations and quizzes. Vocational teachers were likely to administer a performance test or assess a student's portfolio. The mathematics and science content of most vocational courses was limited. Teachers in both groups reported the leading determinants of students' grades were basic reading skills, completing work on time, creative thinking and problem solving, and self-management skills, although occupational skills were significantly more likely to contribute to a vocational student's grade. (Over one-half of the report consists of 23 tables of estimates and standard errors. The questionnaire is appended.) (YLB)

NATIONAL CENTER FOR EDUCATION STATISTICS

Statistical Analysis Report January 1994

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Contractor Report

FRSS
Fast Response Survey System

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Office of Educational Research and Improvement NCES 94-409

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Public Secondary School Teacher Survey on Vocational Education

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Sheila Heaviside
Nancy Carey
Elizabeth Farris
Westat, Inc.

Judi Carpenter
Project Officer
National Center for Education Statistics

U.S. Department of Education
Office of Educational Research and Improvement NCES 94-409

U.S. Department of Education
Richard W. Riley
Secretary

Office of Educational Research and Improvement
Sharon P. Robinson
Assistant Secretary

National Center for Education Statistics
Emerson J. Elliott
Commissioner

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Contact:
Judi Carpenter
(202) 219–1333

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Highlights

These highlights summarize the results of the National Assessment of Vocational Education Teacher Survey (fall 1992) and describe some characteristics of vocational education teachers and courses in the nation's public secondary schools. This survey was requested by the National Assessment of Vocational Education and conducted through the Fast Response Survey System (FRSS).

- In fall 1992, 97 percent of vocational teachers and 98 percent of academic teachers in the nation's public secondary schools were teaching full time (table 2). Ninety-one percent of vocational teachers and 92 percent of academic teachers indicated that their primary teaching assignment was in the area for which they had prepared to teach.

- Vocational and academic teachers in public secondary schools report similar teaching experience. Vocational teachers averaged 17 years of experience, 14 of which were spent in their primary teaching assignment (figure 2). Academic teachers had 18 years of teaching experience, 15 of which had been in their primary teaching assignment.

- Overall, 66 percent of public secondary school vocational teachers had nonteaching paid work experience directly related to their teaching assignment, compared with only 19 percent for their academic counterparts (table 2 and figure 3). The amount of experience also differed, with vocational teachers averaging 10 years nonteaching experience compared with 6 years for academic teachers.

- Eighty-eight percent of vocational teachers held at least a bachelor's degree; 50 percent held a degree above a bachelor's (table 3). In contrast, virtually all academic teachers had a bachelor's degree and over half (60 percent) held a degree higher than a bachelor's.

- Sixty-six percent of vocational teachers had an education major (table 3).

- In the fall of 1992, 73 percent of public vocational teachers reported that they considered their classes to be composed either primarily of students of average ability (40 percent) or of students spanning a wide range of abilities (33 percent; table 4). Teachers in academic courses viewed their students differently; they were more than three times as likely as vocational teachers to indicate that their students were of higher than average ability (35 percent compared to 11 percent). Seventeen percent of vocational and 13 percent of academic teachers believed that their class was composed primarily of students with lower than average ability.

- Vocational teachers were more likely to coordinate curriculum or team teach with other vocational teachers (37 percent), and fewer (from 5 to 13 percent) coordinated efforts with English, math, science, and other teachers often or always (table 8).

- While homework was assigned in nearly all academic classes (95 percent), it was assigned in only 59 percent of vocational classes (table 10).

- Student performance in vocational courses was most commonly evaluated by teacher-developed tests (84 percent) and student classwork (76 percent; table 11).

- Among vocational teachers, placement of problem students into vocational education programs and the status of vocational education in relation to academic subjects led the list of reported problems in the vocational programs in their schools (55 percent and 54 percent respectively; table 14). Almost half of vocational teachers indicated that student motivation (49 percent) and maintaining vocational enrollments (47 percent) were also serious problems.

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Introduction

In the Carl D. Perkins Vocational and Applied Technology Education Act of 1990 (Public Law 101-392), Congress called for upgrading the academic and occupational competencies obtained by students when participating in vocational education. This Act was meant to ensure equal educational opportunities for all students and to develop the academic and occupational competencies needed to work in a technologically advanced marketplace, thereby making the United States more competitive in the world economy. The legislation also mandated an assessment of vocational education programs. This report presents the results of a survey of public secondary school teachers undertaken as a separate but supporting study requested by the National Assessment of Vocational Education. It was conducted by the U.S. Department of Education's National Center for Education Statistics for the Office of Research, Office of Educational Research and Improvement, using the Fast Response Survey System (FRSS).

The National Assessment of Vocational Education is charged with evaluating the current status of vocational education by collecting information from a variety of sources, including new and extant surveys, case studies, and examinations of course materials. Some information needed for this assessment was believed to be best provided by vocational teachers themselves. Four issues in particular became the focus of the Fast Response National Assessment of Vocational Education Teacher Survey conducted in the fall of 1992. Each of these was directly related to goals of the Perkins Act.

First, the Perkins Act calls for an assessment of the preparation and qualifications of vocational teachers. The survey obtained supporting information about public secondary school vocational teachers, including teaching experience, educational attainment, nonteaching work experience, and whether vocational teachers were likely to be teaching in the subject for which they had prepared.

Another measure to upgrade vocational education and improve the skills of vocational students described in the Perkins Act is the integration of academic and vocational curricula. This goal ensures that vocational students develop the academic skills needed in an increasingly demanding and technologically advanced marketplace. Thus, the FRSS survey obtained information about the amount of time spent on various academic and occupational subject matter, curriculum coordination, evidence of team teaching, and vocational teachers' judgments about their own preparedness to teach academic subject matter.

A third set of measures that directly relate to the National Assessment were included in the survey. These measures obtain information about activities and teaching methods employed in the classroom, the degree to which vocational teachers promote student learning through homework and testing, and the degree to which teachers emphasize and reinforce students' academic skills. Detailed, representative information on these issues can perhaps be best obtained from vocational instructors, whose teaching practices determine the content and academic rigor of vocational courses.

Finally, the survey asked vocational teachers to indicate what they perceived to be problems in the vocational education programs in their schools.

This report presents data obtained from public secondary school vocational education teachers and a comparison sample of academic teachers. Information provided by vocational teachers was analyzed along with that provided by academic subject teachers who served as a benchmark for comparative purposes. Comparisons are also made between vocational courses in vocational high schools and vocational courses offered in comprehensive high schools.

Data have been weighted to national estimates of vocational and academic teachers teaching in public secondary schools with 11th and 12th grades (table 1). Only those teachers who were teaching at the same school when the study was conducted (fall 1992) as when the sample of teachers was selected (spring 1992) were included in the study. All statements of comparison made in this report have been tested for significance through chi-square tests or t-tests adjusted for multiple comparisons using the Bonferroni adjustment and are significant at the .05 level or better.

Characteristics of Vocational Education Teachers

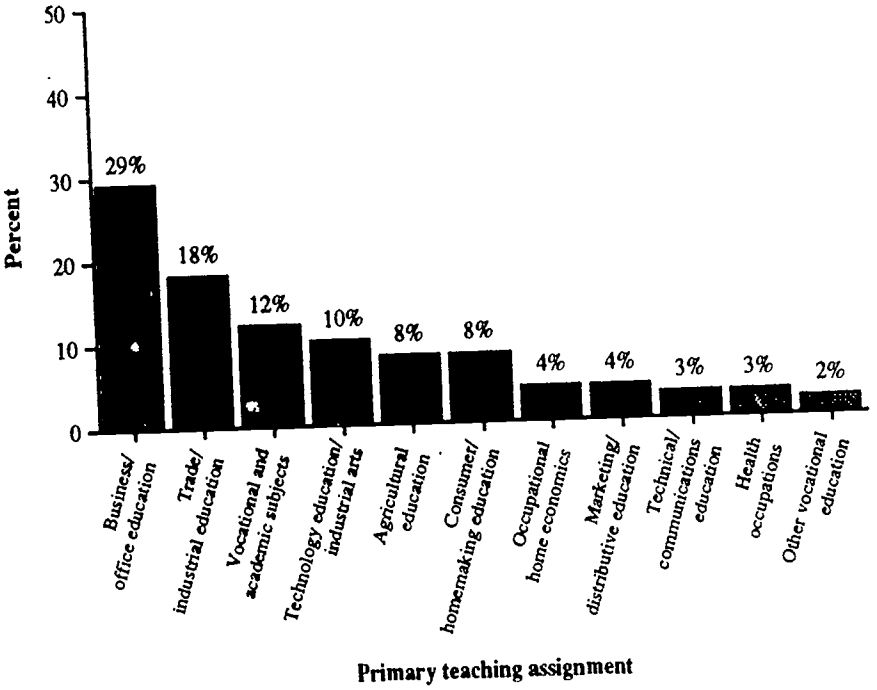
In fall 1992, 118,000 vocational education teachers were teaching in the nation's public secondary schools.[1] Seventy-nine percent of these were teaching in comprehensive high schools; the remaining 21 percent were employed in vocational education schools. This survey obtained information about various characteristics of vocational teachers related to their level of preparation, including their primary teaching assignments, years of teaching experience, full- or part-time status, nonteaching work experience, and educational background (table 2). Characteristics of vocational teachers are compared with academic secondary teachers, and differences between vocational teachers teaching in vocational schools and those teaching in comprehensive high schools are also presented.

Primary Teaching Assignments

Business and office education led a list of nine vocational education fields cited as the primary teaching assignment for vocational education teachers, with 29 percent indicating business/office education was their primary assignment (figure 1). The second largest percentage (18 percent) of vocational teachers taught courses in trade and industrial education, and 10 percent taught courses primarily in technology education and industrial arts. From 3 percent to 8 percent of vocational teachers taught classes in other specified vocational subject areas. Twelve percent of vocational teachers indicated that their primary assignment was evenly split between an academic and a vocational course. The cover page of the questionnaire in the appendix lists all vocational subjects specified along with a description of each.

[1]The sample of schools from which the teacher sample was drawn included all public secondary schools with 11th and 12th grades and included regional vocational schools.

Figure 1. Percent of public secondary school vocational education teachers reporting various subjects as their primary teaching assignment: 1992



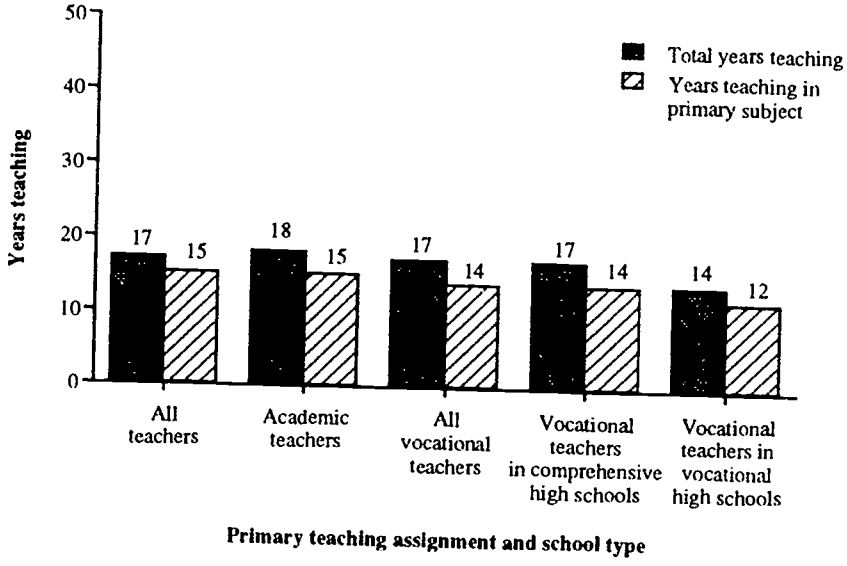
NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Teaching Experience

Vocational teachers averaged 17 years of teaching experience, 14 of which had been in their primary teaching assignment (figure 2). The amount of teaching experience reported by vocational teachers was similar whether they were teaching in vocational schools, where they averaged 14 years of teaching experience and 12 years teaching in their primary assignments, or in comprehensive schools, where vocational teachers reported averages of 17 years teaching and 14 years teaching in their primary subject.

Figure 2. Mean number of years of teaching experience and years teaching in primary subject of public secondary school teachers, by primary teaching assignment and school type: 1992



SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

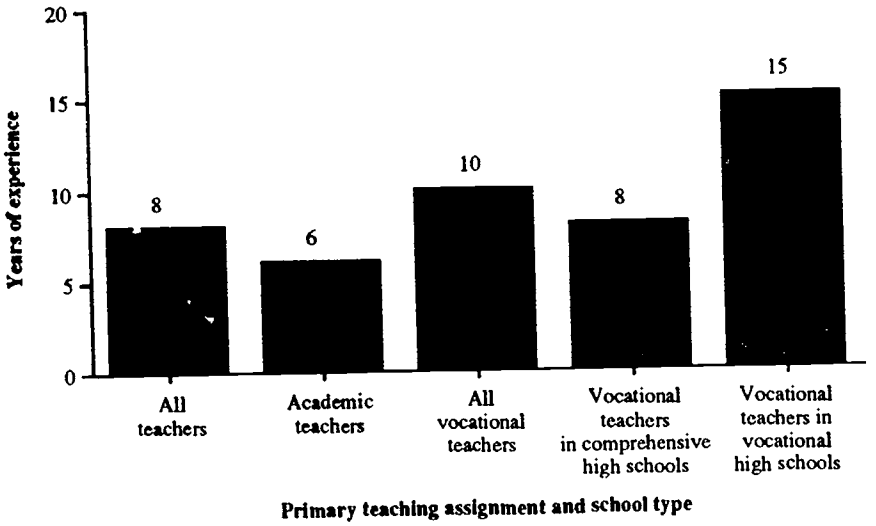
Almost all vocational teachers (97 percent) taught full time in fall 1992 (table 2). Moreover, 91 percent reported that they were currently teaching in the subject for which they had originally prepared to teach. Vocational teachers in vocational schools were more likely to report teaching in the subject for which they had prepared; 95 percent of vocational teachers in vocational high school were doing so, as compared to 90 percent of vocational teachers in comprehensive high schools. The percentage of vocational teachers in vocational high schools who were teaching full time was about the same as vocational teachers in comprehensive high schools (98 percent and 96 percent, respectively).

This profile of vocational education teachers' teaching experience was very similar to that of academic subject teachers. Academic teachers had 18 years of teaching experience and had taught in their primary assignment for 15 years, on average. Like their vocational counterparts, most academic teachers were teaching full time and in the subject area for which they had originally prepared to teach (98 percent and 92 percent, respectively).

Other Related Nonteaching Work Experience

Two-thirds (66 percent) of all vocational teachers had paid work experience in a nonteaching occupation directly related to their current primary teaching assignment, and they reported having spent an average of 10 years employed in such positions (table 2 and figure 3). In contrast, a much smaller percentage (19 percent) of academic teachers reported having paid nonteaching experience related to their primary teaching area. Those that did averaged only 6 years of nonteaching experience. Approximately 6 percent of both vocational and academic teachers with nonteaching work experience related to their primary teaching assignment obtained this experience in the military.

Figure 3. Mean number of years of related nonteaching work experience among teachers with nonteaching work experience, by public secondary school teachers' primary teaching assignment and school type: 1992



SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Differences were also found among vocational teachers by the type of school in which they taught. Over three-quarters (80 percent) of vocational teachers in vocational high schools had nonteaching experience, while 62 percent of vocational teachers in comprehensive high schools had such experience. The amount of nonteaching experiences followed a similar pattern, with vocational teachers in vocational high schools having nonteaching experience reporting considerably more years of nonteaching experience (15 years) than those in comprehensive high schools (8 years).

Educational Background

Although vocational education teachers had considerably more "real-life" experience in their field of teaching than academic teachers, they tended to have fewer years of formal schooling. Eighty-eight percent of vocational teachers had attained at least a bachelor's degree (table 3). For 39 percent of vocational teachers a bachelor's was the highest degree attained, and 50 percent reported holding a degree above a bachelor's. Among all vocational teachers, 6 percent held an associate's degree, 4 percent indicated that an occupational license was their highest credential, and 2 percent reported that a high school diploma was the highest degree they had obtained.

In contrast, virtually all academic teachers had a bachelor's degree and over half (60 percent) held a degree higher than a bachelor's.

Vocational teachers in vocational schools had fewer years of academic preparation than their comprehensive school counterparts. For example, in comprehensive high schools, 95 percent of vocational teachers possessed a bachelor's degree, but only 63 percent of vocational teachers in vocational high schools held a bachelor's degree. Additionally, in comprehensive schools, 55 percent of vocational teachers had achieved a degree above a bachelor's compared to only 33 percent in vocational schools.

Vocational teachers in comprehensive high schools are more comparable to academic teachers than to their counterparts in vocational high schools in terms of highest degree attained. Approximately 40 percent of both groups' highest degree was a bachelor's. Sixty percent of academic teachers held a degree above bachelor's and 55 percent of vocational teachers in comprehensive high schools had also gone beyond the bachelor's degree.

Characteristics and Composition of Vocational Education Classes

This study is based upon a representative sample of vocational teachers, rather than a representative sample of vocational classes. Most teachers teach more than one class, and many of these teachers may teach more than one vocational subject. The teacher responses to this survey, Part II Class Information, were based on the first class taught on October 1 in the teacher's primary assignment. Since this survey did not cover all classes taught by the teacher, it is not representative of all vocational classes or students in the United States. We can, however, describe those classes for which teachers reported.

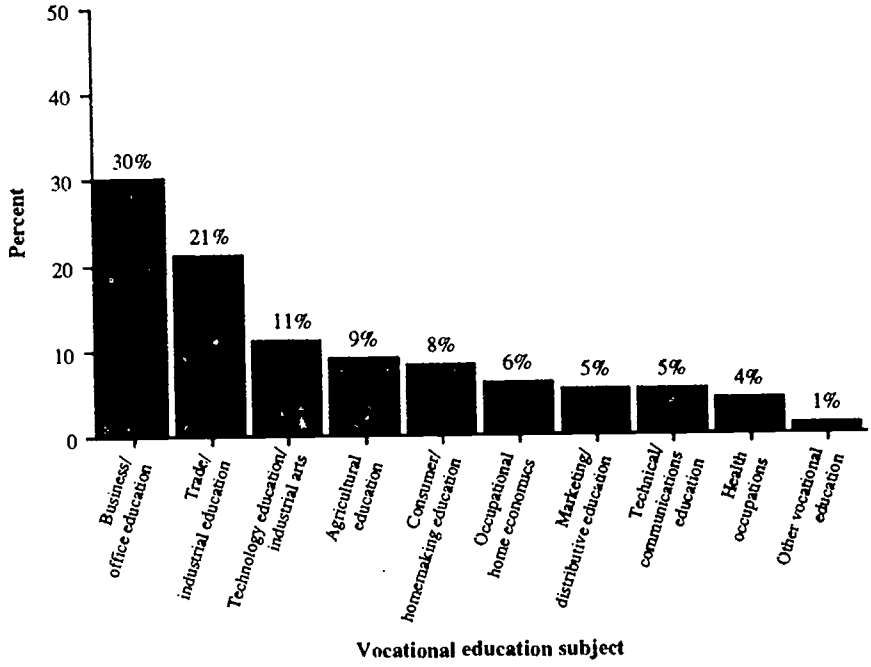
Classes

When teachers reported on the first class taught in their primary assignment on October 1, almost a third (30 percent) of the reported vocational classes were in business and office education (figure 4).[2] The other most frequently reported vocational classes were trade and

[2]The distribution of classes is highly correlated with the distribution of primary teaching assignments reported by teachers since the class for which they reported on was the first class taught in their primary teaching assignment the week of October 1, 1992. The distributions of classes and teaching assignments are not identical, however, because some teachers' assignments are evenly split between academic and vocational subjects. These teachers were counted separately for teaching assignment, but the class data they provided are counted as vocational or academic, depending upon the subject of the actual class for which the teacher reported.

industrial education (21 percent) and technology education and industrial arts (11 percent). Additional vocational courses included agricultural education (9 percent), consumer and homemaking education (8 percent), occupational home economics (6 percent), marketing and distributive education (5 percent), technical and communications education (5 percent), health occupations (4 percent), and other vocational education (1 percent).

Figure 4. Percent of vocational subjects reported as subject of first course taught in primary assignment field, by public school vocational education teachers: 1992



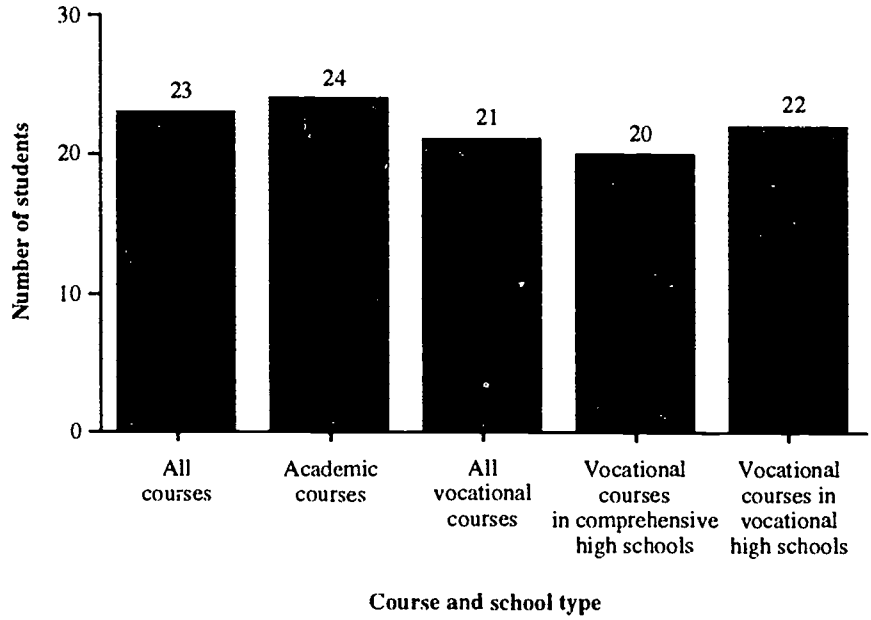
NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Class Size

On average, the class size in vocational education courses was 21. Academic classes were larger, averaging 24 students (figure 5).

Figure 5. Mean class size in public secondary school classes, by course and school type: 1992



SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Student Abilities

In the fall of 1992, most vocational classes were composed either primarily of students of average ability or of students spanning a wide range of abilities. This pattern appeared in both comprehensive and vocational high schools. Teachers in academic courses viewed their students differently. They were about three times as likely as vocational teachers to indicate that their students were of higher than average ability (35 percent compared to 11 percent; table 4). Academic teachers were only half as likely as vocational teachers, however, to report that their classes were made up of students with a wide range of abilities (16 percent compared with 33 percent). Only 14 percent of all teachers indicated that their classes were composed primarily of lower than average ability students. This was similar for both vocational and academic courses (17 percent and 13 percent, respectively).

Application Toward Graduation Requirements

About one-fourth (26 percent) of all vocational courses count toward academic graduation requirements and 59 percent of vocational courses at vocational high schools count toward academic graduation requirements. Relatively small proportions of vocational courses fulfill graduation requirements in English (5 percent), science (10 percent), or

math (11 percent; table 4). Vocational courses in vocational high schools were more than twice as likely as those in comprehensive schools to fulfill graduation requirements in English (11 versus 4 percent), science (24 versus 6 percent), and math (24 versus 7 percent).

Integration and Coordination of Curriculum

Teachers were asked to report the percentage of class time spent on material in the areas of basic algebra, math beyond basic algebra, writing, biology principles, chemistry laws or principles, physics laws or principles, and occupationally related principles. The teachers also indicated whether they served as the main instructor when these materials were covered in class. Finally, teachers rated how prepared they felt to teach each of these subjects.

Time Spent on Various Subject Matter

The academic content of most vocational courses is quite limited. When describing the first course taught in their primary subject on October 1, 1992, only 10 percent of vocational teachers indicated that more than 25 percent of class time was devoted to writing assignments (table 5). Even fewer (from 1 to 3 percent) indicated that more than 25 percent of the class was spent on problems using basic algebra (2 percent) or math beyond basic algebra (1 percent), biology (3 percent), chemistry (1 percent), or physics (1 percent). However, half (50 percent) spent more than 25 percent of class time on occupationally related principles.

Overall, the greatest difference between vocational and academic courses was in the amount of time spent on occupationally related material. While 50 percent of vocational teachers in vocational high schools spent more than 25 percent of class time on material involving occupational principles, only 5 percent of teachers in academic courses did so.

Differences in course content were found between vocational and academic courses. Some of these differences, however, are influenced by the fact that many of the academic teachers are reporting for classes in the specific subject area (for example, English, math and science teachers). When compared with teachers whose primary teaching assignment is not the subject of interest, fewer differences emerged.

More than 25 percent of class time was spent on writing assignments in 28 percent of academic courses, compared with 10 percent of vocational courses. This difference holds when vocational courses are compared with academic classes other than those in the language arts; only math teachers report less time spent in writing (6 percent; not shown in tables) than vocational courses.

Overall, a larger percentage of academic teachers reported spending more than 25 percent of class time using basic algebra principles (15 percent), compared with vocational teachers (2 percent). Likewise, a higher proportion of teachers in academic courses devoted more than 25 percent of class time to scientific principles: 9 percent for biology, 6 for chemistry, and 5 percent for physics. In contrast, only 3 percent or less of vocational courses involved scientific principles.

One difference was found when comparing vocational courses in vocational schools with those in comprehensive schools. Vocational students in comprehensive schools were twice (11 percent) as likely to have spent more than 25 percent of the class writing than those in vocational schools (5 percent).

Of particular interest was the percentage of vocational teachers indicating that no time at all was spent on problems involving much of the material covered in this survey. In one-half to three-fourths of vocational classes, no time was devoted to problems using basic algebra (58 percent), math beyond basic algebra (79 percent), biology principles (75 percent), chemistry (70 percent), and physics (68 percent; table A). However, most vocational classes involved a writing assignment (only 20 percent did not involve writing in some way) and in only 5 percent of vocational courses were occupational principles not broached.

Table A.--Percent of vocational classes in public secondary schools in which no time was spent on various subject matter, by course and school type: 1992

Task	Vocational classes		
	All	In comprehensive high school	In vocational high school
Problems using basic algebra	58	62	47
Problems using math beyond basic algebra	79	79	78
Writing assignments	20	20	17
Biology principles	75	74	81
Chemistry laws or principles.	70	71	63
Physics laws or principles	68	70	62
Occupationally related principles. . .	5	6	1

Principal Instructor

In order to measure the extent to which team teaching is being used in vocational classes as one means of integrating academic and vocational education, the survey asked teachers to indicate whether they or someone else was the main instructor when each of these subjects was typically covered in class. In 88 to 98 percent of classes, vocational education teachers reported taking the lead as the main instructor for each of these areas. For math beyond basic algebra, 12 percent of vocational teachers indicated that some other teacher led the instruction when this material was covered in class (table B).

Table B.--Percent of pubiic secondary school vocational teachers indicating they were the main instructors when various subject matter was covered in class, by course and school type: 1992

Task	Vocational teachers		
	All	In comprehensive high school	In vocational high school
Problems using basic algebra	94	98	84
Problems using math beyond basic algebra	88	90	83
Writing assignments	96	98	93
Biology principles	96	96	93
Chemistry laws or principles	95	96	93
Physics laws or principles.	96	97	93
Occupationally related principles	98	98	97

Teachers' Preparation

Teachers were asked to rate their level of preparation to teach material in each of these areas whether or not it was part of the curriculum in the classes they taught. This was examined to determine the extent to which vocational teachers are prepared to integrate or reinforce academic subject matter in their classes. A 4-point scale was used to determine the extent to which teachers felt prepared, with 1 indicating the teacher felt not at all prepared to teach materials in the areas, and 4 indicating the teacher felt very well prepared to teach the subject matter. Data are presented in this section and in tables 6 and 7 combining 3 and 4 on the scale.

Overall, vocational teachers felt best prepared to teach occupationally related principles (91 percent). Between about half and three-quarters of vocational teachers also felt prepared to teach problems using basic algebra (51 percent) and writing (74 percent). Far fewer indicated that they felt prepared to teach math beyond basic algebra (29 percent), biology (36 percent), chemistry (25 percent), or physics (27 percent).

Little variation between academic and vocational teachers was found overall in the degree to which they felt prepared to teach different kinds of problems and materials. However, some differences were found among vocational teachers. Here, while the majority of vocational teachers (91 percent) indicated that they felt prepared to teach occupationally related principles, only 43 percent of academic teachers reported such feelings of preparedness (table 6). Writing stood out as the one area that approximately three-quarters (77 percent) of all teachers (including 74 percent for vocational and 78 percent for academic teachers) felt prepared to teach. However, fewer vocational teachers in vocational high schools (65 percent) indicated such preparedness. Only about one-third (33 percent for biology, 28 percent for chemistry, and

29 percent for physics) of teachers in all groups felt prepared to teach scientific principles, and approximately half of all teachers (52 percent) reported feeling prepared to teach problems using basic algebra.

About half of all vocational teachers (51 percent) also felt prepared to handle problems using basic algebra, although fewer (29 percent) felt prepared to deal with high-level math problems. About the same percentage of academic teachers as vocational teachers felt prepared to teach basic algebra (53 percent), but they were more likely than vocational teachers to feel prepared to handle problems beyond the basic level (39 percent).

Vocational teachers as a group also indicated different levels of preparedness depending on their area of primary teaching assignment. To examine these differences, vocational teachers were divided into four groups: business/office education teachers; trade and industrial education teachers; technology education/industrial arts teachers; and vocational teachers teaching other subjects.

Overall, most vocational teachers, regardless of primary teaching assignment, felt well prepared to teach occupationally related principles (percentages ranged from 88 to 94 percent; table 7). Business/office education teachers (79 percent) and those teaching other vocational subjects (81 percent) felt better prepared to teach material involving writing assignments than those who taught trade and industrial education or technology education/industrial arts (60 percent for each). However, fewer than 10 percent of business/office education teachers felt prepared to teach any of the scientific principles and were also less likely to feel prepared to teach math beyond basic algebra (19 percent) than their counterparts in trade and industrial education (32 percent), technology education/industrial arts (41 percent), and other vocational education (31 percent).

Technology education/industrial arts teachers felt more proficient than business or other vocational teachers to teach subject material involving physics and mathematics beyond the basic algebra level. Fifty percent of these teachers felt prepared to teach physics compared to 3 percent for business/office education teachers and 33 percent for other vocational education teachers. Additionally, 41 percent of the technology education/industrial arts teachers were prepared to teach advanced math compared with 19 to 32 percent for other groups.

Coordinating Curriculum

Teachers were asked how often they coordinate curriculum or team teach with other teachers. This would indicate some integration of vocational education and academic curricula.

Overall, only about 10 percent of teachers indicated that they typically (often or always) coordinate course curricula or team teach with teachers of English, mathematics, science, vocational education, or some other subject (table 8). As might be expected, academic teachers were least likely to coordinate curricula or team teach with vocational education teachers. Only 3 percent of academic teachers interacted with vocational teachers in this way compared to the 5 to 13 percent of vocational

teachers indicating they coordinated efforts with other subject area teachers.

Vocational teachers were most likely to coordinate with other vocational teachers. Over one-third (37 percent) of these teachers team taught or coordinated curricula often or always with other vocational teachers.

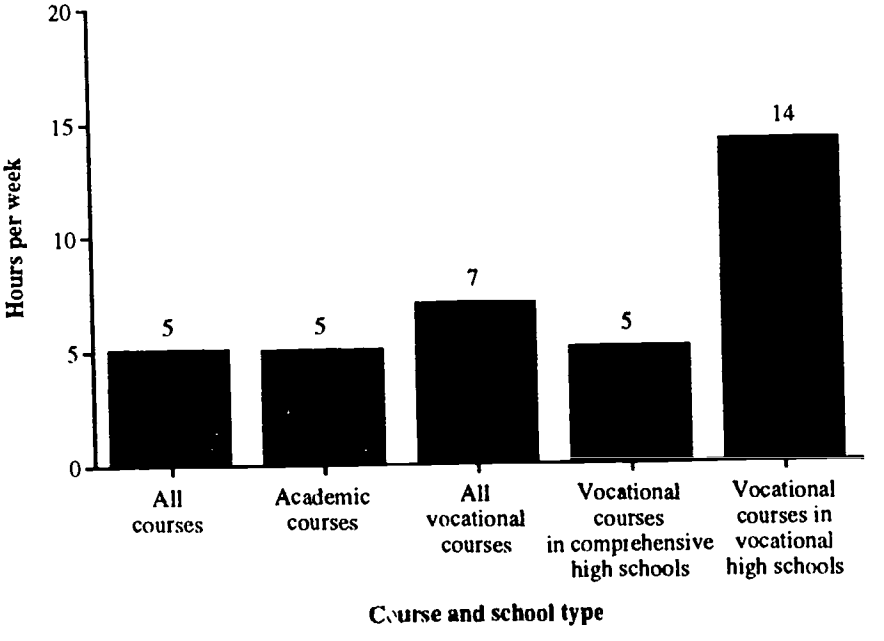
Vocational Education Course Content and Activities

Teachers were also asked to provide additional information about the length of the class, activities and teaching methods used, specific material covered, and interaction with other teachers for the first class taught in their primary teaching assignment.

Class Length

The difference between academic and vocational courses in average hours per week that the class met (5 hours and 7 hours, respectively) during the fall of 1992 is due to differences in vocational schools (figure 6). Students in vocational courses in vocational high schools spent considerably more time in one course than students in vocational courses in comprehensive schools and in academic courses. The mean class hours per week for vocational courses taught in vocational high schools was 14; the mean class hours in vocational courses in comprehensive high schools was 5, while academic courses averaged 5 hours per week.

Figure 6. Mean number of hours per week public secondary school classes meet, by course and school type: 1992



SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRS...45, 1993.

Classroom Activities and Teaching Methods

Teachers were asked to indicate whether six classroom activities had taken place when the class last met: a lecture; students using computers; students using instruments, tools, or equipment; students writing a paragraph or more; teachers assigning homework; and a test or quiz.

About three-fourths (76 percent) of vocational teachers indicated that there had been a lecture during the last class, and in 73 percent of the classes students had engaged in activities involving the use of instruments, tools, or equipment (table 9). Fewer than half of vocational teachers indicated that students had used computers (40 percent), written a paragraph or more (41 percent), taken a test or quiz (43 percent), or been assigned homework (45 percent).

Vocational courses differed somewhat from academic courses in terms of the activities and teaching methods employed during class. The three most notable differences were in the areas of assigning homework, students' use of instruments, and students' use of computers. Over three-quarters (81 percent) of the academic course teachers had assigned homework, while less than half (45 percent) of teachers in vocational courses had done so. In contrast, in nearly three-quarters (73 percent) of vocational courses students were required to use some kind of instruments, tools, or equipment, while only about one-third (37 percent) of academic courses involved any kind of equipment usage. Finally, only 13 percent of academic courses had included computer usage as a class activity, while in 40 percent of vocational courses students had used computers.

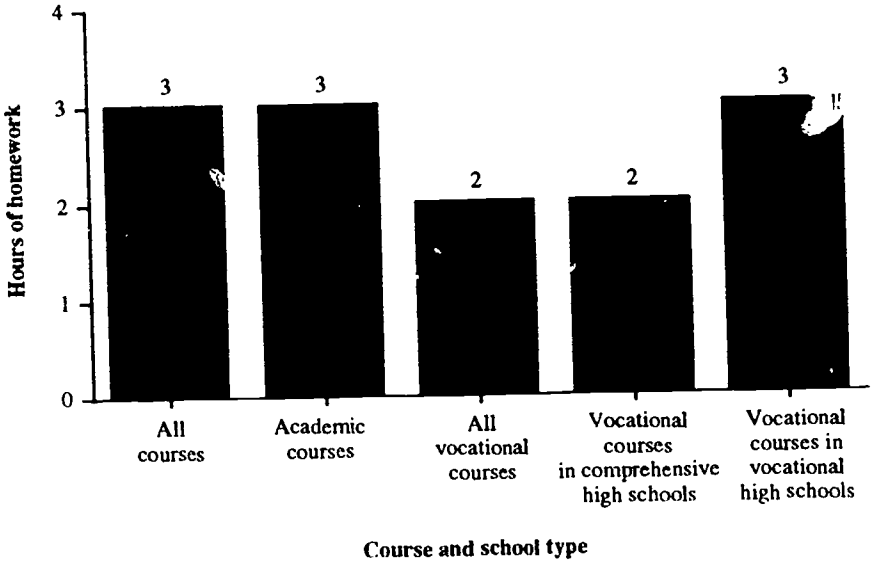
With respect to the remaining activities that occurred during class time -- teacher lectures, students writing a paragraph or more, and the administration of a test or quiz -- few differences were found. A majority of both academic and vocational courses had included lectures (75 and 76 percent, respectively), and tests or quizzes had been administered in 42 percent of academic and 43 percent of vocational courses. However, while approximately half (54 percent) of academic courses had involved students writing a paragraph when the class last met, this was true for only 41 percent of vocational courses.

An examination of differences across vocational courses with regard to classroom activities and methods reveals some variation by type of school. Vocational courses in vocational high schools were somewhat more likely than those in comprehensive schools to have involved a lecture (87 versus 74 percent) and student use of tools or equipment (87 versus 69 percent) when the class last met.

Homework

Vocational courses differed from academic courses in terms of whether or not homework was assigned (table 10). While homework was assigned in nearly all academic classes (95 percent), it was assigned in no more than 59 percent of vocational classes. Also, the homework assigned in vocational classes required less time for completion than academic class homework: 2 hours versus 3 hours over a 5-day period (figure 7).

Figure 7. Mean hours of homework assigned in last 5 days in public secondary school classes, by course and school type: 1992



SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

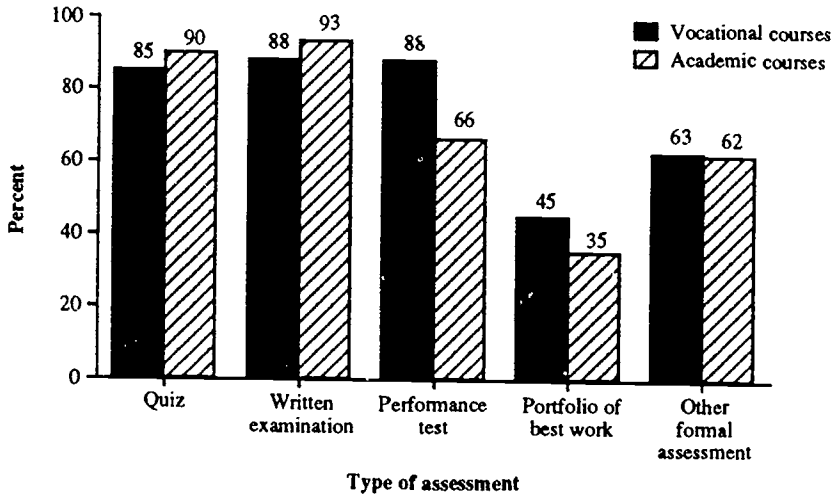
Course differences were found in terms of the kinds of activities assigned for homework. A fairly high percentage of homework for both vocational and academic courses required reading assignments (69 percent overall). An even higher percentage (83 percent) of vocational courses in vocational high schools involved reading assignments. In contrast, 32 percent of homework for academic courses involved essay writing, while only 16 percent of homework for vocational courses required such work. Homework assigned in vocational courses involved using basic mathematical computations 40 percent of the time, while homework in academic courses involved less use of basic mathematical computation (27 percent). However, homework for academic courses did require a higher percentage of advanced mathematical or scientific problem solving (24 percent) than homework for vocational courses (10 percent). A much higher percentage of homework assigned in vocational courses involved use of nonacademic skills (41 percent) than that assigned in academic classes (5 percent). Vocational courses taught in vocational high schools required an even higher percentage of the use of job skills in homework (49 percent) than those taught in comprehensive high schools (39 percent).

Use of Assessments

Teachers were asked how often during the current grading period they planned to conduct each of five assessments: a quiz, written examination, performance test, portfolio of best work, or some other formal assessment. These responses were examined in terms of whether or not each of these assessments was to be used at least once during the fall 1992 grading period.

Vocational teachers indicated that they were most likely to use written examinations (88 percent), performance tests (88 percent), and quizzes (85 percent; table 11 and figure 8). More than half (63 percent) also planned to administer some other formal assessment, and 45 percent would evaluate student performance by assessing student portfolios.

Figure 8. Percent of public secondary school teachers using various types of assessments, by type of course: 1992



SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Academic teachers were similar to vocational teachers with reportedly high use of quizzes and written examinations (90 and 93 percent, respectively). They were also about equally likely to utilize some other formal assessment (62 percent compared with 63 percent for vocational teachers). However, academic teachers were less likely to evaluate their students on the basis of a performance test or portfolios (66 and 35 percent, respectively, compared with 88 and 45 percent for vocational teachers).

Student Evaluation

Information to determine how student performance was evaluated in vocational courses was obtained from two items. The first asked teachers to describe what percentage of a student's grade was determined by nine potential measures. The second item listed 18 student competencies and asked teachers to indicate on a 5-point scale the extent to which they contributed to a student's grade in the class. Data are presented for percentage of teachers indicating a particular competency contributed to the grade to a moderate or great extent.

Components of Grades

Student performance in vocational courses was most commonly evaluated by teacher-developed tests (84 percent) and student classwork (76 percent; table 11). In more than half of these classes, teachers also considered performance in school labs or shops (56 percent), attendance and/or class participation (55 percent), and student presentations or projects (53 percent). Student homework also accounted for part of a student's grade in 42 percent of vocational courses. Less frequently cited were standardized tests (27 percent), student portfolios of best work (18 percent), job performance at work site (12 percent), and other measures (11 percent).

Generally, the pattern of use for various types of assessments in vocational courses was similar for comprehensive and vocational schools. However, performance in school labs or shops and attendance and/or class participation were more common measures of performance in vocational schools (78 percent and 72 percent, respectively) than in comprehensive schools (50 percent for each).

Student classwork was more frequently cited as an assessment measure for vocational courses in comprehensive schools (80 percent) than in vocational schools, where only 60 percent indicated that student classwork contributed to the students' grades.

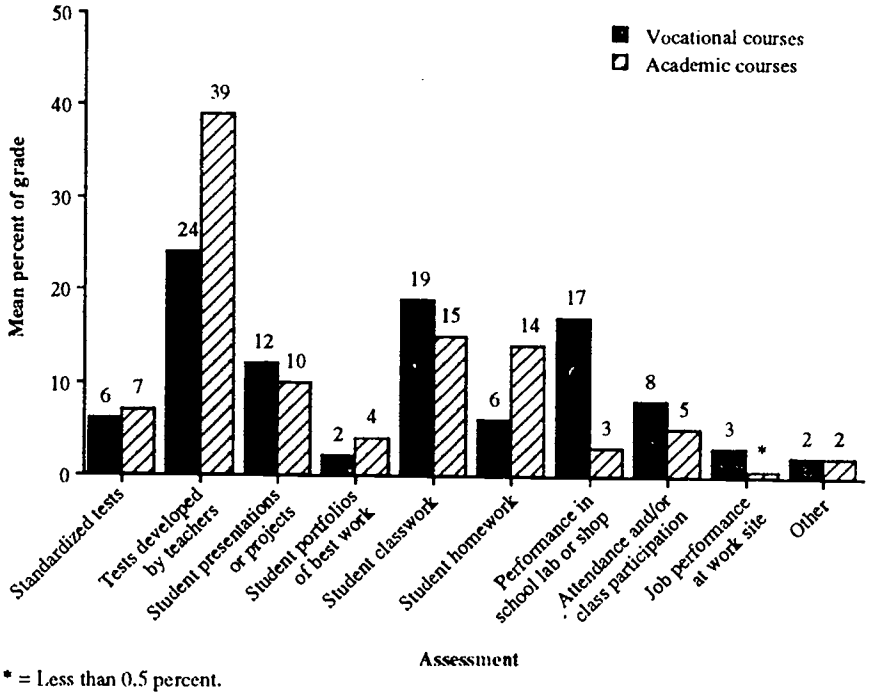
Teachers of vocational courses were only half as likely (42 percent) as teachers of academic courses (84 percent) to evaluate students on homework and slightly less likely to judge their performance based upon teacher-developed tests (84 percent compared with 93 percent in academic courses). On the other hand, teachers in vocational courses were more likely to assign grades based in part on performance in school labs or shops (56 percent) and attendance and/or class participation (55 percent) than academic teachers (20 percent for school lab or shop performance and 43 percent for attendance and/or class participation).

In addition to indicating whether or not specified assessments were used to determine students' grades, teachers reported what percentage of students' grades were based on each assessment.

Overall, teacher-developed tests account for the largest percentage of students' grades in both vocational and academic courses. Academic teachers, however, indicated that a larger percentage of the grades in their courses were determined by teacher-developed tests than did vocational teachers (39 percent versus 24 percent; figure 9), table 12). Other differences were found between academic and vocational courses. Performance in school labs or shops accounted for 17 percent of a

student's grade in vocational courses as compared to 3 percent of the grade in academic courses. In academic classes 14 percent of the grade was determined by student homework compared to 6 percent in vocational classes.

Figure 9. Mean percent of public secondary school students' grades based on specified assessments, by course type: 1992



* = Less than 0.5 percent.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Like academic teachers, vocational teachers in comprehensive high schools indicated that teacher-developed tests were the single largest contributor to the grade, accounting for 26 percent of it. In this regard, vocational teachers in comprehensive schools more closely resembled academic teachers than vocational teachers in vocational schools, who reported that teacher-developed tests accounted for only 18 percent of the grade and that the largest contributor to the grade was a student's performance in school labs or shops. In vocational schools, school lab or shop performance accounted for twice as much of the vocational course grade than in vocational courses in comprehensive high schools (28 versus 14 percent). Conversely, student classwork in vocational courses in comprehensive schools was a larger determinant of course grades than those in vocational schools (21 percent compared with 12 percent). Attendance and/or class participation was twice as important in vocational courses in vocational schools than in vocational courses in comprehensive schools (14 percent compared with 7 percent).

Vocational and academic teachers were similar in the smaller emphasis placed upon standardized tests, which accounted for between 6 and 7 percent of grades, student portfolios of best work (2 to 4 percent), and job performance at work site (less than 1 percent in academic courses but only 3 percent in vocational courses).

Overall, homework was not one of the more important determinants of student success in vocational classes. For example, although 42 percent of teachers in vocational classes indicated that student homework is a contributing factor to the determination of grade, it accounted for only 6 percent of the final grade in these classes in comprehensive schools and 4 percent in vocational schools. Academic subject teachers were twice as likely to use homework as a deciding factor in grade (84 percent), and it accounted for 14 percent of the grades they gave.

Competencies Contributing to Students' Grades

The degree to which various competencies contribute to a student's grade to a moderate or great extent were examined in the study. Teachers in academic courses reported the leading determinants of students' grades were basic reading skills (92 percent), completing work on time (87 percent), creative thinking and problem solving (85 percent), and self-management skills (83 percent; table 13). These same skills led the vocational course lists with between 82 and 87 percent of teachers indicating these were of moderate or great importance in the assignment of grades. For vocational courses, however, additional factors contributing to grades in vocational schools differed somewhat from those for academic schools. Even more pronounced differences were found between vocational courses in comprehensive schools and those in vocational schools.

General employability skills (84 percent), job-specific skills (80 percent), and the ability to apply academic concepts to occupational tasks (81 percent) were significantly more likely to contribute to a vocational student's grade than to the grade of a student in an academic course. These competencies were most important in vocational schools, where from 89 to 96 percent of vocational teachers indicated that such job-related skills contributed to a moderate or great extent to students' grades; this compares with 75 percent to 81 percent of vocational teachers in comprehensive schools and only 19 percent to 36 percent of academic teachers who based their grades on these same factors.

Vocational students were more likely to be judged in terms of their teamwork skills than those in academic classes (62 percent versus 52 percent). Those attending vocational schools were most likely to be evaluated in terms of teamwork skills (78 percent) compared with those in comprehensive high schools (57 percent). Other competencies that were of greater consideration to vocational teachers than academic teachers included developing an understanding of organizational and technical systems (65 percent versus 41 percent), ability to use technology to solve problems (62 percent versus 36 percent), and basic mathematics skills or concepts (68 percent versus 37 percent).

On the other hand, teachers in academic courses used the following criteria more frequently than those in vocational courses to evaluate

student performance: writing skills (76 percent versus 59 percent), basic reading skills (92 percent versus 86 percent), and research and reference skills (44 percent versus 36 percent).

Overall, vocational teachers in vocational schools were more likely than their comprehensive school counterparts to consider a host of competencies. In addition to the greater emphasis placed upon occupational skills (job-specific skills, general employability skills, and application of academic concepts to occupational tasks), teamwork skills were more important in vocational courses in vocational schools (78 percent) than in comprehensive schools (57 percent). Research or reference skills were almost equally important in vocational school vocational courses as they were in academic courses (46 and 44 percent, respectively). They were less important in comprehensive school vocational courses (33 percent). Advanced mathematics skills or concepts was another category that vocational teachers in vocational schools were more likely to take into consideration in determining grades than their comprehensive school counterparts (29 percent versus 19 percent). Additionally, oral communications (82 percent versus 72 percent), basic science knowledge (39 percent versus 31 percent), and advanced science knowledge (21 percent versus 11 percent) were greater determinants of grades in vocational high schools than in comprehensive school vocational courses.

Teachers' Perceptions of Vocational Education Problems in Their School

Teachers were asked a number of questions about the seriousness of various potential problems in the vocational education programs in their schools and rated each problem on a scale of 1 to 4, with 4 indicating a serious problem. Data are presented in this section and in table 14 combining 3 and 4 on the scale.

Among vocational teachers, the indiscriminate placement of problem students into vocational education programs and the status of vocational education in relation to academic subjects led the list of problems. More than half (55 percent) of vocational teachers reported a serious problem with the placement of problem students into vocational education programs, and 54 percent indicated that the status of vocational education was a serious problem in their school (table 14). Almost half of vocational teachers indicated that student motivation (49 percent) and maintaining vocational enrollments (47 percent) were also serious problems.

Vocational teachers also reported the following problems: student absenteeism (41 percent), time available for working with students other than students with special needs (38 percent), access to computers (34 percent), student discipline (27 percent), the link between academic curriculum and the local labor market (26 percent), and maintaining high instructional standards (24 percent).

Academic teachers' perceptions of problems in vocational education programs in their school differed somewhat from the perceptions of vocational teachers. Academic teachers were less likely than vocational teachers in either comprehensive or vocational schools to view the maintenance of vocational enrollment or the inappropriate placement of

problem students in vocational education programs as serious problems. Only 33 percent of academic teachers compared with 47 percent of vocational teachers view maintaining vocational enrollments as a serious problem. Problem student placement in vocational programs, seen as a serious problem by more than half of vocational teachers (55 percent), was considered a significant problem by only 39 percent of academic teachers.

Summary

This survey was undertaken to provide data on the context of vocational education in public secondary schools, including teacher qualifications, course content and activities, and student assessment in vocational classes. When vocational teachers were asked about various problems in the vocational education programs in their schools, few cited maintaining high instructional standards as a serious problem. In fact, much of the data obtained in this survey indicate that vocational and academic programs have many similarities in terms of teacher qualifications and course content and activities. Some noteworthy differences also emerge.

Overall, the background profiles of vocational and academic public secondary school teachers were similar. Almost all taught full time and had a significant amount of teaching experience (17 years for vocational teachers and 18 years for academic teachers). Both groups of teachers reported that most of their teaching experience had been in the subject of their primary teaching assignment, and over 90 percent indicated that their primary teaching assignment was the subject they had prepared to teach. Vocational teachers in vocational schools, however, reported fewer years of formal schooling than academic teachers. This was not true for vocational teachers teaching in comprehensive schools; their educational backgrounds closely resembled those of academic teachers.

Compared with academic classes, class size was slightly lower and class length somewhat longer in vocational classes. About one-fourth of vocational courses fulfill graduation requirements for English, science, or math subjects, and vocational courses in vocational high schools were more than twice as likely as those in comprehensive schools to fulfill graduation requirements in these academic subjects.

Vocational courses differed from academic courses in terms of the activities and teaching methods employed during class. In particular, homework was much more likely to have been assigned during a 5-day period in academic courses than in vocational courses. In contrast, vocational course students were about twice as likely to have used some kind of instruments, tools or equipment, and computers. Large proportions of both vocational and academic teachers planned to include written examinations and quizzes at least once during the grading period. However, vocational teachers were more likely than academic teachers to administer a performance test or assess a student's portfolio of best work.

Items designed to obtain information about the integration of academic and vocational subject matter found that the mathematics and science content of most vocational courses was limited. Relatively few vocational teachers indicated that more than 25 percent of class time was

spent on problems using basic algebra, more advanced mathematics, biology, chemistry, or physics. In most instances, vocational education teachers maintained the instructional lead when academic materials were covered in their classes. Little variation was found between academic and vocational teachers overall in the degree to which they felt prepared to teach different kinds of problems and materials.

Student performance in vocational courses was most commonly evaluated by teacher-developed tests and student classwork. Compared with academic classes, student performance evaluations in vocational courses were more likely to be based, at least in part, on attendance and/or class participation and performance in school labs or shops. Homework, on the other hand, was less likely to be a determinant of grades for vocational students than for those in academic courses. This is in part due to the fact that while homework was assigned in 95 percent of academic courses, it was part of the curriculum in only slightly more than half of vocational courses. When homework was assigned in vocational courses, it required less time to complete and covered different tasks than academic course homework.

Teachers in academic courses reported the leading determinants of students' grades were basic reading skills, completing work on time, creative thinking and problem solving, and self-management skills. These same skills led the vocational course lists along with some additional factors. For example, occupational skills (including general employability skills, job-specific skills, and the ability to apply academic concepts to occupational tasks) were significantly more likely to contribute to a vocational student's grade than to the grade of a student in an academic course and received greatest emphasis in vocational courses in vocational high schools.

According to more than half of vocational teachers, the placement of problem students into vocational education programs regardless of appropriateness and the status of vocational education in relation to academic subjects were serious problems. Student motivation and maintaining vocational enrollments were also considered serious problems by almost half of vocational teachers.

Future research in this area might include the comparison of teacher-reported activities with case studies to better understand the comparability of academic course content in vocational courses and academic courses. Additional research might also look at school differences in curriculum and certification requirements between vocational and comprehensive high schools, as well as differences by subject within vocational programs. Much of this is planned for the National Assessment of Vocational Education.

Survey Methodology and Data Reliability

Sample Selection

A two-stage sampling process was used to select teachers for the FRSS National Assessment of Vocational Education Teacher Survey. At the first stage, a stratified subsample of 395 public secondary schools with 11th and 12th grades was selected from the national sample selected for the National Assessment of Vocational Education. The National Asssessment of Vocational Education sampling frame contains over 16,800 secondary schools with 11th and 12th grades. Schools without 11th or 12th grades were excluded from the frame prior to sampling. A total of 3,130 eligible schools were selected for the National Assessment of Vocational Education, of which 395 were included in the FRSS survey.

The sample was stratified by type of district (regular versus vocational) and type of school (comprehensive versus vocational). Within each of the major strata, schools were sorted by size and region (northeast, central, southeast, and west). The allocation of the sample to the major strata was made in a manner that was expected to be reasonably efficient for national estimates, as well as for estimates for major subclasses. Schools within a stratum were sampled with probabilities proportionate to the estimated number of teachers in the school.

Teacher Sampling

At the second stage, the 395 schools in the sample were contacted and asked to provide a list of all vocational and academic teachers in specified areas in order to draw the teacher sample. Teacher list collection was conducted during spring 1992. Eligible academic teachers included all teachers teaching math, science, English, social studies, and languages at the 9th to 12th grade levels. All vocational teachers teaching occupational vocational education courses at the 9th to 12th grade level were also included. Teachers employed full or part time at the school were included. Excluded from the list were itinerant teachers (unless their homebase was the sampled school), substitute teachers, special education teachers, and teachers teaching only nonoccupational vocational courses, physical education, or music. A list of 15,000 secondary teachers was compiled and a final sample of 2,376 teachers was drawn. The selection of teachers was designed to permit separate estimates of teachers' responses by major subclasses including type of teacher (vocational or academic) and type of school (vocational or comprehensive). On average, six to seven teachers were sampled from each school. The survey data were weighted to reflect these sampling rates (probability of selection) and were adjusted for nonresponse.

The number of vocational education teachers may differ from those obtained in the National Center for Education Statistics' Schools and Staffing Survey (SASS) because of differences in sampling and definitions of eligibility between the two surveys.

Response Rates

Of the 395 public secondary schools drawn in the first stage of sampling, 31 schools were found to be out of the scope of the study (because they had closed or they did not offer 11th and 12th grades). Of the remaining 364 schools, 355 provided complete lists of eligible vocational and academic teachers. The school level response was 98 percent (355 responding schools divided by the 364 eligible schools in the sample).

In October 1992, questionnaires (see appendix B) were mailed to 1,464 vocational and 912 academic secondary teachers at their schools. Teachers were asked to complete the questionnaire in reference to the first class taught in the teacher's primary teaching assignment on October 1, 1992. Three hundred and five teachers were found to be out of scope (no longer at the school or otherwise not eligible), leaving 2,071 eligible teachers in the sample. Telephone followup of nonrespondents was initiated in November, and data collection was completed in January 1993. The teacher-level response was 93 percent (1,924 teachers completed the questionnaire divided by 2,071 eligible teachers in the sample). The overall study response rate was 91 percent (98 rate of school response multiplied by the 93 percent response rate at the teacher level). Item nonresponse ranged from 0.0 to 1.9 percent.

Sampling and Nonsampling Errors

The response data were weighted to produce national estimates. The weights were designed to adjust for the variable probabilities of selection and differential nonresponse. A final poststratification adjustment was made so that the weighted teacher counts equaled the corresponding Common Core of Data (CCD) frame counts within cells defined by school size, metropolitan status, and region. The findings in this report are estimates based on the sample selected and, consequently, are subject to sampling variability.

The survey estimates are also subject to nonsampling errors that can arise because of nonobservation (nonresponse or noncoverage) errors, errors of reporting, and errors made in collection of the data, all of which can bias the data. Nonsampling errors may include such problems as the differences in the respondents' interpretation of the meaning of the questions; memory effects; misrecording of responses; incorrect editing, coding, and data entry; differences related to the particular time the survey was conducted; or errors in data preparation. While general sampling theory can be used in part to determine how to estimate the sampling variability of a statistic, nonsampling errors are not easy to measure and, for measurement purposes, usually require that an experiment be conducted as part of the data collection procedures or that data external to the study be used.

To minimize the potential for nonsampling errors, the questionnaire was pretested with teachers like those who completed the survey. During the design of the survey and the survey pretest, an effort was made to check for consistency of interpretation of questions and to eliminate ambiguous items. The questionnaire and instructions were extensively reviewed by the National Center for Education Statistics and the Office of Research in OERI. Manual and machine editing of the questionnaires were conducted to check the data for accuracy and consistency. Cases with

missing or inconsistent items were recontacted by telephone. Imputations for item nonresponse were not implemented, as item nonresponse rates were less than 3 percent (for nearly all items, nonresponse rates were less than 1 percent). Data were keyed with 100 percent verification.

Variances

The standard error is a measure of the variability of estimates due to sampling. It indicates the variability of a sample estimate that would be obtained from all possible samples of a given design and size. Standard errors are used as a measure of the precision expected from a particular sample. If all possible samples were surveyed under similar conditions, intervals of 1.96 standard errors below to 1.96 standard errors above a particular statistic would include the true population parameter being estimated in about 95 percent of the samples. This is a 95 percent confidence interval. For example, the estimated percentage of vocational teachers who taught full time is 97 percent, and the estimated standard error is 0.8 percent. The 95 percent confidence interval for the statistic extends from 97 - (0.8 x 1.96) to 97 + (0.8 x 1.96) or from 95.4 to 98.5.

Estimates of standard errors were computed using a technique known as jackknife replication. As with any replication method, jackknife replication involves constructing a number of subsamples (replicates) from the full sample and computing the statistic of interest for each replicate. The mean square error of the replicate estimates around the full sample estimate provides an estimate of the variance of the statistic (see Wolter, 1985, Chapter 4). To construct the replications, 30 stratified subsamples of the full sample were created and then dropped 1 at a time to define 30 jackknife replicates (see Wolter, 1985, page 183). A proprietary computer program (WESVAR), available at Westat, Inc., was used to calculate the estimates of standard errors. The software runs under IBM/OS and VAX/VMS systems.

Background Information

The survey was performed under contract with Westat, Inc., using the Fast Response Survey System (FRSS). FRSS was established in 1975 by NCES. It was designed to collect small amounts of issue-oriented data quickly and with minimum burden on respondents. Over 40 surveys have been conducted through FRSS. Recent FRSS reports (available through the Government Printing Office) include the following:

- Public School Kindergarten Teachers' Views on Children's Readiness for School (NCES 93-410)
- Office for Civil Rights Survey Redesign: A Feasibility Survey (NCES 92-130)
- Public School District Survey on Safe, Disciplined, and Drug-Free Schools, E.D. TABS (NCES 92-008)
- Public School Principal Survey on Safe, Disciplined, and Drug-Free Schools, E.D. TABS (NCES 92-007)

- Teacher Survey on Safe, Disciplined, and Drug Free Schools, E.D. TABS (NCES 91-091)
- College-Level Remedial Education in the Fall of 1989 (NCES 91-191)

Westat's project director was Elizabeth Farris, and the survey manager was Sheila Heaviside. Judi Carpenter was the NCES project officer. The data requesters were David Boesel and Lisa Hudson, Office of Research, OERI.

This report was reviewed by the following individuals.

Outside NCES

- David Baker, American Education Research Association
- Carol Griffiths, Office of Vocational and Adult Education, U.S. Department of Education
- David Grissmer, Rand Corporation
- Lisa Hudson, Office of Educational Research and Improvement, U.S. Department of Education
- Ken London, Board of Education, City of New York

Inside NCES

- Susan Ahmed, Statistical Standards and Methodology Division
- John Burkett, Data Development Division
- Steven Gorman, Education Assessment Division
- Bernard Greene, Postsecondary Education Statistics Division
- Jim Houser, Data Development Division
- Marilyn McMillen, Elementary/Secondary Education Statistics Division

For more information about the Fast Response Survey System or the National Assessment of Vocational Education Teacher Survey, contact Judi Carpenter, Elementary/Secondary Education Statistics Division, Special Surveys and Analysis Branch, National Center for Education Statistics, Office of Educational Research and Improvement, 555 New Jersey Avenue NW, Washington DC 20208-5651, telephone (202)219-1333.

References

The WESVAR Procedures. 1989. Rockville, MD: Westat, Inc.

Wolter, K. 1985. Introduction to Variance Estimation. Springer-Verlag.

Tables of Estimates and Standard Errors

Table 1.--Number and percent of occupational vocational education teachers and academic teachers in public secondary schools with 11th and 12th grades in the sample and universe: 1992

Teachers	Sample		Universe	
	Number	Percent	Number	Percent
Total	1,920	100	442,000	100
All vocational teachers	1,198	62	118,000	27
In vocational schools	598	50	25,000	21
In comprehensive schools	600	50	93,000	79
Academic teachers	722	38	325,000	74

NOTE: Percentages may not add to 100 and numbers may not add to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Table 2.--Percent of public secondary school teachers teaching full time whose primary teaching assignment is in the subject for which they prepared to teach, and having paid nonteaching work experience directly related to teaching assignment, by teacher's primary teaching assignment and school type: 1992

Characteristic	All teachers	Academic	Vocational		
			All	In comprehensive high school	In vocational high school
Teaching full time	98	98	97	96	98
Whose current primary teaching assignment is subject they prepared to teach	92	92	91	90	95
Having paid nonteaching work experience directly related to teaching assignment	31	19	66	52	80
With paid nonteaching work experience in the military directly related to teaching assignment	6	6	6	4	9

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Table 2a.--Standard errors of the percent of public secondary school teachers teaching full time whose primary teaching assignment is in the subject for which they prepared to teach, and having paid nonteaching work experience directly related to teaching assignment, by teacher's primary teaching assignment and school type: 1992

Characteristic	All teachers	Academic	Vocational		
			All	In comprehensive high school	In vocational high school
Teaching full time	0.5	0.5	0.9	1.1	1.0
Whose current primary teaching assignment is subject they prepared to teach	0.9	1.1	1.5	1.7	1.4
Having paid nonteaching work experience directly related to teaching assignment	1.4	1.6	2.6	2.8	2.8
With paid nonteaching experience in the military directly related to teaching assignment	1.1	2.0	1.0	1.1	2.5

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Table 3.--Percent of public secondary school teachers with various degrees, and with a major in education, by teacher's primary teaching assignment and school type: 1992

Degree held	All teachers	Academic	Vocational		
			All	In comprehensive high school	In vocational high school
Degree					
High school diploma or GED	98	98	98	98	99
Associate's degree or 2-year certificate	18	15	27	24	38
Bachelor's degree	96	100	88	95	63
Degree above bachelor's	57	60	50	55	33
Nonteaching occupational certificate or license	11	7	22	19	37
Highest degree					
High school diploma or GED	*	0	2	1	4
Nonteaching occupational certificate or license	1	0	4	2	10
Associate's degree or 2-year certificate	2	*	6	2	22
Bachelor's degree	40	40	39	41	31
Degree above bachelor's	57	60	50	55	33
Major field of study					
Education	52	47	66	71	46
Other	48	53	34	29	54

* = Less than .5 percent.

NOTE: Where applicable, percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Table 3a.--Standard errors of the percent of public secondary school teachers with various degrees, and with a major in education, by teacher's primary teaching assignment and school type: 1992

Degree held	All teachers	Academic	Vocational		
			All	In comprehensive high school	In vocational high school
Degree					
High school diploma or GED	0.6	0.8	0.6	0.7	0.5
Associate's degree or 2-year certificate	1.4	1.7	1.4	1.7	2.3
Bachelor's degree	0.5	0.2	1.5	0.9	2.3
Degree above bachelor's	1.6	1.6	2.7	3.2	2.7
Nonteaching occupational certificate or license	0.8	1.0	1.9	1.8	9.4
Highest degree					
High school diploma or GED	--	--	0.4	0.5	1.2
Nonteaching occupational certificate or license	0.1	--	0.4	0.5	2.1
Associate's degree or 2-year certificate	0.4	0.1	1.4	0.5	3.3
Bachelor's degree	1.5	1.6	2.5	3.1	2.1
Degree above bachelor's	1.6	1.6	2.7	3.2	2.7
Major field of study					
Education	1.7	2.2	2.1	2.1	2.3
Other	1.7	2.2	2.1	2.1	2.3

-- Estimate of standard error is not derived because it is based on a statistic estimated at less than 0.5 percent or at 100 percent.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Table 4.--Percent of public secondary school teachers indicating class characteristics, by course and school type: 1992

Characteristic	All courses	Academic	Vocational		
			All	In comprehensive high school	In vocational high school
With majority of students in:					
9th grade	27	29	21	25	6
10th grade	24	26	18	19	14
11th grade	28	26	33	29	48
12th grade	21	19	29	28	32
With students primarily of:					
Higher ability	29	35	11	11	10
Average ability	37	36	40	41	35
Lower ability	14	13	17	16	21
Wide range of abilities	20	16	33	32	34
Average/wide range of abilities	57	51	73	73	69
Fulfilling graduation requirements in:					
Math	20	23	11	7	24
Science	18	20	10	6	24
English	22	27	5	4	11
Other	51	37	91	94	80

NOTE: Where applicable, percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Table 4a.--Standard errors of the percent of public secondary school teachers indicating class characteristics, by course and school type: 1992

Characteristic	All courses	Academic	Vocational		
			All	In comprehensive high school	In vocational high school
With majority of students in:					
9th grade	1.9	2.2	1.9	2.1	2.0
10th grade	1.6	2.0	2.1	2.1	4.2
11th grade	1.4	1.5	2.3	1.9	5.3
12th grade	1.4	1.6	2.3	2.8	2.0
With students primarily of:					
Higher ability	1.3	1.6	1.3	1.5	2.2
Average ability	1.6	1.9	2.1	2.4	1.6
Lower ability	0.9	1.1	1.6	1.8	3.4
Wide range of abilities	1.0	1.2	1.9	2.3	4.4
Average/wide range of abilities	1.6	2.0	1.9	2.2	5.2
Fulfilling graduation requirements in:					
Math	0.8	1.0	2.4	1.3	7.6
Science	0.8	0.9	2.1	1.1	7.5
English	0.7	1.0	0.9	1.0	1.8
Other	1.3	1.5	2.1	0.9	8.4

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Table 5.--Percent of classes in public secondary schools in which more than 25 percent of time is spent on specified tasks, by course and school type: 1992

Task	All courses	Academic	Vocational		
			All	In comprehensive high school	In vocational high school
Problems using basic algebra	12	15	2	1	3
Problems using math beyond basic algebra	8	10	1	1	2
Writing assignments	23	28	10	11	5
Biology principles	8	9	3	3	3
Chemistry laws or principles	5	6	1	1	2
Physics laws or principles	4	5	1	1	3
Occupationally related principles	16	5	50	47	59

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Table 5a.--Standard errors of the percent of classes in public secondary schools in which more than 25 percent of time is spent on specified tasks, by course and school type: 1992

Task	All courses	Academic	Vocational		
			All	In comprehensive high school	In vocational high school
Problems using basic algebra	1.0	1.4	0.4	0.4	1.0
Problems using math beyond basic algebra	0.8	1.1	0.4	0.5	0.7
Writing assignments	1.4	1.8	1.1	1.2	1.7
Biology principles	0.5	0.8	0.8	1.0	1.1
Chemistry laws or principles	0.8	1.0	0.4	0.5	0.8
Physics laws or principles	0.7	0.8	0.4	0.3	1.4
Occupationally related principles	1.0	0.8	2.6	2.6	7.6

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Table 6.--Percent of public secondary school teachers who feel well prepared (3 or 4 on the rating scale) to teach various subjects, by teacher and school type: 1992

Subject material	All teachers	Academic	Vocational		
			All	In comprehensive high school	In vocational high school
Problems using basic algebra	52	53	51	51	53
Problems using math beyond basic algebra	36	39	29	28	30
Writing	77	78	74	77	65
Biology principles	33	32	36	37	32
Chemistry laws or principles	28	29	25	24	27
Physics laws or principles	29	30	27	26	32
Occupationally related principles	56	43	91	91	93

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Table 6a.--Standard errors of the percent of public secondary school teachers who feel well prepared (3 or 4 on the rating scale) to teach various subjects, by teacher and school type: 1992

Subject material	All teachers	Academic	Vocational		
			All	In comprehensive high school	In vocational high school
Problems using basic algebra	1.2	1.6	1.8	2.3	3.9
Problems using math beyond basic algebra	1.3	1.7	1.7	2.1	4.1
Writing	1.3	1.5	2.0	1.9	4.6
Biology principles	1.5	1.8	2.0	2.3	2.2
Chemistry laws or principles	1.2	1.4	2.1	2.2	4.1
Physics laws or principles	1.3	1.5	1.9	2.0	5.3
Occupationally related principles	1.8	2.4	1.3	1.4	3.4

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Table 7.--Percent of vocational teachers in public secondary schools who feel well prepared (3 or 4 on the rating scale) to teach various subject material, by primary teaching assignment: 1992

Subject material	All vocational education	Business/ office education	Trade and industrial education	Technology education/ industrial arts	Other vocational education
Problems using basic algebra	51	44	52	59	55
Problems using math beyond basic algebra	29	19	32	41	31
Writing assignments	74	79	60	60	81
Biology principles	36	8	29	26	59
Chemistry laws or principles	25	3	21	30	40
Physics laws or principles	27	3	39	50	33
Occupationally related principles	91	94	94	90	88

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Table 7a.--Standard errors of the percent of vocational teachers in public secondary schools who feel well prepared (3 or 4 on the rating scale) to teach various subject material, by primary teaching assignment: 1992

Subject material	All vocational education	Business/ office education	Trade and industrial education	Technology education/ industrial arts	Other vocational education
Problems using basic algebra	1.8	3.3	3.4	4.3	2.8
Problems using math beyond basic algebra	1.7	2.6	3.1	4.2	2.9
Writing assignments	2.0	3.0	7.9	4.7	2.8
Biology principles	2.0	1.8	3.4	5.2	3.6
Chemistry laws or principles	2.1	1.1	4.8	5.2	3.8
Physics laws or principles	1.9	1.1	4.3	5.2	3.3
Occupationally related principles	1.3	1.7	3.7	3.4	2.6

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Table 8.--Percent of classes in public secondary schools in which teachers often or always (3 or 4 on the rating scale) coordinate course curricula or team teach, by teacher's subject, by course and school type: 1992

Teacher's subject	All courses	Academic	Vocational		
			All	In comprehensive high school	In vocational high school
English	11	13	6	6	7
Mathematics	11	12	6	5	12
Science	9	11	5	5	6
Vocational education	11	3	37	35	46
Others	10	9	13	9	28

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Table 8a.--Standard errors of the percent of classes in public secondary schools in which teachers often or always (3 or 4 on the rating scale) coordinate course curricula or team teach, by teacher's subject, by course and school type: 1992

Teacher's subject	All courses	Academic	Vocational		
			All	In comprehensive high school	In vocational high school
English	0.8	1.1	1.0	1.0	2.5
Mathematics	0.9	1.1	0.7	0.9	4.0
Science	1.0	1.3	0.7	0.8	2.1
Vocational education	0.6	0.6	1.7	1.9	4.7
Others	1.2	1.3	2.8	1.2	11.1

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Table 9.--Percent of public secondary school teachers indicating that various activities took place when class last met, by course and school type: 1992

Activity	All courses	Academic	Vocational		
			All	In comprehensive high school	In vocational high school
Lecture	75	75	76	74	87
Students using computers	20	13	40	39	42
Students using instruments, tools, or equipment	46	37	73	69	87
Students writing a paragraph or more	51	54	41	42	40
Homework assigned	72	81	45	47	39
Test or quiz	42	42	43	41	49

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Table 9a.--Standard errors of the percent of public secondary school teachers indicating various activities took place when class last met, by course and school type: 1992

Activity	All courses	Academic	Vocational		
			All	In comprehensive high school	In vocational high school
Lecture	1.3	1.7	1.9	2.2	4.3
Students using computers	1.5	1.3	2.4	2.3	7.1
Students using instruments, tools, or equipment	1.6	1.7	2.0	2.5	1.4
Students writing a paragraph or more	1.4	1.8	2.0	2.4	2.8
Homework assigned	1.7	1.7	3.0	2.3	10.7
Test or quiz	1.5	1.9	2.7	2.8	8.9

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Table 10.--Percent of classes in public secondary schools in which homework is assigned, and percent where homework often or always (3 or 4 on the rating scale) involves specified activities, by course and school type: 1992

Homework assignment	All courses	Academic	Vocational		
			All	In comprehensive high school	In vocational high school
Classes with homework assigned	86	95	59	59	58
Where homework involves:					
Reading assignment	69	69	69	65	83
Short answer questions	54	53	58	57	60
Essay writing	29	32	16	16	15
Basic mathematical computations	29	27	40	38	46
Advanced mathematical or scientific problem solving	21	24	10	9	13
Nonacademic job skills	11	5	41	39	49

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Table 10a.--Standard errors of the percent of classes in public secondary schools in which homework is assigned, and percent where homework often or always (3 or 4 on the rating scale) involves specified activities, by course and school type: 1992

Homework assignment	All courses	Academic	Vocational		
			All	In comprehensive high school	In vocational high school
Classes with homework assigned	1.1	0.8	2.2	2.1	7.2
Where homework involves:					
Reading assignment	1.6	2.0	2.5	3.1	3.5
Short answer questions	1.4	1.8	2.4	2.8	3.1
Essay writing	1.6	1.9	1.6	2.1	2.6
Basic mathematical computations	1.2	1.3	2.2	2.7	2.4
Advanced mathematical or scientific problem solving	1.6	1.7	1.8	2.1	2.9
Nonacademic job skills	0.8	0.8	2.4	2.8	2.8

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Table 11.--Percent of courses in public secondary schools in which various assessments were planned at least once during the current grading period and in which specified assessments contribute to students' grades, by course and school type: 1992

Assessment	All courses	Academic courses	Vocational courses		
			All	In comprehensive high school	In vocational high school
Assessment planned during the current grading period:					
Quiz	89	90	85	83	92
Written examination	92	93	88	88	89
Performance test	72	66	88	86	97
Portfolio of best work	38	35	45	43	52
Other formal assessment	62	62	63	63	63
Assessment contributes to students' grades:					
Standardized tests	26	26	27	26	33
Teacher-developed tests	91	93	84	85	80
Student presentations or projects	54	54	53	55	44
Student portfolios of best work	22	23	18	19	18
Student classwork	80	81	76	80	60
Student homework	74	84	42	45	35
Performance in school lab or shop	29	20	56	50	78
Attendance and/or class participation	46	43	55	50	72
Job performance at work site	4	1	12	11	15
Other	10	9	11	9	16

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Table 11a.--Standard errors of the percent of courses in public secondary schools in which various assessments were planned at least once during the current grading period and in which specified assessments contribute to students' grades, by course and school type: 1992

Assessment	All courses	Academic courses	Vocational courses		
			All	In comprehensive high school	In vocational high school
Assessment planned during the current grading period:					
Quiz	1.0	1.2	2.0	2.0	2.7
Written examination	0.9	1.1	1.4	1.9	1.5
Performance test	1.8	2.3	1.3	1.5	1.2
Portfolio of best work	1.4	1.6	1.7	2.0	2.0
Other formal assessment	1.5	2.0	1.9	2.2	4.0
Assessment contributes to students' grades:					
Standardized tests	1.2	1.6	1.8	2.0	4.7
Teacher-developed tests	0.9	1.1	1.6	1.9	3.8
Student presentations or projects	1.9	2.4	2.7	2.5	7.8
Student portfolios of best work	1.3	1.5	1.9	1.9	5.6
Student classwork	1.3	1.5	2.9	2.1	7.7
Student homework	1.5	1.4	2.7	2.4	9.5
Performance in school lab or shop	1.3	1.4	2.2	1.8	2.9
Attendance and/or class participation	2.1	2.4	1.9	1.7	3.6
Job performance at work site	0.4	0.4	1.2	1.4	4.6
Other	1.1	1.4	1.5	1.4	4.8

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Table 12.--Mean percent of public secondary school students' grades based on specified assessments, by course and school type: 1992

Assessment	All courses	Academic courses	Vocational courses		
			All	In comprehensive high school	In vocational high school
Standardized tests	7	7	6	6	7
Teacher-developed tests	35	39	24	26	18
Student presentations or projects	11	10	12	13	9
Student portfolios of best work	3	4	2	2	3
Student classwork	16	15	19	21	12
Student homework	12	14	6	6	4
Performance in school lab or shop	7	3	17	14	28
Attendance and/or class participation	6	5	8	7	14
Job performance at work site	1	*	3	3	3
Other	2	2	2	2	3

* = Less than .5 percent.

NOTE: Where applicable, percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Table 12a.--Standard errors of the mean percent of public secondary school students' grades based on specified assessments, by course and school type: 1992

Assessment	All courses	Academic courses	Vocational courses		
			All	In comprehensive high school	In vocational high school
Standardized tests	0.4	0.6	0.6	0.6	1.6
Teacher-developed tests	0.8	0.9	0.8	0.8	1.8
Student presentations or projects	0.5	0.7	0.7	0.7	1.3
Student portfolios of best work	0.2	0.3	0.2	0.3	1.0
Student classwork	0.4	0.5	1.0	0.8	1.5
Student homework	0.3	0.4	0.5	0.6	1.1
Performance in school lab or shop	0.4	0.3	1.1	0.8	1.6
Attendance and/or class participation	0.4	0.4	0.9	0.3	3.4
Job performance at work site	0.1	--	0.4	0.5	1.1
Other	0.2	0.3	0.4	0.4	0.9

-- Estimate of standard error is not derived because it is based on a statistic estimated at less than 0.5 percent or at 100 percent.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Table 13.--Percent of classes in public secondary schools in which various competencies contribute to a moderate or great extent (3 or 4 on the rating scale) to students' grades, by class and school characteristics: 1992

Competency	All courses	Academic	Vocational		
			All	In comprehensive high school	In vocational high school
Completing work on time	87	87	86	86	89
Teamwork skills	55	52	62	57	78
Research/reference skills	42	44	36	33	46
Understanding of organizational and technical systems	47	41	65	64	68
Ability to use technology (e.g., computers, calculators) to solve problem	42	36	62	63	61
Creative thinking and problem solving	85	85	82	82	81
Self-management skills	84	83	87	86	91
Basic mathematics skills or concepts	45	37	68	68	69
Advanced mathematics skills or concepts	23	24	21	19	29
Basic reading skills	91	92	86	88	79
Advanced reading skills	60	66	41	39	47
Oral communications	76	76	74	72	82
Writing skills	72	76	59	58	61
Basic science knowledge	27	25	33	31	39
Advanced science knowledge	16	17	13	11	21
Job-specific skills	34	19	80	75	96
General employability skills	43	30	84	81	94
Ability to apply academic concepts to occupational tasks	47	36	81	78	89

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Table 13a.--Standard errors of the percent of classes in public secondary schools in which various competencies contribute to a moderate or great extent (3 or 4 on the rating scale) to students' grades, by course and school characteristics: 1992

Competency	All courses	Academic	Vocational		
			All	In comprehensive high school	In vocational high school
Completing work on time	1.0	1.2	1.1	1.4	3.3
Teamwork skills	2.1	2.4	2.1	2.5	2.4
Research/reference skills	1.6	2.1	2.2	2.0	2.6
Understanding of organizational and technical systems	1.8	2.4	1.6	2.1	2.3
Ability to use technology (e.g., computers, calculators) to solve problem	1.9	2.0	2.4	3.0	2.2
Creative thinking and problem solving	1.3	1.5	1.7	1.6	4.9
Self-management skills	1.3	1.6	1.2	1.5	2.5
Basic mathematics skills or concepts	1.2	1.4	1.8	2.0	5.1
Advanced mathematics skills or concepts	1.5	1.6	2.1	2.4	1.9
Basic reading skills	0.9	0.9	2.3	1.8	7.6
Advanced reading skills	1.7	2.0	2.5	3.1	1.7
Oral communications	1.6	2.0	1.6	1.9	1.3
Writing skills	1.5	1.8	2.0	2.4	2.2
Basic science knowledge	1.3	1.4	1.9	2.0	6.5
Advanced science knowledge	0.9	1.1	1.2	1.5	1.9
Job-specific skills	1.5	1.5	2.3	2.3	1.2
General employability skills	1.6	1.6	2.0	2.0	2.0
Ability to apply academic concepts to occupational tasks	1.8	2.3	1.9	2.1	3.6

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Table 14.--Percent of public secondary school teachers indicating various vocational issues are a serious problem (3 or 4 on the rating scale) for vocational education, by teacher and school type: 1992

Vocational education issue	All teachers	Academic	Vocational		
			All	In comprehensive high school	In vocational high school
Link between academic curriculum and local labor market	30	32	26	28	18
Coordinating vocational and academic instruction	43	43	42	42	39
Status of vocational education in relation to academic subjects	48	45	54	57	43
Adequacy of equipment	37	36	39	40	33
Access to computers	35	35	34	36	27
Maintaining high instructional standards	28	29	24	25	20
Maintaining vocational enrollment	37	33	47	49	41
Teachers' preparation in instructing students with special needs	32	31	33	34	30
Support services for students with special needs	26	24	30	32	23
Time available for working with students other than students with special needs	39	40	38	39	37
Placing problem students into vocational education programs, regardless of appropriateness	44	39	55	56	52
Student motivation	51	52	49	49	48
Student discipline	32	34	27	27	26
Student absenteeism	45	47	41	40	41

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Table 14a.--Standard errors of the percent of public secondary school teachers indicating various vocational issues are a serious problem (3 or 4 on the rating scale) for vocational education, by teacher and school type: 1992

Vocational education issue	All teachers	Academic	Vocational		
			All	In comprehensive high school	In vocational high school
Link between academic curriculum and local labor market	1.6	2.1	2.3	1.7	5.4
Coordinating vocational and academic instruction	2.1	2.5	2.6	2.2	10.9
Status of vocational education in relation to academic subjects	1.9	2.5	2.7	2.2	7.5
Adequacy of equipment	2.2	2.9	2.6	2.7	5.4
Access to computers	2.8	3.3	2.5	2.8	3.5
Maintaining high instructional standards	1.5	2.0	2.1	1.9	5.9
Maintaining vocational enrollment	1.9	2.4	2.7	2.5	6.9
Teachers' preparation in instructing students with special needs	1.8	2.3	2.1	2.5	4.2
Support services for students with special needs	1.8	2.4	2.1	2.2	6.7
Time available for working with students other than students with special needs	2.1	2.8	2.2	2.8	2.9
Placing problem students into vocational education programs, regardless of appropriateness	1.8	2.4	2.9	2.7	9.6
Student motivation	2.3	2.9	2.2	2.9	2.4
Student discipline	2.0	2.6	2.4	2.3	7.5
Student absenteeism	2.3	2.8	1.9	2.3	2.1

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Table 15.--Estimate and standard error table for figure 1, the percent of public secondary school vocational education teachers reporting various subjects as their primary teaching assignment: 1992

Primary teaching assignment	Percentage of teachers	
	Estimate	Standard error
Business office/education	29	1.5
Trade/industrial education	18	2.6
Vocational and academic subjects	12	1.6
Technology education/industrial arts	10	1.1
Agricultural education	8	0.8
Consumer/homemaking education	8	1.1
Occupational/home economics	4	0.8
Marketing/distributive education	4	0.5
Technical/communications education	3	0.6
Health occupations	3	0.7
Other vocational education	2	0.6

NOTE: Where applicable, percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Table 16.--Estimate and standard error table for figure 2, the mean number of years of teaching experience and experience teaching in primary subject of public secondary school teachers, by primary teaching assignment and school type: 1992

School and teacher characteristic	Mean years teaching		Mean years teaching in primary subject	
	Estimate	Standard error	Estimate	Standard error
All teachers	17	0.3	15	0.3
Academic	18	0.4	15	0.4
Vocational	17	0.3	14	0.3
In comprehensive high schools	17	0.4	14	0.4
In vocational high schools	14	0.4	12	0.4

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Table 17.--Estimate and standard error table for figure 3, the mean number of years of related nonteaching work experience, among teachers with nonteaching work experience, by public secondary school teachers' primary teaching assignment and school type: 1992

Teacher and school characteristic	Mean years of teaching experience	
	Estimate	Standard error
All teachers	8	0.5
Academic	6	0.5
Vocational	10	0.7
Vocational teachers in comprehensive schools	8	0.5
Vocational teachers in vocational schools	15	0.9

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Table 18.--Estimate and standard error table for figure 4, the percent of vocational subjects reported as subject of first course taught in primary assignment field, by public secondary school vocational education teachers: 1992

Subject	Percent of courses	
	Estimate	Standard error
Business office/education	30	1.5
Trade/industrial education	21	2.7
Technology education/industrial arts	11	1.2
Agricultural education	9	0.8
Consumer/homemaking education	8	1.2
Occupational/home economics	6	0.8
Marketing/distributive education	5	0.7
Technical/communications education	5	0.7
Health occupations	4	1.5
Other vocational education	1	0.5

NOTE: Where applicable, percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Table 19.--Estimate and standard error table for figure 5, the mean class size in public secondary school classes, by course and school type: 1992

Course and school characteristic	Mean class size	
	Estimate	Standard error
All courses	23	0.4
Academic courses	24	0.4
All vocational courses	21	0.5
Vocational courses in comprehensive high schools	20	0.6
Vocational courses in vocational high schools	22	0.8

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Table 20.--Estimate and standard error table for figure 6, the mean number of hours per week public secondary school classes meet, by course and school type: 1992

Course and school characteristic	Mean hours per week classes meet	
	Estimate	Standard error
All courses	5	0.1
Academic courses	5	0.1
All vocational courses	7	0.4
Vocational courses in comprehensive high schools	5	0.1
Vocational courses in vocational high schools	14	0.5

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Table 21.--Estimate and standard error table for figure 7, the mean hours of homework assigned in last 5 days in public secondary school classes, by course and school type: 1992

Course and school characteristic	Mean hours of homework	
	Estimate	Standard error
All courses	3	0.1
Academic courses	3	0.1
All vocational courses	2	0.1
Vocational courses in comprehensive high schools	2	0.1
Vocational courses in vocational high schools	3	0.2

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Table 22.--Estimate and standard error table for figure 8, the percent of public secondary school teachers using various types of assessments, by type of course: 1992

Assessment	Course type			
	Academic		Vocational	
	Estimate	Standard error	Estimate	Standard error
Quiz	90	1.2	85	2.0
Written examination	93	1.1	88	1.4
Performance test	66	2.3	88	1.3
Portfolio of best work	35	1.6	45	1.7
Other formal assessment	62	2.0	63	1.9

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Table 23.--Estimate and standard error table for figure 9, the mean percent of public secondary school students' grades based on specified assessments, by course type: 1992

Assessment	Course type			
	Academic		Vocational	
	Estimate	Standard error	Estimate	Standard error
Standardized tests	7	0.6	6	0.6
Tests developed by teachers	39	0.9	24	0.8
Student presentations on projects	10	0.7	12	0.7
Student portfolios of best work	4	0.3	2	0.2
Student classwork	15	0.5	19	1.0
Student homework	14	0.4	6	0.5
Performance in school lab or shop	3	0.3	17	1.1
Attendance and/or class participation	5	0.4	8	0.9
Job performance at work site	*	--	3	0.4
Other	2	0.4	2	0.3

*Less than 0.5 percent.
--Estimate of standard error is not derived because it is based on a statistic estimated at less than 0.5 percent or 100 percent.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, National Assessment of Vocational Education Teacher Survey, FRSS 45, 1993.

Appendix A
Questionnaire

U.S. DEPARTMENT OF EDUCATION NATIONAL CENTER FOR EDUCATION STATISTICS WASHINGTON, D.C. 20208-5651 **NATIONAL ASSESSMENT OF VOCATIONAL EDUCATION TEACHER SURVEY** FAST RESPONSE SURVEY SYSTEM	FORM O.M.B. NO.: 1850-0670 EXPIRATION DATE: 9/93

This survey is authorized by law (20 U.S.C. 1221e-1). While you are not required to respond, your cooperation is needed to make the results of this survey comprehensive, accurate, and timely.

DEFINITIONS FOR THIS SURVEY:

Agriculture education - courses directly related to preparation for entry into an agricultural occupation; includes animal, plant, food, or soil sciences; agricultural business, management, mechanics, surveying, or production; animal husbandry; horticulture; floriculture and gardening; other related courses.

Business and office education - courses directly related to preparation for entry into a business or business support occupation; includes investments and taxation; management/organizational science; bookkeeping; accounting; business data processing; word processing; other related courses.

Health occupations - courses directly related to preparation for entry into a support occupation in the health fields; includes health sciences; medical or dental assistant; dental services; nursing-related services; allied health; pharmacy; medical laboratory; pre-medicine; other related courses.

Marketing/distributive education - courses directly related to preparation for entry into an occupation in marketing; includes insurance; fashion merchandise; advertising; tourism services; other related courses.

Occupational home economics - courses directly related to preparation for entry into clothing, food, or home/family/child care occupations; includes interior design; custom tailoring and apparel construction; catering/chef/baking; teacher aide; other related courses.

Consumer and homemaking education - courses directly related to preparation for homemaking; includes consumer education, food and nutrition, family living and parenthood education, child growth and development, housing and home management, clothing and textiles; other related courses.

Trade and industrial education - courses directly related to preparation for entry into an industrial or trade occupation; includes building and construction; mechanics and repair; precision production; transportation; cosmetology and consumer/ personal service industries; other related courses.

Technical/communications education - courses directly related to preparation for entry into an occupation in broadcasting, computer/information sciences or as an engineering or science technician; includes radio/TV production; telecommunications; communications technology; computer programming; data processing (other than business data processing); computer applications; and advanced technology/technician courses in manufacturing, electronics, chemistry, and other related fields.

Technology education/industrial arts - courses directly related to preparation for entry into occupational education and training programs; and general or introductory technology courses related to communications, transportation, construction, and manufacturing industries.

AFFIX LABEL HERE

IF ABOVE INFORMATION IS INCORRECT, PLEASE CORRECT DIRECTLY ON LABEL.

Name of person completing form:_____ Telephone:_____

Best days and times to reach you (in case of questions):_____

RETURN COMPLETED FORM TO:	IF YOU HAVE ANY QUESTIONS, CALL:
WESTAT 1650 Research Boulevard Rockville, Maryland 20850 Attention: 928092	Sheila Heaviside 1-800-937-8281, Ext. 8391

I. TEACHER INFORMATION

1. What is your primary teaching assignment--that is, in what subject area do you teach the most classes this school year? *(Circle one number. See front page for definitions.)*

Vocational education subjects

Agricultural education	1
Business and office education	2
Health occupations	3
Marketing/distributive education	4
Occupational home economics	5
Consumer and homemaking education	6
Trade and industrial education	7
Technical/communications education	8
Technology education/industrial arts	9
Other (*specify*)_____	10

Academic subjects

English	11
Mathematics	12
Science	13
Social studies	14
Foreign language	15
Any other (*specify*)_____	16

2. How many years:

a. Have you been teaching? _____years
b. Have you been teaching the subject that is now your primary assignment? _____years

3. Do you teach full time? Yes ..... 1 No 2

4. Is your current primary teaching assignment the subject for which you prepared to teach?

Yes 1
No ..... 2 *(If no, specify the subject you prepared to teach.)*_____

5. a. Do you have paid work experience (including part-time work) in a nonteaching occupation directly related to your current primary teaching assignment?

Yes ..... 1 No ..... 2 *(If no, skip to question 6.)*

b. What is/was the occupation?_____

c. Is/was this an occupation in the military?

Yes ..... 1 No 2

d. How many total years were you employed in this occupation? _____years

e. What is the most recent year you were employed in this occupation? 19_____

6. Which of the following credentials do you have? *(Circle one in each row.)*

	Yes	No
a. High school diploma or GED	1	2
b. Associate's degree or two-year certificate	1	2
c. Bachelor's degree	1	2
d. Degree above bachelor's	1	2
e. Nonteaching occupational certificate or license	1	2

7. Please list the major(s) or field(s) of concentration for the credentials you marked in question 6b through 6e.

_____

_____

II. CLASS INFORMATION

(Question 8 asks you to specify a certain class; questions 9 to 21 refer to this class.)

8. On October 1, 1992, what was the course title of the first class you taught in your primary assignment to 9th, 10th, 11th, or 12th graders?

Course title:_____

9. What is the grade level of the majority of students in this class? grade_____

10. Compared to the average student in the same grade at your school, how would you describe this class? *(Circle one.)*

Primarily higher ability students	1
Primarily average ability students	2
Primarily lower ability students	3
Students of a wide range of abilities	4

11. How many students were enrolled in this class on or about October 1, 1992? _____students

12. Does this class fulfill graduation requirements in any of the following areas? *(Circle one in each row.)*

	Yes	No
a. Mathematics	1	2
b. Science	1	2
c. English	1	2
d. Other (*specify*)_____	1	2

13. Which of the following activities took place during this class when it last met? *(Circle one in each row.)*

	Yes	No
a. Lecture	1	2
b. Students using computers	1	2
c. Students using instruments, tools, or equipment	1	2
d. Students writing a paragraph or more	1	2
e. Assigning homework	1	2
f. Test or quiz	1	2

14. For the current grading period, about what percentage of a student's grade in this class will be based on each of the following? *(Column should add to 100%.)*

	Percentage of grade
a. Standardized tests	_____
b. Teacher-developed tests	_____
c. Student presentations or projects	_____
d. Student portfolios of best work	_____
e. Student classwork	_____
f. Student homework	_____
g. Performance in school lab or shop	_____
h. Attendance and/or class participation	_____
i. Job performance at work site	_____
j. Other (*specify*)_____	_____
	100%

15. How often during the current grading period do you plan to conduct each of the following assessments in this class? *(Circle one in each row.)*

	0 times	1 time	2 times	3 times	4 or more times
a. Quiz	0	1	2	3	4
b. Written examination	0	1	2	3	4
c. Performance test	0	1	2	3	4
d. Portfolio of best work	0	1	2	3	4
e. Other formal assessment	0	1	2	3	4

16. To what extent do each of the following competencies contribute to students' grades in this class? *(Circle one in each row.)*

	Not at all	Slight extent	Moderate extent	Great extent
a. Completing work on time	1	2	3	4
b. Teamwork skills	1	2	3	4
c. Research/reference skills	1	2	3	4
d. Understanding of organizational and technical systems	1	2	3	4
e. Ability to use technology (e.g., computers, calculators) to solve problems	1	2	3	4
f. Creative thinking and problem-solving	1	2	3	4
g. Self-management skills	1	2	3	4
h. Basic mathematics skills or concepts	1	2	3	4
i. Advanced mathematics skills or concepts	1	2	3	4
j. Basic reading skills	1	2	3	4
k. Advanced reading skills	1	2	3	4
l. Oral communication	1	2	3	4
m. Writing skills	1	2	3	4
n. Basic science knowledge	1	2	3	4
o. Advanced science knowledge	1	2	3	4
p. Job-specific skills	1	2	3	4
q. General employability skills	1	2	3	4
r. Ability to apply academic concepts to occupational tasks	1	2	3	4

17. How many hours does this class meet per week? _____hr. _____min.

18. a. Is homework assigned in this class?

Yes ..... 1 No ..... 2 *(If no, skip to question 20.)*

b. How many hours of homework were assigned in the last 5 school days? _____hr. _____min.

19. In this class, how often does the homework you assign involve the following? *(Circle one in each row.)*

	Never	Sometimes	Often	Always
a. Reading assignments	1	2	3	4
b. Short-answer questions	1	2	3	4
c. Essay writing	1	2	3	4
d. Basic mathematical computations	1	2	3	4
e. Advanced mathematical or scientific problem-solving	1	2	3	4
f. Nonacademic job skills	1	2	3	4

20. For this class, how often do you and the following teachers coordinate course curricula or team teach? *(Circle one in each row.)*

	Never	Sometimes	Often	Always
a. English teachers	1	2	3	4
b. Mathematics teachers	1	2	3	4
c. Science teachers	1	2	3	4
d. Vocational education teachers	1	2	3	4
e. Other teachers *(specify)*_____	1	2	3	4

21. What percentage of time in this class is typically spent on the following material? If taught, who is the main instructor on this material in this class? *(For each row, circle one in Column A and, if applicable, one in Column B.)*

	A. Percentage of time				B. Main instructor	
	0%	1-10%	11-25%	26-100%	You	Other
a. Problems using basic algebra	1	2	3	4	1	2
b. Problems using math beyond basic algebra	1	2	3	4	1	2
c. Writing assignments	1	2	3	4	1	2
d. Biology principles	1	2	3	4	1	2
e. Chemistry laws or principles	1	2	3	4	1	2
f. Physics laws or principles	1	2	3	4	1	2
g. Occupationally related principles	1	2	3	4	1	2

22. How prepared do you feel to teach the following material (whether or not you have ever had to teach it)? *(Circle one in each row.)*

	Not at all prepared			Very well prepared
a. Problems using basic algebra	1	2	3	4
b. Problems using math beyond basic algebra	1	2	3	4
c. Writing	1	2	3	4
d. Biology principles	1	2	3	4
e. Chemistry laws or principles	1	2	3	4
f. Physics laws or principles	1	2	3	4
g. Occupationally related principles	1	2	3	4

III. VOCATIONAL EDUCATION INFORMATION

23. Is there vocational education instruction in your school?

Yes..... 1 No ..... 2 *(If no, stop here.)*

24. How great a problem are the following issues for vocational education in your school? *(Circle one in each row.)*

	Not a problem			Serious problem
a. Link between vocational curriculum and local labor market	1	2	3	4
b. Coordinating vocational and academic instruction	1	2	3	4
c. Status of vocational education in relation to academic subjects	1	2	3	4
d. Adequacy of equipment	1	2	3	4
e. Access to computers	1	2	3	4
f. Maintaining high instructional standards	1	2	3	4
g. Maintaining vocational enrollments	1	2	3	4
h. Teachers' preparation in instructing students with special needs	1	2	3	4
i. Support services for students with special needs	1	2	3	4
j. Time available for working with students other than students with special needs	1	2	3	4
k. Placing problem students into vocational education programs, regardless of appropriateness	1	2	3	4
l. Student motivation	1	2	3	4
m. Student discipline	1	2	3	4
n. Student absenteeism	1	2	3	4

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