


Study of Occupational Learning
Report to the Springfield School District
March, 1988

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The study of occupational learning began in 1981-82, when the students currently in the eleventh grade of the Springfield schools were in the fourth grade. Data have subsequently been gathered from the students during their eighth and ninth grades in school. Data have been gathered from the students in individual interviews (fourth and ninth grades), from questionnaires completed during class hours (fourth, eighth, and ninth grades), from written essays on their future plans written during class hours (fourth and eighth grades), from the school records on achievement and attendance (fourth grade), from teachers and administrators (eighth grade), and from mothers of the students (fourth and eighth grade). Earlier reports prepared for the district (1985 and 1986) are available on request from the author. The current report focuses first on characteristics of the students in the ninth grade and changes in their views from the fourth to the ninth grade, and, second, on the transition from middle school to high school. Analyses other than those reported here can be completed upon request.

Characteristics of the Ninth Graders

Three hundred sixty-nine students responded to the in-class questionnaire in the ninth grade.[1] Approximately equal numbers of males and females were in the sample.

Fifty-five per cent were enrolled in Springfield High School and 45% in Thurston High School. For almost all the variables studied responses from students in the two schools were identical; the few statistically significant differences that did appear might well be attributed to chance. Thus, responses for students in the two schools are reported jointly.

In the paragraphs below information is reported on the students' perceptions of high school, their attitudes toward various school subjects, the importance the students attach to a number of school related areas, their academic self concept, their course preferences in high school, and their extracurricular and leisure activities.

Perceptions of High School

The majority of the students tended to have a positive view of their high school experience. When asked how much they liked going to high school 63% responded "a lot," 32% said "somewhat," and only 5% responded "not very much" or "not at all."

The students were asked in both eighth and ninth grade to check which of a variety of characteristics described their teachers. Sixty-eight percent of the ninth graders said that the teachers in their high school were friendly, 58% said that they "expect us to do our best," 48% said that they are "willing to help students," but only 22% said that

the teachers "understand our problems. Nine per cent of the students said that the teachers were "too easy with school work," and 22% said that they were "too strict." Females were significantly more likely than males to believe that the teachers were friendly, willing to help, and expect students to do their best. There was only a slight trend for students to have rated their middle school teachers as friendlier, more understanding, willing to help, and more likely to expect the best than high school teachers.[2]

The students were also asked to check which areas on a list were "problems" in their school. They could check as many responses as they wanted. Seventy-six per cent of the students reported that students skipping class and students smoking were problems, 63% reported student drug use as a problem, 59% checked absences, 53% checked alcohol use, and 50% marked "talking back to teachers or other adults." Students fighting with each other, robbery or theft, and destroying or hurting school property were marked by less than half the students (40%, 38%, and 44% respectively). The ninth grade females and males tended to perceive the same problems in their schools. However, the students reported significantly more problems in their high schools (an average of 5.2) than in their middle schools (an average of 3.9).

Attitudes Toward School Subjects

The first part of the questionnaire concerned the students' attitudes toward school and their views of their educational ability. Specific questions asked about their views toward six subjects: language, social studies, math, science, physical education, and career education. The students were asked how much they liked the area, how hard it was for them, whether or not they did their best work in the class, and how important they believed the subject was. The answers to each of these questions tended to be associated with each other, and so the responses regarding a specific subject area were combined into scale scores that represent a composite attitude toward each area. Scale scores ranged from 4 to 20 points, with a higher score indicating more positive attitudes (they like the area, believe it is easy, do their best work, and think it is important). Scores greater than 12 indicate positive attitudes, scores less than 12 indicate more negative attitudes.

The average scale scores of male and female students for each subject area are shown in Table One. The results indicate that, on the average, the students had positive, or at least neutral, attitudes, toward all their subjects. Females' favorite areas were (in rank order) mathematics, career education, physical education, and language arts.

Table One
Attitudes of Male and Female Ninth Graders
Toward School Subjects¹

Subject	Females mean (s.d.)	Males mean (s.d.)	t	df	p	d
Language Arts	14.8 (2.7)	13.4 (2.6)	4.82	358	<.001	.53
Mathematics	15.8 (2.5)	15.8 (2.5)	0.00	365	1.000	.00
Social Studies	13.5 (3.0)	13.8 (2.8)	-1.06	338	.290	-.10
Science	13.6 (3.2)	14.7 (3.2)	-3.43	351	.001	-.34
Physical Educ.	15.1 (2.9)	16.1 (2.8)	-3.32	356	.001	-.35
Career Educ.	15.4 (2.9)	14.5 (3.1)	2.74	364	.006	.30

1 Scores on these variables range from 4 to 20, with a higher score indicating a more positive attitude. The mean is simply the average score; s.d. stands for the standard deviation and is a measure of the dispersion or spread of the scores around the mean. The t statistic is a test of the extent to which the differences in the scores of males and females could be expected by chance. The value under the "p" or probability column indicates the probability that the difference in the scores of the males and females occurred by chance. The d value is a descriptive measure of the extent of these differences and is equal to the difference in the two means divided by the common standard deviation. It has been suggested that a d of .2 be considered small, a d of .5 be considered moderate and a d of .8 be considered large.

Males' favorite areas were (in rank order) physical education, mathematics, science, and career education.

Females had significantly more positive attitudes than males toward language arts and career education; males had significantly more positive attitudes than females toward science and physical education.[3] Except for attitudes toward the language arts, these differences are not especially large.[4] Even though the popular media has

often focused on the supposed negative attitudes of females toward mathematics, there were no significant differences between the males and females in their views toward this subject, a result found in many other studies.

Information on the students' attitudes toward various subjects is also available in each of the years included in the study thus far. As shown in Table 2, the students' attitudes changed somewhat over the years in all of the areas studied except language arts. Attitudes toward science and social science became slightly more negative over the years, while attitudes toward math and physical education were more negative in the eighth grade than in either the fourth or ninth grade. In each of the years studied the students reported the most positive attitudes

Table Two
Attitudes of Students Toward School Subjects,
Fourth, Eighth and Ninth Grades*

Subject	Grade Level		
	Fourth	Eighth	Ninth
Language Arts	14.4	14.3	14.4
Mathematics	15.9	15.2	15.9
Social Studies	14.3	14.2	13.9
Science	14.8	14.6	14.3
Physical Education	16.8	14.7	15.6

* Details on the scales are given in Table One. All figures in the table are arithmetic means.

toward physical education and mathematics and the least positive attitudes toward social studies.

School-Related Values

The students were asked how important various areas were to both them and their "best friends." Their answers to this question are summarized in Table Three. Both academic and social endeavors were reported by the students as being "very important." Eighty one per cent of the students said that getting good grades was very important to them, and more than two-thirds reported that learning job skills, making friends, and having fun were very important. Less than half of the students reported that doing well in sports or participating in extracurricular activities was very important. Responses regarding their best friends were similar, except that the students tended to report that their friends were less interested in good grades and job skills and more interested in having fun than they were. Responses of males and females were similar in each of these areas except sports, which males reported as being more important both for themselves and their friends.

Academic Self-Concept

A series of questions asked the students their views of their school work and academic ability. The majority of the students tended to have relatively positive views of their academic ability. Fifty-eight per cent thought they they

Table Three
Importance of Activities to Ninth Grade Students*

Activity	Percent Saying Very Important	
	Student	Best Friend
Getting good grades	81	62
Doing well in sports	41	36
Making friends	72	65
Having fun	68	77
Participating in extracurricular activities (other than sports)	34	30
Learning job skills	71	41

* The questions were phrased as follows. "A number of things can be important to students in school. How important is each of the following to you?" and "Think now about your best friends. How important are each of the things below to them in school?" Possible responses were very important, somewhat important, not very important, and not important at all.

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could finish college if money were not an issue and that they would do as well as most other students in college. Sixty-three per cent of the students thought they could get mostly A's in high school if they really tried. Males and females generally did not differ in their responses to these questions.

The majority of the students also reported that most of their friends planned to attend college after finishing high school and that their friends, parents, and "favorite teacher" believed that they could go to college. Eighty-six percent of the students reported that someone (usually their

parents) had encouraged them to go to college in the future. Responses of the males and females were again similar, except in their views of their teachers' perceptions of their achievement and ability. Females believed that their teachers would rate their behavior, academic achievement, and eventual educational attainment higher than males did.

Comparisons are possible over the three grade levels on some variables in this area. These comparisons indicate that the students tended to have slightly more positive views of their academic ability in high school than in middle school. They also tended to gradually increase their assessment of the importance of grades over the five year span.

When questioned about their future aspirations and plans, twenty-one per cent of the students reported that they planned to enter the military after finishing high school. Seventy-two per cent said that they would like to finish a four year college, but only 53% thought that they really would get that far in school. Ten per cent of the students reported that they would like to quit school after high school graduation, but 15% thought that they really would get no farther than high school graduation. The difference in the students' educational aspirations and actual expectations is statistically significant ($t=8.53$, $p<.001$). [5] There were no significant sex differences in the students' educational expectations or aspirations, and

the results are similar to those obtained in the eighth grade.

High School Course Preferences

Another part of both the eighth and ninth grade questionnaires dealt with the students' plans to take a variety of courses during their high school careers. They were asked to mark one of three options regarding each course area: 1) "have taken or are taking the course now," 2) "want to take the course sometime in high school," and 3) "do not want to take the course in high school." Results with these questions are given in Table Four. Among the academic courses, it may be seen that over three-fourths of the ninth grade students either had taken or wanted to take a foreign language, advanced math, algebra, and geometry. Almost as many wanted to take chemistry, physics, and computer science. Although the various vocational courses were not chosen quite as often, over one-half of the students wanted to take or had taken accounting, clerical courses, and marketing. Almost as many wanted to take or had taken electronics training, home economics, and mechanics. In every case, students were significantly more likely to report in ninth grade than they were in eighth grade that they wanted to take a course in high school. Most of the students indicated interest in a wide range of

Table Four
 Students' High School Course Preferences
 in Eighth Grade and Ninth Grade*

	<u>Percent Wanting to Take Course</u> <u>8th Grade</u>	<u>Ninth Grade</u>
<u>Academic Courses:</u>		
A foreign language	65	88
Advanced mathematics	36	80
Algebra	48	97
Chemistry	31	81
Computer science	49	68
Geometry	38	89
Physics	30	70
<u>Vocational Courses:</u>		
Accounting	29	67
Agricultural courses	4	15
Clerical/secretarial training	21	56
Construction training	6	18
Electronics training	28	48
Forestry training	7	16
Food service training	13	32
Health occupations	20	61
Home economics	32	45
Marketing/sales training	17	58
Mechanics training	22	33
Metal work training	9	22

* Figures in the table represent the percentage of students saying they wanted to take the course in high school and/or had taken the course already (ninth grade only).

courses, and the extent of interest was much greater than what they indicated in middle school.

Part of the increase from that reported in middle school may involve a slight change in the way the question was worded (the ninth grade, but not the eighth grade, version asked them specifically to report if they had already taken the course), but the increased interest appears even in courses not typically available to middle school students. It is not clear from the data what these results suggest. Perhaps because the students completed the questionnaires while in their career education classes they were more cognizant of the range of courses available to them and their utility in later life. Perhaps also simply being in high school encourages students to participate in a variety of coursework. The important issue, of course, is whether or not the students actually take the courses during their high school career. Hopefully, this issue may be addressed in the future.

Extracurricular Activities and Home Life

The students reported active lives outside of school hours. Fifty-eight percent were involved with sports activities, 32% with music, 23% with school clubs, 4% in student government, and 12% with other types of activities. Males were slightly more likely to participate in sports;

females were slightly more likely to participate in school clubs.

The students were asked to check which of a variety of items their parents had established "definite rules" for. Fifty-five per cent of the students reported rules about the time they should be in "on Friday or Saturday nights" and 44% reported rules about "time spent on homework." Thirty-one per cent reported rules about "eating dinner with the family" and "amount of dating." Twenty-one per cent noted rules about "time spent watching TV," but only 9% reported rules "against going steady," perhaps because relatively few were yet heavily involved in courtshp. Twenty-seven percent of the students reported rules "against going around with certain girls" and 34% reported rules "against going around with certain boys." There were significant sex differences on some of these items, with significantly more females than males reporting rules about times for being in, amount of dating, against going steady, and associating with certain people. Significantly more males than females reported rules about time spent watching TV and time spent on homework. There were no significant changes from eighth grade to ninth grade in the number of family rules.

Table Five summarizes the responses students gave to two questions designed to assess how much time they spent doing a variety of activities on both "a typical school

night" and "a typical nonschool day (weekends and holidays)." The most popular activity on both types of days was watching television, with 64% of the students reporting that they spent more than an hour on this activity on school days and 82% spending more than an hour on non-school days. The second most common activity on school nights was doing homework, with 41% spending more than an hour on this activity, followed closely by listening to the radio and talking with family and friends. Only eleven per cent reported spending more than an hour reading books or magazines for fun on school nights. On non-school days over half of the students reported spending more than an hour talking with friends and family members and listening to the radio. Less than a third reported spending more than an

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Table Five
Ninth Grade Students' Reports of Amount of
Time Spent on Various Activities on a Typical School Night
And a Typical Non-School Day

Activity	Percentage Spending One Hour or More on a School Night	Non-School Day
Watching television	64*	82*
Listening to the radio	39*	62*
Listening to cassettes	26*	46
Working on a computer	4*	10*
Doing homework	41*	28*
Talking with friends	27*	69
Talking with family	36*	62
Working at a job	8	26*
Reading for fun	11	28*

* Significant sex differences, see text for details.

hour doing homework, working at a job, reading for fun, or working on a computer. The students reported spending significantly more time on homework in the ninth grade than in the eighth grade, but significantly less time reading books and magazines for fun.

There were sex differences in many of the reports of leisure activities. On school nights females were significantly more likely than males to listen to the radio and cassettes, do homework, and talk with friends. On non-school days the females were also significantly more likely than the males to read books and magazines for fun, but were not more likely to listen to cassettes or talk with friends. Males were significantly more likely than females to watch television, work on computers, talk with family members (school days only), and work at a job (weekends only).

The Transition From Middle School to High School

In the eighth grade the students were asked what they thought their high school teachers would be like, what problems might occur in high school, and how much they thought they would like high school. In the report prepared for the district in 1986 it was noted that the students tended to believe that they would like high school but that there would be significantly more problems and that the teachers would be somewhat less understanding than they had

Table Six
Perceptions of High School from Students in Eighth Grade
and Ninth Grade and from Mothers

	<u>Eighth Gr. Students</u>	<u>Ninth Gr. Students</u>	<u>Mothers</u>
<u>Teachers are</u> Friendly-a,b	53	68	59
Too strict-a,b	30	22	5
Too easy with school work-a	2	9	15
Understand students' problems-b	19	22	39
Expect students to do their best-b	56	58	72
Willing to help students-a,b	34	48	63
<u>Problems in</u> <u>school include</u> Absenteeism-a,b	42	59	42
Skipping class-b	74	76	55
Fighting-a	67	40	35
Robbery/theft-a	51	38	44
Vandalism-b	57	44	26
Smoking-b	79	76	62
Drug use-a,b	75	63	75
Alcohol use-a,b	70	53	65
Talking back-a	65	50	56

a -- Difference between reports of students in eighth and ninth grade is statistically significant.

b -- Difference between reports of students in ninth grade and mothers is statistically significant.

been in middle school. Data are available from the ninth grade questionnaire that can be used to compare the students' actual perceptions of high school with their anticipations in middle school. These data are displayed in Table Six. Also included are reports from the mothers' questionnaires (completed in the summer after eighth grade) regarding their views of the high school teachers and problems in the high schools.

As ninth graders the students clearly had more positive views of high school than they reported in eighth grade. Compared to their perceptions of what high school would be like while they were in middle school, the ninth graders were more likely to report that the teachers were friendly, understanding, and willing to help. Fewer reported that the teachers were too strict, and more saw the teachers as "too easy." In all areas but absenteeism and skipping class, the ninth graders reported that there were fewer problems in school than they anticipated during middle school.

When compared to their mothers, however, the ninth graders tended to have somewhat less favorable perceptions. The students tended to see the teachers as friendlier than their mothers, but less understanding, less willing to help, stricter, and less likely to expect students to do their best. Students also were significantly more likely than their mothers to report problems in all areas but fighting, robbery, talking back and drug use. Only with the area of

drug use did mothers perceive that the problem was more severe than the students did.

Although when they were in middle school the students anticipated problems in high school they believed that they would like high school more than they liked middle school ($t=8.82$, $p<.001$). Their anticipations were supported. When they were in ninth grade their reports of how much they liked high school were significantly more positive than their attitudes toward middle school ($t=5.25$, $p<.001$ when high school rating compared to 8th grade rating; $t=9.85$, $p<.001$ when high school rating was compared to 9th grade rating of how much liked middle school).

Summary

In general, while it must be remembered that these students represent only a portion of those actually enrolled in the high schools in the ninth grade, the results appear to suggest that the students in the study had positive attitudes toward school and their academic ability.[6] Only five per cent reported that they didn't like high school, and the majority reported that their teachers were friendly and expected students to do their best. They generally liked their school subjects and valued good grades and learning job skills. The majority believed that they had the academic ability to finish college and to get A's in school if they tried. They also reported that their

teachers, parents and friends had relatively high educational expectations for them. However, while almost three-fourths of the students reported aspirations of college graduation, only about half thought they would really get that far in school.

The students also reported high aspirations for their high school careers, with over two-thirds of the students reporting that they had taken or hoped to take a foreign language, advanced mathematics, chemistry, physics and computer science. Approximately half or more of the students wanted to take high school course work in accounting, clerical areas, electronics, health occupations, and marketing or sales.

The majority of the students were involved in extracurricular activities, with sports being the most popular choice. The favorite leisure activity of the students appeared to be watching television. Almost two-thirds of the students reported watching television for more than an hour on a typical school night, 41% reported spending more than an hour doing homework, but only 11% reported spending that much time "reading for fun."

The students tended to like high school more than they liked middle school, even though they believed problems such as fighting, absenteeism, and substance abuse were more prevalent in high school than in middle school. When the ninth graders' perceptions of their high schools were

compared to the views they had of high school while in the eighth grade it appeared that their views of high school in ninth grade were much more positive. They generally believed there were fewer problems than they had anticipated and that the teachers were more friendly, understanding, and helpful than they had expected. However, when the ninth graders' views of high school were compared to their mothers' views, the ninth graders generally had more negative perceptions.

Footnotes

1. A similar number of students completed individual one-hour interviews. The information in the following paragraphs comes from the questionnaires; a report on the results from the interview will be given to the district at a later date.
2. All comparisons between grade levels reported in this paper involve only the students who provided data in both grades.
3. Throughout this report when a finding is reported as statistically significant it means that one would expect to find the result by chance only 5% of the time or less.
4. In a multivariate analysis not included here the author analyzed the sex differences in attitudes toward the language arts and science and found that these differences remained even after various school and family related variables were controlled.
5. In the interviews in the 9th grade the students were also questioned about their educational aspirations and expectations. When these two differed they were asked why they differed (almost always the expectations were lower than the aspirations). Coding of these questions is not yet finished, but results of this analysis will be given to the district as soon as they are available. The impression of the coders and interviewers was that a relatively large proportion of the students believed that lack of money would hinder their ability to attain their aspirations.
6. Only students whose parents had given written permission for them to participate in the study completed questionnaires.