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ABSTRACT

The purposes of this pilot study were to determine if elementary and middle school teachers and principals have similar perceptions of science education, and to compare the teachers' perceptions of science education with their perceptions of the principals' enthusiasm for the teaching of science. The study used three elementary and two middle schools in southwest Alabama. There were 90 elementary and 51 middle school teachers in the study, and 5 elementary and 2 middle school administrators. The survey consisted of questions to ascertain demographic data, the number of science/science education courses taken at the undergraduate and graduate level, and to compare teachers' perception of the importance of teaching science and administrators' views on the importance of teaching science. The findings of the study indicated that the vast majority of elementary school teachers believe that teaching science is important or very important in the curriculum. They also perceive their principals' view of science as important or very important in the curriculum. This is consistent with the principals' own perception of science, indicating that good communication exists between administrators and their faculty concerning science education. Middle school teachers view science more highly than their elementary counterparts, while their perceptions of the principals' enthusiasm for science is somewhat lower. The middle school principals viewed their enthusiasm for science as very important. Data indicated that elementary school teachers spend about 50 minutes per day in science instruction and that middle school science teachers spend approximately 25 hours per week in science instruction. (ND)

The Impact of Administrators' Interest in Science Teaching upon Teachers' Perceptions of the Importance of Teaching Science

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Introduction

Science is, in fact, the most neglected academic subject in United States schools (Goodlad, 1984). Students rarely, if ever, perform experiments in class where the textbook is the primary curriculum (Weiss, 1987). Central to maintaining high motivation and commitment to organization and activity is feedback (Hackman & Oldham, 1980). Feedback is the amount of direct, clear information about one's work in terms of excellence and or importance.

According to Mikkelsen and Joyner (1982) "teachers need positive motivation from the principal to the extent that they can achieve success and be recognized. But for this experience to take place, there must be exhibited a relationship of mutual trust and respect. This feeling, furthermore, must be communicated openly and on an ongoing basis." (p. 68)

Put in a school context, principals affect instruction interdependently through the principal-teacher communication associated with supervision and evaluation (Firestone & Wilson, 1985). "Despite the importance of communication for educational administration among principals and teachers, the research literature specific to teachers' communication...is uncommonly sparse." (Reyes & Hoyle, 1992, p. 164)

Teachers' perception of their principals' enthusiasm towards their classroom instruction may affect their performance. The teachers' perception of the principals' enthusiasm is communicated by way of classroom visitations, monitoring reports, adherence to policies, and parental feedback. When communication is satisfactory, evidence suggests increased commitment...(Firestone & Wilson, 1985).

The purpose of this pilot study was to determine if teachers in both elementary and middle schools have similar perceptions of science education as those of their principals. Additionally, it was also the purpose to compare the teachers' perception of science education with their perception of the principals' enthusiasm for the teaching of science.

Method

This pilot study was done using three elementary and two middle schools. The elementary schools provide the middle schools with students upon completion of the sixth grade. All schools were from the same school district in Southwest Alabama. The schools represented a cross section of the racial, intellectual, and SES factors of that area.

There were 90 elementary and 51 middle school teachers in the study. From the elementary schools, there were 87 females and three males. From the middle schools, there were 45 females and six males. The racial composition of the elementary schools was 21 Blacks (23%) and 69 Whites (77%) while the composition for the middle schools was 11 Blacks (22%) and 40 Whites (78%).

There were five elementary and two middle school administrators in the study. All five elementary school administrators were female while the two middle school administrators were males. The racial composition for the elementary schools was two Blacks (40%) and three Whites (60%). For the middle schools, both were White (100%).

A one page attitude survey was developed by the researchers. There was a separate survey for the teachers and administrators. The survey consisted of questions to ascertain demographic data, the number of science/science education courses taken at the undergraduate and graduate level, and two questions, using a five point Likert scale (with five being the highest value), to determine their perceptions on the importance of teaching science and how their administrators view the importance of teaching of science. (See Figures 1 and 2)

The surveys were administered during a faculty meeting. On average, the surveys took less than ten minutes to complete. Teachers not currently teaching science were asked to complete the demographic data and only questions numbered seven and eight.

Results

The following results were obtained from teachers and administrators that completed the survey. The demographic data revealed that 77% of the elementary teachers were employed at the same school three years ago, the average number of years taught was 10.5, the average year in which they received their undergraduate degree w[illegible] 1978, and the year they received their graduate degree was 1984.

Middle school teachers' data showed that 73% of the teachers were employed at the same school three years ago, the average year in which they received their undergraduate degree was 1974, and the year they received their graduate degree was 1983.

The elementary administrators' demographic revealed that 60% were employed at the same school three years ago, the average number years as an administrator was six, the average number of years taught was 20.8, the average year received their undergraduate degree was 1974, and the year they received their graduate degree was 1977.

The middle school administrators' data showed that 50% were employed three years ago at the same school, the average number of years as an administrator was five and one-half, the average number of years taught was 20.5, the average year in which they received their undergraduate degree was 1974, and the year they received their graduate degree was 1980. (See Table 1)

The participants were unable to recall the number of hours of science and science education taken as an undergraduate and as a graduate student, so this part of the survey was not used. For the elementary teachers that responded to item number five, four and one-half hours per week were spent on the teaching of science and for question number six, two hands-on activities were done per week. The middle school science teachers taught science an average of 25 hours per week with three hands-on science activities done per week.

The elementary teachers responses to question number seven revealed that 52% circled number five, 36% circled number four, 12% circled three with zero per cent for numbers two and one. For questions number eight, 55% circled number five, 36% circled number four, eight per cent circled number three, zero per cent on number two ,and one per cent circled number one.

The middle school teachers indicated on question number seven that 78.4% circled number five, 17.6% circled number four, four per cent for number three with zero per cent for number two and one. The answers for question number eight indicated that 47% circled number five, 21% circled number four, 32% circled number three with zero per cent for numbers two and one. (See Table 2)

The elementary school administrators responded to question five with 60% circled number five, 20% for number four, and 20% for number three. For question number six, 80% circled yes with 20% not responding.

The middle school administrators responded to question number five when all circled (100%) number five and yes on question number six. (See Table 3)

Discussion and Implications

The findings of this pilot study indicate that the vast majority of elementary teachers believe that teaching science to be important or very important in the curriculum. They also perceive their principals' view of science as important or very important in the curriculum. This is consistent with the principals' own perception of science, indicating that good communications between administrators and their faculty concerning science education exist.

Middle school teachers view science more highly than their elementary counterparts with 96% claiming science to be important or very important. Their perceptions of the building principals' enthusiasm for science is some what lower at 68%. This may be due to the subject matter orientation of middle school teachers as compared to elementary teachers who tend to teach across the curriculum. The middle school principals viewed their enthusiasm for science as very important.

Table two indicates that the elementary teachers instruct science at about 50 minutes per day with approximately half that time devoted to hands-on science activities.

Middle school science teachers instruct science approximately 25 hours per week and devote three hours per week to hands-on science activities. The survey indicates both elementary and middle school faculty provide daily science instruction. This is consistent with the findings of Mikkelsen and Joyner (1982) and Firestone and Wilson (1985).

In general, when principals and teachers both perceive science as an important component of the curriculum, it tends to receive its due place and not be neglected as indicated by Goodlad (1984).

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Table 1
Demographic Data for all Participants

Elementary and Middle School Teachers

	Elementary	Middle School
Employed at same school for three years	77%	73%
Average number years taught	10.5	15
Average year for undergraduate degree	1978	1974
Average year for graduate degree	1984	1983

Elementary and Middle School Administrators

	Elementary	Middle School
Employed at same school for three years	60%	50%
Average number years as an administrator	6	5.5
Average number years taught	20.8	20.5
Average year for undergraduate degree	1974	1974
Average year for graduate degree	1977	1980

Table 2

Elementary and Middle School Teachers Responses to Questions five and Six

Questions Five and Six

	Elementary	Middle School
5. Hours per week spent on science	4.5	25
6. Number of hands-on activities per week	2	3

Question Seven

7. How important do you perceive science?

	Not Important				Very Important
	1	2	3	4	5
Elementary	--	--	12%	36%	52%
Middle School	--	--	4%	17.6%	78.4%

Question Eight

8. How important do you think your immediate boss perceives science?

	Not Important				Very Important
	1	2	3	4	5
Elementary	1%	--	8%	36%	55%
Middle School	--	--	32%	21%	47%

Table 3

Elementary and Middle School Administrators Responses to Questions Five and Six

Question Five

5. How important do you perceive science?

	Not Important				Very Important
	1	2	3	4	5
Elementary	--	--	20%	20%	60%
Middle School	--	--	--	--	100%

Question Six

6. Science is or is not important as other disciplines?

	Yes	No
Elementary	80%	20%
Middle School	100%	--

Science Survey

Question: Does the training teachers receive in the teaching of science affect their opinion in the importance of teaching science in the elementary/middle school classroom?

Teachers (Complete all parts)

Race:_____ Gender:_____

Were you employed at this school three years ago? _____
Number of years taught: _____
Undergraduate degree in what year and field? _____
Graduate degree(s) in what year(s) and field(s) _____
_____

1. Number of hours in science for undergraduate degree? _____ (quarter/semester)
2. Number of hours in science for graduate degree(s)? _____ (quarter/semester)
3. Number of hours in science education for undergraduate degree? _____ (quarter/semester)
4. Number of hours in science education for graduate degree(s)? _____ (quarter/semester)
5. Average number of hours per week that you actually spend teaching science? _____
6. Average number of science hands-on activities that you do per week? _____
7. How important do you perceive science in the elementary curriculum?

Not Important				Very Important
1	2	3	4	5

8. How important do you think your immediate boss perceives science in the elementary curriculum?

Not Important				Very Important
1	2	3	4	5

Figure 1 Teachers' Survey

Science Survey

Question: Does the training administrators receive in the teaching of science affect their opinion in the importance of teaching science in the elementary/middle school classroom?

Administrators (Complete all parts)

Race:_____ Gender:_____

Were you employed at this school three years ago? _____
Number of years taught: _____
Number of years as administrator: _____
Undergraduate degree in what year and field? _____
Graduate degree(s) in what year(s) and field(s) _____
_____

Administrators

1. Number of hours in science for undergraduate degree? _____ (quarter/semester)
2. Number of hours in science for graduate degree(s)? _____ (quarter/semester)
3. Number of hours in science education for undergraduate degree? _____ (quarter/semester)
4. Number of hours in science education for graduate degree(s)? _____ (quarter/semester)
5. How important do you perceive science in the elementary curriculum?

Not Important				Very Important
1	2	3	4	5

6. Science is or is not as important as other disciplines?

YES NO (Circle one)

Why?

Figure 2 Administrators' Survey