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ABSTRACT

The implementation and evaluation of the effects of a seven-period day on students and teachers, especially on student achievement, is the purpose of this study. A three-part methodology includes two applications of the Concerns Based Adoption Model (CBAM) to teachers; administration of the School Attitude Survey (SAS) to students and teachers; and a statistical analysis of students' test scores and grade point averages. The subjects were 853 students and 54 teachers in a suburban setting. The results of the achievement data were inconclusive; however, the number of student dropouts was significantly reduced. The SAS analysis revealed contradictory perceptions of the program. Students appreciated the increased learning opportunities, while teachers identified the program with increased workloads and less planning time. The results of this first-year study provide a basis for further planning for the implementation of the seven-period program. More information and time are necessary before widescale implementation can be recommended. Tables summarize survey results and present statistical analyses of attitude tests and test scores. (9 references) (LMI)

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The Impact of a Seven-Period School Day
on Teachers and Students

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The Impact of a Seven Period Day on Teachers and Students

The Hamilton County Department of Education, Chattanooga, Tennessee initiated a school improvement pilot project at one suburban high school (grades 9-12) to implement a seven-period (45 minute) day during 1988-89 school year. The Tennessee State Department of Education granted a waiver to implement and evaluate the effects on students and teachers of a 45-minute class period in lieu of the traditional 55-minute schedule. The rationale for the modification included providing the framework for scheduling a broader curriculum to meet the diverse needs of students, as well as providing students more options for electives or other academic courses. Also, the seven-period day would help meet the needs of at-risk students and reduce the dropout rate.

Limited research is available to determine the effects of the seven-period day on student achievement. One study focused on the impact of the seven-period day on student scheduling, courses and transportation issues, but not achievement (Goldberg, 1983). Another study (Bishop, Waner, & Weber, 1989) reported the results of the implementation of a seven-period schedule in a rural Virginia high school. The data suggests that the seven-period day was an effective alternative to a six period day. Student response was favorable and no significant negative impact on achievement occurred.

It is expected that as graduation requirements increase, students will have limited opportunities to take electives and advanced courses without extending the school day or reconfiguring the periods. This study provides information about how to plan for implementation and

contributes to the void in the literature concerning research that can be used for school reform at the national level.

This study acknowledges, as others have cautioned, that increasing time in school, in and of itself, will not necessarily increase achievement. (Karweit, 1988). Time for learning has been studied under many guises including classroom efficiency, student attention, length of the school day/year, and time on task. Time devoted to school learning appears to be a modest predictor of achievement (Walberg, 1988). Unfortunately, when the time spent in school has been increased, the promised results of higher achievement have not followed (Karweit, 1984). Other educational perspectives have focused on the opportunities for learning, the quality of the instructional opportunity, as well as better time management to increase learning (Bloom, 1985; Fredrich & Walberg, 1980). Time, however, is only one of several factors which influence learning. Other factors include the emotional and physical state of the learner and the social atmosphere of the classroom (Blai, 1986). Other studies will need to evolve and extend the scope of these findings for more deliberate analysis of the impact of time on learning with respect to not only the amount, but also quality of time.

Methods

Subjects

The high school has one thousand twenty-six (1026) students and sixty-two (62) teachers. The school is located in a suburban environment with an enrollment of approximately 93% white and 7% black students. Eight hundred fifty-three (853) of the students and

fifty-four (54) teachers participated in the data collection activities for this study. These numbers represent approximately 83% of the students and 85% of the teachers.

Design and Procedure

This study used quantitative and qualitative data analysis techniques to assess the impact of the Seven-Period Program on 9th through 12th grade students in one large, suburban high school. A statistical description summarizes achievement in relation to standardized test scores and grade point averages during the 1987-88 and 1988-89 school years. On-site visitations by the researchers in the fall (October, 1988) and near the end of the school year (May, 1989) were used to administer CBAM (Concerns Based Adoption Model) techniques to monitor and analyze teachers' concerns (Hall & Loucks, 1977). Finally, a School Attitude Survey (SAS), a 25-item Likert scale, was administered to both students and teachers at the end of the school year (May, 1989).

Results

Expanded Educational Opportunities

The expanded educational opportunities in the seven period (45 minute) school day were reflected in the number and types of courses offered to students. During the 1987-88 school year, 231 courses compared to 280 in 1988-89 were offered in the curriculum reflecting a 26% increase. Nine new courses and four modified courses were offered during the 1988-89 school year. One of the nine new courses, a study skills class, was required of the 9th graders. Other new courses included American Sign Language, Applied Math II,

Algebra III, Math Tutoring, Computer Application/Statistics, Piano, College Contemporary Issues and European History (AP). Divisions were made in English, Algebra I, Algebra II and Geometry to offer more sections. Most of the additional courses offered during the seven period day represented duplications of existing courses already in the 1987-88 curriculum. Table 1 summarizes the comparison of the course offerings for the 1987-1988 year with the 1988-1989 year.

Table 1

Comparison of offerings courses in the major subject areas

Subject	1987-88	1988-89	% Increase
Art	10	12	20
Business	10	12	20
Home Economics	10	12	20
Language Arts	62	78	26
Math	40	48	20
Physical Education	18	23	28
Music	7	81	14
R.O.T.C.	14	15	7
Science	30	32	7
Social Studies	30	40	33
Total	231	280	26%

Achievement Data

An important feature of this evaluation was assessing the impact of the Seven-Period Program on student achievement. Achievement indicators were selected to satisfy several criteria. First, the indicator needed to reflect some type of student achievement. Secondly, pre

and post measures (1987-88 and 1988-89) needed to be available. Finally, the indicator had to be measured late enough in the school year that the program could have produced an effect.

Unfortunately, limited standardized test scores were available for use. Data available included grade point averages (GPA), Pre-Scholastic Aptitude Test (PSAT), Stanford Test of Academic Skills, and the Tennessee Ninth Grade Proficiency Test.

GPA's were measured at the end of the 1987-88 school year and at the end of the 1988-89 school year. To determine if any significant differences existed between pre-program GPA's and post-program GPA's for the 1989 tenth, eleventh and twelfth grades, paired t-tests were performed.

Independent t-tests were performed on the verbal and mathematics sections of the PSAT to determine if any significant differences existed between the scores of the 1988 and 1989 tenth graders and the 1988 and 1989 eleventh graders. Similarly, the scores for the Stanford Test of Academic Skills were compared for the 1988 and 1989 twelfth graders. Finally, the Tennessee Proficiency Test scores for Central High tenth graders were compared to the same scores for other Hamilton County Schools' tenth graders.

Grade Point Average

Paired t-tests were performed on the 1987-88 and 1988-89 end-of-year Grade Point Averages for the seniors, juniors, and sophomores to detect any significant decreases after program implementation.

Results indicated that the GPAs for 1989 twelfth graders ($n = 193$) were higher at the end of their senior year (after program implementation) than at the end of their junior year (before program implementation).

On the other hand, the GPAs for the 1989 eleventh graders ($n = 226$) were higher at the end of their sophomore year (before program implementation) than at the end of their junior year (after program implementation).

The GPAs for the 1989 tenth graders ($n = 196$) were the same at the end of their freshman year (before program implementation) and at the end of their sophomore year (after program implementation).

Table 2

Paired t-test results for 1987-88 and 1988-89 GPAs

Year	Mean	Standard Deviation	t	p
<u>1989 Seniors - 1988 GPA vs 1989 GPA</u>				
Junior (1988)	2.461	.633	-3.71	.000
Senior (1989)	2.497	.609		
<u>1989 Juniors - 1988 GPA vs 1989 GPA</u>				
Soph (1988)	2.462	.621	5.22	.000
Junior (1989)	2.391	.628		
<u>1989 Sophomores - 1988 GPA vs 1989 GPA</u>				
Fresh (1988)	2.333	.757	.76	.448
Soph (1989)	2.320	.733		

Pre-Scholastic Aptitude Test

Results indicated that the 1989 tenth graders scored significantly higher than the 1988 tenth graders on both the math and verbal sections of the PSAT. Also, the 1989 eleventh graders scored significantly higher than the 1988 eleventh graders on the math section of the PSAT. On the verbal section there were no significant differences.

Table 4

Results of Scholastic Aptitude Test - 1988 vs 1989

Year	Mean	N	Standard Deviation	t	p
<u>1988 Sophomores vs 1989 Sophomores</u>					
Math(1989)	42.15	39	8.22	3.34	.001
Math(1988)	35.40	65	10.88		
Verb(1989)	45.77	39	9.21	3.70	.000
Verb(1988)	38.90	65	9.01		
<u>1988 Juniors vs 1989 Juniors</u>					
Math(1989)	43.63	61	11.37	2.30	.023
Math(1988)	39.36	58	8.65		
Verb(1989)	49.23	61	9.47	1.66	.099
Verb(1988)	46.38	58	9.23		

Stanford Test of Academic Skills

A comparison of the mean scores for the two groups revealed that the 1989 twelfth graders scored lower on all sections of the Stanford than the 1988 twelfth graders. The only exception was the science section where the 1989 group scored higher. The scores are reported as average percentile rank for the group taking the test.

Table 5

1989 Seniors vs 1988 Seniors - Test Date: February, 1989

Section	1988	1989
Reading Comprehension	63	59
Reading Vocabulary	56	53
Spelling	55	51
English	67	60
Social Science	57	52
Science	52	54
Using Information	69	64
Total Reading	64	59
Total English	66	58
Math	65	60

Tennessee Proficiency Test

Results indicated that, in general, the Central High School ninth grade class of 1989 scored lower than the 1989 ninth grade from Hamilton County on the Tennessee Proficiency Test given in March of 1989. The data are presented as the percentage of students passing the test. On all 21 sections

of the mathematics test and on 25 of the 29 sections of the Language Arts test, the Central High ninth graders scored below the Hamilton County ninth graders.

Table 6

1989 9th Grade - Central High vs Hamilton County - Percentage of Students Passing TPT

Skill	Central	Hamilton Co
Mathematics	86.5	92.9
Language Arts	81.9	85.4
Total	78.7	83.9

Drop-Out Record

The drop-out record of Central High School for the 1988-89 school year was compared to the drop-out record for the 1987-88 school year for the total number of students dropping out, the reasons for dropping out, and the number re-entered. The records showed that fewer students dropped out of school during the 1988-89 school year (after program implementation) than in the 1987-88 school year (before program implementation). In the 1987-88 school year 70 students dropped out, but 8 re-entered leaving a total of 62. In the 1988-89 school year 34 students dropped out with 1 re-entering, leaving a total of 33.

Table 7

Number of dropouts and reasons for dropping out - 1988 vs 1989

Reason	1987-'88	1988-'89
Married	11	2
GED	8	1
CSTCC	5	0
Service	1	0
Work	37	28
Children	0	2
Re-entered	8	1
Total	70	34

Attitude Survey

This survey was designed to measure the attitudes of the students and faculty of Central High School toward the school, in general, and toward the Seven-Period Program, in particular. The survey consisted of 28 Likert items scored on a 5-point scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), with 3 being the neutral response.

Faculty vs Students Table 8 in the appendix reports the results by item of t-test between the student vs faculty responses. In general, the students expressed more positive attitudes toward the program than the teachers. Students responded more favorably to 18 of the 28 items, while faculty responded favorably to only 2 of the 28 items. For example, most students indicated that they liked the program because it allowed them to take an additional class. The teachers, however,

did not agree with this. On the average, students felt that they were learning as much in the seven period day as in the six period day, but teachers responded less favorably to this item.

Several of the survey items related to time -- time to lecture, time to take tests, time to explain homework, and time for labs. Most of the teachers felt that they needed more time to complete these tasks. For example, most teachers felt that they needed more time to finish lectures, but students felt that lecture time was inadequate.

Teachers were also more sensitive to issues such as interruptions, scheduling conflicts, and inadequate classroom space. The students, however, were neutral on these topics.

Both students and faculty felt that more subjects and courses are needed for the program, and that students and faculty should be asked for new course recommendations.

Teachers and students generally agreed that teachers had to work harder in the seven-period school day. For the most part, students were generally pleased with the program and felt it should be continued for another year. Teachers, on the other hand, were not pleased with the program and most felt that it should be discontinued.

Academic Paths In general, the response patterns for the students in the three academic paths were the same. They all liked being able to take an additional class. All three groups (Academic Honors, Honors, and Standard) seemed to be pleased with the program and also indicated that their parents were pleased with the program. All three groups agreed that the program should be continued for another year.

Teacher Concerns

Teachers were asked to identify their major concerns with respect to the Seven Period (45 minute) Program in November, 1988 and May, 1989 with an open-ended response. Their concerns were categorized in the following areas: Personal, Management, Consequences for Students, and Refocusing on Other Alternatives.

Personal Seventeen reponses were identified as personal concerns regarding the seven-period day. Teacher stress and pressure (8); Another preparation for teachers (5); Extra teaching period is exhausting for some teachers (2); Less cooperation among staff; Inequities in teaching assignments.

Management Management concerns were the most common with eighty-six responses. Inadequate time to cover the material and explain work for students (13); Not enough time for laboratory work (11); Too many interruptions (9); Not enough class time for adequate preparation for homework assignments (8); Not enough time for testing (7); Scheduling problems (7); Too many preparations/not enough planning time for teachers (6); Not enough time to give individual help or practice (6); and Lack of adequate classrooms (6).

Refocusing on Other Alternatives Finally, five reponses were actually refocusing on alternatives to the seven-period day. These concerns focused on returning to the six period day.

Table 8

Summary of teacher concerns 1988-89

<u>Area</u>	<u>November-88</u>	<u>May-89</u>
Personal	22 (18%)	17 (10%)
Management	53 (44%)	86 (52%)
Consequence	40 (33%)	58 (35%)
Refocusing	6 (06%)	5 (03%)

The concerns of teachers were similar in November, 88 and May, 89 with a slight movement from personal to management concerns.

Teachers were dealing with the logistics of implementing the seven period (45 minute) day. Many of the teachers were concerned about the impact of the shorter periods on the achievement of students.

Generally, teachers were not pleased with the seven period (45 minute) day and were advocates of returning to the six period structure.

Conclusions

The results of the achievement data are inconclusive in that the Grade Point Averages, PSAT and Stanford Test data were not consistent across the assessment measures. On the positive side, grade point averages were higher after implementation of the seven period program. The PSAT data for tenth and eleventh grades also indicated positive effects on achievement. However, the Stanford data do not support achievement gains for the twelfth grade. Given the conditions of the school program, the school environment, the early administration of the Stanford, and lack of comparative student

achievement gains over previous years, it is unrealistic to develop any conclusions at this time. In fact, caution is recommended in attributing any achievement effects to the Seven-Period Program, since there is no way to rule out all possible confounding factors.

Another positive finding related to the reduced number of student dropouts. Far fewer students (34 compared to 70) dropped out of Central High in the 1988-89 school year than did in the 1987-88 school year.

The School Attitude Survey (SAS) also revealed contradictory perceptions of the program. Significant differences existed between the teachers' and students' attitudes on the SAS. Chi-square and t-test indicated that the students' attitudes toward the seven-period day were generally more positive than the teachers' attitudes. Many of the teachers (42%) indicated that they would like to return to the six-period day, although acknowledging that students liked the seven-period format. The seven-period day was believed to have increased students' homework and class assignments without allowing as much depth with curriculum material as the six-period day. Teachers seemed to have difficulties adjusting and organizing for the shorter classes (45 minutes) indicating that writing assignments, laboratory experiments, and the utilization of media were minimized. The seven period format was perceived as offering more learning opportunities for students, but increasing the teachers' workload from the standpoint of preparation and teaching. Because the students were very supportive of the program and teachers were less enthusiastic,

considerable planning in light of the teacher concerns should occur before further implementation.

Teacher concerns expressed in the open-ended comments supported the findings on the School Attitude Survey. Teachers reported that inadequate time was available for covering and explaining class work, reviewing homework, laboratory work, and testing. Interruptions and encroachments were additional compounding factors affecting the amount of instructional time available. Other comments focused on the extra period with respect to increasing teacher stress and work loads and decreasing planning time. Teachers believed that students' academic achievement would be affected due to the lack of discussion time and individual attention to student problems related to the assignments. Teachers were also concerned about the physical layout of the school, due to overcrowded conditions and lack of flexible large spaces for creative scheduling.

The results of this first year study can be used for further planning in the implementation of the Seven Period Program. Additional data and time to work through the initial problems associated with any innovation are necessary before wide scale implementation can be recommended. The evaluation will be continued through 1989-90 school year.

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Table 8**Results of t-tests for attitude items - faculty vs. students**

Item	Student		Faculty		t	Prob
	Mean	SD	Mean	SD		
1. I like to come to school every day.	2.83	1.02	3.54	1.44	-3.55	.001
2. Teachers are motivated and interested in school.	3.09	.98	3.48	1.08	-2.58	.013
3. Students are motivated and interested in school.	2.49	.90	2.57	1.03	-.55	.582
4. Students receive enough individual help for assignments.	2.47	1.09	2.49	1.25	-.11	.915
5. Students have too much homework as a result of the program.	3.05	1.26	3.22	1.11	-1.11	.269
6. Students like the program because they can take an additional class.	3.73	1.25	2.98	1.31	4.07	.000
7. Students are learning as much in 45 minutes as in 55 minutes.	3.41	1.27	2.09	1.26	7.40	.000
8. Students are pleased with their school grades.	2.67	.98	2.64	.83	.23	.819
9. Students have to work harder as a result of the program.	3.22	1.14	3.23	1.15	-.07	.941
10. Teachers have to work harder as a result of the program.	3.29	1.15	4.58	.77	-8.09	.000
11. Teachers use all class time in meaningful ways.	3.12	1.14	3.90	1.04	-.53	.000
12. Teachers need more time to complete lectures and discussions.	2.98	1.23	4.15	1.04	-7.86	.000
13. Teachers spend enough time explaining homework.	2.79	1.23	2.64	1.04	1.11	.270
14. Students need more time to take tests.	3.37	1.16	3.79	1.21	-2.43	.018
15. Laboratory classes need to be longer to set up and complete .	3.62	1.10	4.62	.74	-6.52	.000

Item	Student		Faculty		t	Prob
	Mean	SD	Mean	SD		
16. Too many interruptions occur during class.	2.79	1.23	4.17	1.07	-9.08	.000
17. Classroom space is adequate for this school.	3.13	1.15	1.85	1.41	7.75	.000
18. Scheduling conflicts make it difficult to fully utilize the program.	3.05	1.05	4.04	1.12	-6.21	.000
19. More subjects and courses are needed in the program.	3.32	1.23	3.40	1.27	-.47	.641
20. Students should be asked for new course recommendations.	3.69	1.00	3.38	1.24	2.20	.028
21. More time is needed for lunch.	3.94	1.21	3.21	1.36	3.81	.000
22. Time between classes is adequate for students to go to lockers, etc.	2.35	1.37	3.36	1.39	-5.14	.000
23. The program would work better if teachers had more input.	3.20	.99	4.02	.93	-6.22	.000
24. The program would work better if students had more input.	3.45	1.00	3.15	1.16	1.79	.078
25. Basically I am pleased with the seven-period day	3.67	1.24	2.45	1.51	5.73	.000
26. Basically, I am pleased with the 45 minute classes.	3.77	1.19	2.25	1.50	7.25	.000
27. Parents are in favor of the seven-period school day.	3.46	1.07	2.86	.78	5.22	.000
28. The program should be continued for another year.	3.78	1.37	2.43	1.49	6.43	.000

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	Mean	SD	Mean	SD		
16. Too many interruptions occur during class.	2.79	1.23	4.17	1.07	-9.08	.000
17. Classroom space is adequate for this school.	3.13	1.15	1.85	1.41	7.75	.000
18. Scheduling conflicts make it difficult to fully utilize the program.	3.05	1.05	4.04	1.12	-6.21	.000
19. More subjects and courses are needed in the program.	3.32	1.23	3.40	1.27	-.47	.641
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23. The program would work better if teachers had more input.	3.20	.99	4.02	.93	-6.22	.000
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25. Basically I am pleased with the seven-period day	3.67	1.24	2.45	1.51	5.73	.000
26. Basically . I am pleased with the 45 minute classes.	3.77	1.19	2.25	1.50	7.25	.000
27. Parents are in favor of the seven-period school day.	3.46	1.07	2.86	.78	5.22	.000
28. The program should be continued for another year.	3.73	1.37	2.43	1.49	6.43	.000