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BLOCK SCHEDULING'S IMPACT ON INSTRUCTION, FFA, AND SAE IN AGRICULTURAL EDUCATION

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Abstract

The purpose of this study was to examine the impact of block scheduling on teachers and agricultural education programs in North Carolina. Questionnaires were sent to the senior agricultural instructor in each department in the state. Responses were obtainedfrom 68 percent. Approximately 75% of the NC schools are on block scheduling. Teachers generally have a positive attitude toward block scheduling. Block scheduling has resulted in an substantial increase in the number of agriculture students while the number of students in the FFA has remained the same. Block scheduling has had little impact on the quality of the instruction a slight negative impact on SAE, and a substantial negativeimpact on the FFA program. A variety of instructional techniques are needed and each **class** *period needs to be broken up into segments. The communications, the entire* structure *and operating procedures for the FFA may need to be re-examined.*

The publication of a Nation at Risk in 1983 triggered a plethora of educational reforms in the public schools. The reforms included increasing graduation requirements, establishing tech-prep programs, instituting site based management, integrating academic and vocational education, and developing new approaches to instruction (Paideia and FAST science). One potential area for reform, which has received little attention until recently, is the structure of the school day.

The school day has remained static for the past 80 years. In 1909 the Carnegie Foundation for the Advancement of Teaching proposed the "Standard Unit" as the common measure of time spent on a specific subject in high school. This unit, commonly called the Carnegie Unit, calls for students to attend between five and six classes during the school day with each lasting 50 minutes. Even though there have been minor variations in the school day over the years in local schools, the Carnegie Unit still predominates (Maeroff, 1994). However, starting in the early 1990s, schools started experimenting with different approaches to scheduling the school day (Carroll, 1990). A common alternative is to break the school year into two semesters and schedule four classes of 90 minutes during each semester. Courses are completed in one semester instead of a year. In the literature this scheduling strategy is commonly called block scheduling, alternative scheduling, or the Copernican plan (Carroll, 1994).

Block scheduling is growing rapidly in North Carolina and in many other states. In 1992-93 1% of North Carolina public high schools used block scheduling. Block scheduling is defined as "a scheduling system in schools in which students take four courses each semester, in 90 minute class periods, completing eight courses each year" (Averett, 1994). An agricultural education teacher's block schedule is illustrated in Figure 1 and a student's schedule is displayed Figure 2. During the 1994-95 school year, 38% of the public high

TIME	SEMESTER I	Semester II
7:50 - 9:15 a.m.	Biotechnology	Biotechnology
9:20 - 9:50 a.m.	Home Room	Home Room
9:55 - 11:20 a.m.	Horticulture I	Horticulture II
11:25-11:55 a.m.	Prep	Introduction to Agriscience
12:00 - 1:30 p.m.	Lunch I	Lunch I
1:35 - 3:00 p.m.	Introduction to Agriscience	Prep/Visits

Figure 1. Agricultural Educator's Class Schedule on Block Scheduling

TIME	SEMESTER I	SEMESTER II
7:50 - 9:15 a.m.	English I	History I
9:20 - 9:50 a.m.	Home Room/Advocacy	Home Room/Advocacy
9:55 - 11:20 a.m.	Horticulture I	Horticulture II
11:25 - 11:55 a.m.	Algebra I	Introduction to Agriculture
12:00 - 1:30 p.m.	Lunch	Lunch
1:35 - 3:00 p.m.	Elective/Band	Literature

Figure 2. Agricultural Student's Class Schedule on Block Scheduling

schools were on block schedules. An estimated 60% of the high schools in North Carolina are on block scheduling for the 1995-96 school year (Averett, 1994).

Overall, the initial reaction to block scheduling by teachers and administrators appears to be positive (Jones, 1995). Carroll (1994) found that block scheduling decreased average class size, reduced teaching load, and substantially increased learning mastery. Hottenstein and Malatesta (1993) reported that standardized scores increased greatly in their Pennsylvania school after implementing block scheduling. Guskey and Kifer (1995) found less discipline problems and significant increases in standardized scores of African American students in their Maryland school under block scheduling. They also reported that 70% of the students and 95% of the faculty prefer the 4-period day. Schoenstein (1995) found that after block scheduling was implemented in a Colorado high school, student and staff stress was lower, daily attendance was up, and the number of students on the honor roll and attending college increased. Reid (1995) found that English students believe their writing had improved under the block schedule.

Most of the research on block scheduling has been school wide or on the teaching of a specific academic subject. Little research has been conducted on the impact of block scheduling in agricultural education. Since agricultural education involves out-of-school experiential learning and has integral youth organization activities, the impact of block scheduling may be viewed differently. Teacher feelings toward block scheduling appears to be mixed. Some teachers sound like they really like their schedule while others detest it. Both

views may be accurate or the reality of block scheduling may lie in between.

Block scheduling as an innovative scheduling technique, represents a change in routine for teachers and potential concern about the innovation. The theoretical foundation for this research is derived from the Concerns Based Adoption Model (CBAM) developed by Hall and his associates (Hall & Loucks, 1978; Hall & Hord, 1987). The CBAM was designed to provide an understanding of the target audience's perceptions of change. This understanding helps change agents adjust form and function of their innovation. The CBAM is baaed on six main assumptions about change:

1. Change is a process, not an event.

2. Change is accomplished by individuals.

3. Change is a highly personal event.

4. Change involves developmental growth

5. Change is best understood in operational terms.

6. The focus of change facilitation should be on individuals, innovations and the context.

Conversion to Block Scheduling is a process, not a single day event. The individual or in this case the teacher will determine if the change is accomplished. Most importantly is assumption three in that the change process is an extremely personal experience, and how it is perceived by the individuals will strongly influence the outcome. Since many agricultural education programs are involved in the move to block scheduling, it is imperative that teacher perceptions be measured so that adjustments can be made (if needed) in order to insure that students receive a high quality education.

Purpose and Objectives

The overall purpose of this research was to describe impact of block scheduling in agricultural education and to identify exemplary strategies that could be used by other agriculture teachers in block schedules. This research study had three major objectives:

1. To document the impact that block scheduling is having on the conduct of the complete agricultural education program.

2. To identify the attitudes of agriculture teachers toward block scheduling.

3. To identify "strategies that work" in instruction, FFA and SAE according to teachers in schools where block scheduling is used.

Methods and Procedures

Instrument

A survey instrument was sent to the senior agricultural teacher in every secondary agricultural department in the state (N=222). The instrument assessed the teachers' attitudes toward block scheduling and identified the impact of block scheduling on the FFA, SAE, and instructional programs in their schools. Five questions were used to describe the program prior to and after the implementation of block scheduling. The questions revolved around course enrollments, FFA membership, instructional program quality, FFA program quality, and SAE program quality.

An attitude score was calculated from responses to a 28 item instrument. A Likert-type response scale was used with a 1 being strongly disagree and 5 being strongly agree. The responses were summed and averaged to give a mean attitude score. The scoring of the items on the instrument that were worded negatively were reversed in calculating the mean attitude scores.

In an open ended section of the instrument: teachers were asked to identify what they are doing differently in regards to instruction; FFA and SAE and to assess the effectiveness of these practices. This instrument was developed by the researchers and then field tested by six Virginia teachers. Based upon the field test, revisions for clarity were made in the instrument. A Cronbach's alpha was calculated on the attitude portion of the instrument and resulted in a reliability estimate of .92.

Data Collection

The survey was mailed to the teachers in May of 1995. A follow-up administration of the instrument was given by the researchers during the state agricultural teachers conference. A total of 141 teachers' responses were obtained for a response rate of 64%. A comparison of early and late respondents yielded no significant differences between attitude mean scores. Therefore, since late respondents are similar to non-respondents, no further follow-up procedures were conducted and the researchers assumed that the data were generalizable to the study population (Miller & Smith, 1983).

Data Analysis

Both quantitative and qualitative techniques were used in analyzing the data. The data amenable to quantitative analysis were placed in an Excel spreadsheet and various statistical functions were employed. The qualitative data were examined and summarized by the researcher.

Results and/or Findings

Current Status of Block Scheduling in North Carolina

As shown in Figure 3, thirty-four (24%) of the schools were not on block schedules and had no immediate plans to follow a block schedule. Forty-four (33%) schools were not on block schedule but planned to use the block schedule in the near future. Sixty-three (45%) of the schools were on block schedules. Counting the schools on block schedules and those planning to do so, about 3/4 of the schools represented in this research are expected to be on block schedules in the 1995-96 school year.

Of the 63 schools on block schedules, 45 were in their first year of operation. Fifteen schools were in their second year of block scheduling and two schools had been on block schedules three or more years. Of the 63 schools on block schedules, 59 were using the 4 x 4 schedule. The other schools were using the Alternate Day (AB) schedule or some variation of the Alternate Day schedule.

Research Objectives

The first research objective was to document the impact that block scheduling was having on the conduct of the complete agricultural education program or programs that included FFA, SAE, and Classroom/laboratory instruction. Five questions were used to answer this question. These questions focused on course enrollments, FFA membership, instructional program quality, FFA and SAE program quality.

Figure 3. Block Schedule Status of Schools

Enrollment in agricultural courses has increased after the implementation of block scheduling. The mean number of students enrolled in agricultural courses prior to block scheduling was 93.2 students per school. After block scheduling was enacted, the average enrollment rose to 126.6, an increase of 33 students per program (see Figure 4). While enrollments in agriculture increased as a result of block scheduling, membership in the FFA did not. Also displayed in Figure 4, the average FFA membership per school prior to block scheduling was 68.4. After the implementation of block scheduling, the average membership was 70.4. The increased number of students who are taking agriculture are not FFA members.

Teachers were asked to rate the overall quality of the instructional program, FFA program and SAE program prior to and after the implementation of block scheduling. A 10 point Likert-type scale was used with 10 being excellent and 1 being poor. As shown in Figure 5, the rating of the instructional program was 7.4 prior to block scheduling and 7.53 after block scheduling. The teachers did not believe block scheduling had much impact on the quality of their instructional program.

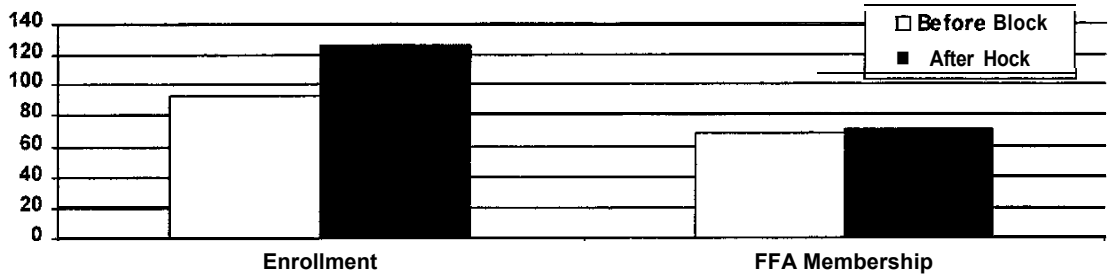

Figure 4. Mean Program Enrollments and FFA Membership Prior and After Block Scheduling

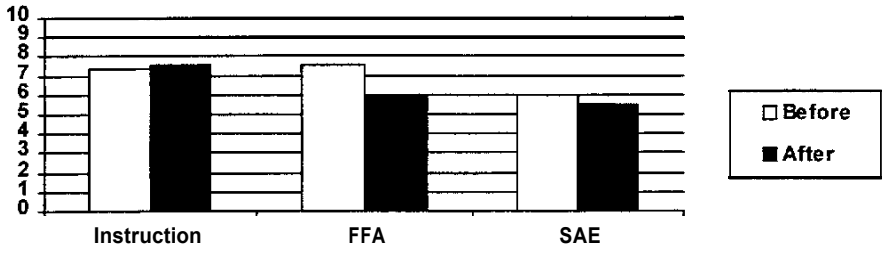

Figure 5. Program Quality Prior To and After Block

The item with the greatest change in relative scores was the FFA program. Prior to block scheduling the teachers rated their FFA program at 7.53. After block scheduling this rating had dropped to 5.95, a decline of nearly two points on a 10 point scale. Teachers believed block scheduling is having a negative impact on the FFA program.

There was a slight decline in scores on the SAE component of the program prior to and after block scheduling. The mean score prior to block scheduling was 5.95. The mean score was 5.49 after block scheduling. These data tend to reveal SAE is a weak component of the program, both before and after block scheduling.

The second research objective was to identify the attitudes of agriculture teachers toward block scheduling. An attitude score was calculated from responses to 28 items which were completed by the respondents. A Likert-type response scale was used with a 1 being strongly disagree and 5 being strongly agree. The responses were summed and averaged to give a mean attitude score. The scoring of the items on the instrument that were worded negatively were reversed in calculating the mean attitude scores. The overall mean attitude score was 3.22 on a 5 point scale. This score falls in the undecided range. The range of scores was from a mean of 4.1 to 2.25. A 4.1 score is "agree" and a 2.25 is near "disagree". Because the mean attitude score was near the midpoint of the scale, it was decided to divide the teachers into three attitude groups to get a better understanding of the attitudes of the teachers. Mean attitude scores above 3.25 were considered positive and mean attitude scores below 2.75 were classified as being negative. Scores falling in between were considered neutral. Attitude scores were calculated only on teachers who had been in the block schedule (see Figure 6).

There were more teachers (N=24) with a positive attitude (M>3.25) toward block scheduling than teachers (N=ll) with a negative attitude. (M<2.75). Twenty-one teachers were classified as having a neutral or undecided attitude (M=2.76-3.24) (see Table 1).

Responses to specific items on the attitude scale were examined to see which items might merit special attention. As displayed in Table 1, six attitude statements had mean ratings of 4.0 or higher. These statements were: Labs can be utilized more effectively under block scheduling (M=4.44), It is more difficult to operate the FFA program since we implemented block scheduling (M=4.13), Enrollment in Ag Ed classes has increased since we implemented block scheduling (M= 4.02), I have had to change my ways of teaching since we implemented block scheduling (M=4.02), I personally like block scheduling (M=4.00), and I have more planning time (M=4.00).

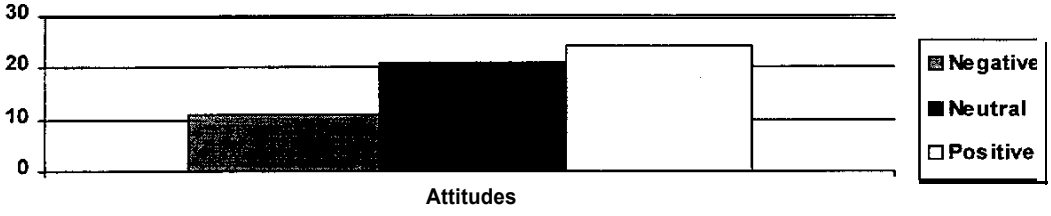

Figure 6. Overall Attitude of Teachers Toward Block Scheduling

There were six attitude items that had mean scores below 2.5 Teachers were in disagreement with the following statements: I have difficulty maintaining student interest for the entire period since we implemented block scheduling (M=2.48), It is easier to cover all of the competencies outlined in the course description under block scheduling (M=2.47), It is easier to develop an FFA Program of Activities under block scheduling (M=2.33), I have had more discipline problems in my class since we implemented block scheduling (M=2.30), Attendance for FFA chapter meetings has increased since block scheduling (M=2.25) and I would prefer to return to a more traditional schedule (M=2.18).

The third research objective was to identify "strategies that work" in instruction, FFA and SAE in schools where block scheduling is in operation. Respondents were asked to complete an open ended statement, suggesting block scheduling strategies that worked for them. Several strategies were repeated. The major points made by the respondents are summarized as follows:

Instructional

- "Break up each period with different activities. Spend part of the time doing class work followed by a practical activity or laboratory work. Some teachers recommend 1/2 of the time on class work and 1/2 the time on practical work while other teachers suggest dividing the class into three 30 minute segments with a different type of activity in each segment. Increase "hands on" activities."
- "Use a wide variety of teaching methods. Methods mentioned included lecture, board work, seat work, small groups, teams, peer teaching, cooperative learning, video, field trips, visiting speakers, team teaching, and use of labs."
- Provide a brief break half way through the period."
- "Prepare thoroughly for class. Use the VOCATS (state list of competencies to be taught in each course) blueprints to plan lessons."
- "Teach introductory or first level courses in the fall."

FFA

- "Publish an FFA newsletter or use bulletin boards to keep members informed of FFA activities. Some type of communication device will be needed to keep the FFA functioning."
- "Have plenty of officer meetings."

General

- "Be ready to try different things, i.e. different teaching methods, more small group work, communicate with news letters and electronically."

A number of points (not suggestions) were made by the teachers and some questions were raised. These comments are as follows:

Instructional

- "The VOCATS system needs to be revised to reflect 135 hours of instruction instead of 180."
- "Field trips (including club activities) are harder to get approved. Students are missing more information if they are gone for a day."
- "Budgets for supplies and materials need to be increased. You are teaching two years of courses in one year. There is an increased number of students."
- "Students may meet all graduation requirements by the junior year and not put much effort into classes the remainder of the time."

Table 1. Attitudes of Teachers Toward Block Scheduling

Attitude Statement	M	SD
Labs can be utilized more effectively under block scheduling.	4.44	.81
It is more difficult to operate the FFA program since we implemented block scheduling.	4.13	.95
Enrollment in Ag Ed classes has increased since we implemented block scheduling.	4.02	.92
I have had to change my ways of teaching since we implemented block scheduling.	4.02	.96
I personally like block scheduling.	4.00	1.10
I have more planning time.	4.00	.87
Block scheduling has been successful in my school	3.83	.97
Coordinating SAE visits are difficult when students are not in class.	3.75	.96
It is more difficult to prepare contest teams since we implemented block scheduling.	3.70	.83
Most of my students like block scheduling.	3.70	.88
I believe block scheduling is a better way to organize school time.	3.63	.95
Students can focus better under block scheduling because they have fewer courses.	3.47	.93
Higher quality students are now joining the FFA.	3.23	.88
My students are learning more since we implemented block scheduling.	3.22	.83
It is easier to teach SAE record keeping with the longer class periods.	3.21	.87
Student achievement has improved with block scheduling.	3.20	1.03
The quality of the students in the program has improved since we implemented block scheduling.	3.16	1.09
Students have difficulty sitting through the longer periods of block scheduling.	3.12	.97
It is more difficult for students to have a SAE program with block scheduling.	3.02	.98
Block scheduling allows students to have different types of SAE Programs.	2.85	.95
I worry that students don't learn as much as they did under a traditional schedule.	2.80	.92
More students are showing interest in the SAE program under block scheduling.	2.57	.92
I have difficulty maintaining student interest for the entire period since we implemented block scheduling.	2.48	.83
It is easier to cover all of the competencies outlined in the course description under block scheduling.	2.47	.97
It is easier to develop a FFA Program of Activities under block scheduling.	2.33	.97
I have had more discipline problems in my class since we implemented block scheduling.	2.30	.93
Attendance for FFA chapter meetings has increased since block scheduling.	2.25	1.13
I would prefer to return to a more traditional schedule.	2.18	1.12

The rating scale was 1 Strongly Disagree, 2 Disagree, 3 Undecided, 4 Agree and 5 Strongly Agree

- "Some biotechnology laboratories need to meet every day."

FFA

- How do you get students enrolled in agricultural education class for the second semester to pay FFA dues during the first semester? How do you maintain contact with students who were in agricultural education the first semester but not the second? Students may not want to pay dues during the second semester because they thii they will get only half the benefits."

- "There is not enough time for FFA activities. It is difficult to prepare for contests and events. The FFA will need to be altered."

Conclusions and/or Recommendations

Block Scheduling's Impact on Instruction. FFA. and SAE

Block scheduling is having an impact on the operation of the agricultural education program as nearly 75% of the programs are on or moving toward being on a block schedule. Block scheduling is resulting in increased number of students enrolling in agricultural education. Teachers perceive little difference in the quality of the instructional program but are having to plan more carefully and use a variety of teaching methods. This is not creating a major problem for teachers. It is recommended that:

- Teachers use a variety of teaching methods in each class period. Divide each class period into halves or thirds and use different teaching methods in each segment.

- Teacher education programs may need to conduct in-service refresher courses on teaching methodologies for the teachers.

Teachers rated SAE as a weak component of the agricultural education program before block scheduling was implemented and afterwards.. If agricultural educators believe SAE is important, this problem needs to be addressed.

Block scheduling is causing problems in the operation of the FFA program. The increased number of students taking agricultural education are not joining the FFA. It is harder to maintain FFA membership, communicate with FFA members: prepare career development teams, work with the FFA officers, and operate the other components of the FFA program. Changes will need to be made in the FFA program. Based upon the written responses and interviews, it is recommended that teachers:

+ Increase FFA program communications, i.e. publish an FFA newsletter, use bulletin boards, or electronic mail to keep members informed of FFA activities.

The umbrella FFA chapter concept may need to be revisited. The state leadership for agricultural education and FFA may need to take the lead in instituting state-wide changes in the operation of the FFA program. Some of the problems encountered in operating local FFA chapters are a result of state deadlines and procedures. The organization and operation of the FFA at the state level needs to be completely rethought. Some possible changes might include:

- Collect and submit FFA dues twice per year, once in the fall and once in the spring.

For years the FFA has operated on a school or calendar year paradigm. It is time to critically challenge that paradigm. Some career development events may have to be held twice during the year, once in the fall and once during the spring. If the purpose of the career development events is to provide motivation for students and reinforce what is being taught, then it would be logical to hold career development events to

coincide with how the instructional program operates in schools. The instructional program should drive the career development events, and not the other way around.

FFA chapters may want to consider having a fall set of officers and a spring set of officers. If one of the goals of the FFA is to develop leadership, then having two sets of officers during the year instead of one set of officers would further contribute to that goal. FFA chapters may want to consider having a fall set of officers and a spring set of officers.

Teacher Attitude

Agriculture teachers in North Carolina generally have a positive attitude toward block scheduling. The majority of the teachers who are on block schedules prefer to remain on block schedules. Block scheduling provides more opportunity for laboratory instruction, teaching more students, and enhances teacher planning time. Block scheduling results in a higher level of student disinterest when methods are not varied. Given a scheduling choice, teachers preferred the block schedule. Strategies suggested by innovative teachers demonstrate the feasibility of conducting quality agricultural education programs.

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