

STAGES OF CONCERN OF TEACHERS IN  
NORTH CAROLINA 4/4 BLOCK SCHEDULED  
PUBLIC SCHOOLS

by

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Dissertation submitted to the Faculty of the  
Virginia Polytechnic Institute and State University  
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

in

Career and Technical Education

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October 18, 2001

Blacksburg, Virginia

Keywords: Block Scheduling, Teachers, Stages of Concern, North Carolina

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(ABSTRACT)

As 4/4 block scheduling was implemented in North Carolina, many public schools offered staff development to help teachers make the transition from a six- or seven-period school schedule, but little is known about the staff development provided. The purposes of this study were to determine the Stages of Concern of North Carolina public school teachers related to 4/4 block scheduling, their perceived professional development needs, and the relationships among their Stages of Concern, professional development needs, and selected characteristics.

By calling each school district's central office, the researcher determined that 248 North Carolina high schools had implemented 4/4 block scheduling as of fall 1998. A list was developed of 73 schools that implemented block scheduling in the fall of 1996, 1997, and 1998. From this list, five schools were randomly selected for each of the three years, resulting in a sample of 15 schools. At each school, five teachers were selected from each of three teaching areas: academic, workforce development, and special subjects. Thus, of the 1086 teachers employed at the 15 participating schools, 225 teachers were included in the sample.

The questionnaire for this study contained three parts: (a) the Hall and Loucks (1979) Stages of Concern questionnaire, (b) a professional development needs section, and (c) a teacher characteristics section.

Results of the study indicated that the teachers were concerned about the success of students in the classroom and the impact of 4/4 block scheduling on their students. Consequence was the peak Stage of Concern for the largest percentage of responders, and collaboration was the peak for the second-largest percentage. Teachers with less experience had higher informational concerns than their peers with more teaching experience. On four of the nine professional development needs, more recent adopters of 4/4 block scheduling indicated significantly less need for professional development than those whose schools adopted this schedule in previous years. Thus, as teachers became more experienced with 4/4 block scheduling, they may have had problems that were unforeseen when this schedule was initially adopted. Implications for practice and further research based on the results of the study were suggested.

## DEDICATION

This dissertation is dedicated to:  
my mother, Ruth Palin Nourse, and  
my stepfather, the late Gy/Sgt. Harold Alley Nourse (USMC, Retired)

## ACKNOWLEDGEMENTS

Heartfelt gratitude is expressed to my committee members—Dr. Daisy Stewart, my chair; Dr. B. June Schmidt; Dr. Jimmie Fortune; Dr. Randy Joyner; and Dr. Bill Price. This committee has been invaluable in providing support and guidance throughout the process of completing this dissertation.

Dr. Marion Asche and Dr. James Hoerner provided valuable advice and served as mentors during completion of coursework at Virginia Polytechnic Institute and State University.

I am grateful for the support of my mother, Ruth Palin Nourse and my stepfather, Harold Alley Nourse. Their kindness and understanding has been invaluable.

Many thanks are expressed to Dr. Shelia Tucker, Dr. Lilla Holsey, Dr. Ivan Wallace, Mrs. Cynthia Smith, and Mr. Dave Parke for their support.

First Sergeant Lloyd Booker (United States Army Reserve) provided considerable career guidance and mentoring during the completion of this dissertation. Without his suggestion to “Be All I Can Be,” I would not have achieved this lifelong goal.

Finally, thanks to Krystie Grubb, Warren Slate, Dave Tuten, Bill Brande, and Don Westbrook. Your understanding has meant a lot!

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## CHAPTER 1

### Introduction

As a result of studies such as *A Nation At Risk* (National Commission on Excellence in Education, 1983), many reforms have occurred in secondary education (Jewell, 1998). These reforms were often intended to increase the number of math, science, and English courses required for a student to graduate from high school. Due to these increased graduation requirements in the secondary schools, there has been a corresponding reduction in the number of elective courses that secondary school students are able to take during their four-year course of study. Rettig and Canady (1996) noted this reduction, stating: "During the 1980s, graduation requirements in many states were increased to as many as 24 Carnegie units for an academic diploma. The six or seven period daily schedule left little room for electives in students' schedules" (pp. 8-9). Thus, the traditional schedule needed to be altered so that electives could be offered to students.

The traditional high school schedule has been altered in many cases (Canady & Rettig, 1993). One high school schedule that has been adopted is block scheduling (North Carolina State Department of Public Instruction, 1998a). The North Carolina State Department of Public Instruction defined block scheduling as a reorganization of school time that allows students to take four courses each semester in 90-minute class periods for a total of eight possible courses per year (Averett, 1994). The trend toward the implementation of block scheduling has surfaced in part due to many states increasing the number of courses required for a student to graduate from secondary school.

### The History of Scheduling in American Schools

Historically, the study of how American schools schedule their courses is almost as old as the nation itself. For instance, Mann (1928) noted that by 1775, the curriculum of the three Rs--reading, writing, and arithmetic--was firmly established in the elementary schools. Mann reported that by 1826, the standard curriculum of the public schools was "given over almost exclusively to the three Rs" (Mann, 1928, p. 14). Mann (1928) also stated that out of 1800 minutes per week available for instruction in 1826, 1650 minutes were devoted to these basic subjects, with the remainder allocated to recess. As the United States progressed from an agrarian economy to the present-day service-based economy, the public schools changed to meet the public and private needs of the nations' citizens (Spring, 1985). Indeed, Spring stated that one of the purposes of school was to function as a "socializer for an industrial society" (Spring, 1985, p. 17). According to Spring (1985), the socializing function of schools was exemplified in such commonplace school activities as walking in an orderly fashion when students were entering and exiting the school building. These orderly school activities modeled the orderliness that workers demonstrated on factory assembly lines. Further, as the workplace changed, schools changed. For example, Spring (1985) indicated that schools had made their schedules more flexible. These flexible schedules modeled changes in the workplace such as allowing workers

to choose their own schedules (Jewell, 1998). Thus, public schools have changed their schedules so that the needs of society could be achieved.

### The Carnegie Unit and Its Effect on Scheduling

One of the changes to scheduling of courses in United States public schools was established by the Carnegie Foundation for the Advancement of Teaching during the early 1900s (Maeroff, 1994). The Carnegie Foundation for the Advancement of Teaching established 14 standard units of credit that were necessary to prove a student was prepared to enter postsecondary schools (Maeroff, 1994). Each Carnegie unit represented about 130 instructional hours of seat time (Maeroff, 1994). In 1907, the Carnegie Foundation for Advancement of Teaching made available a new faculty pension fund to those colleges that endorsed the 14 Carnegie unit requirement--virtually guaranteeing nationwide acceptance of the Carnegie unit as an indicator of a student's preparation for postsecondary education (Maeroff, 1994). The Carnegie Foundation for the Advancement of Teaching succeeded in creating a nationwide change to a standardized number of courses required for graduation--measured by a student's seat time in classes.

### Change in the 1980s

During the 1980s, many state boards of education considered raising the number of Carnegie units required for a student to earn a high school diploma. For example, North Carolina required 21 Carnegie units for a high school diploma during the early 1980s (Averett, 1994). However, by the early 1990s, the North Carolina State Board of Education required 24 Carnegie units (Harter, 1994). Rettig and Canady (1996) and Jewell (1998) found that many other states also raised the Carnegie unit requirements for a high school diploma during the late 1980s. This increase in required courses often caused a decline in student enrollment in elective courses (National Center for Education Statistics, 1996). Thus, secondary school students were taking more core courses and taking fewer workforce development courses and other electives. For example, by February 1991, North Carolina had officially increased its requirements from two courses to three courses in each of three academic areas: mathematics, science, and social studies (Harter, 1994). The increase in core courses, plus three required English courses and a one-unit physical education requirement totaled 13 required courses. The increase in required courses from 10 credits to 13 credits out of 24 possible credits reduced the number of electives a student could take during the typical four-year high school course of study from 14 credits to 11 credits (Harter, 1994).

### The Effect of Increasing Enrollment in Core Courses

The reduced student enrollment in fine arts and workforce development courses placed some high schools in danger of losing workforce development teaching positions--thereby eliminating the choice of a workforce development elective for students (Harter, 1994). As a result of the need to meet increased Carnegie unit requirements, many North Carolina public high schools adopted 4/4 block scheduling. The 4/4 block schedule was designed to allow students to meet daily for only four periods which were longer than the traditional six-or-seven period, 50-minute classes. In this plan, four courses can be completed each semester, resulting in students earning a maximum of 32 credits in four years.

## Professional Development and Block Scheduling in North Carolina

The need for professional development for teachers has been widely accepted (Williams, 1978). Yet, professional development needs of teachers cannot be predicted until teachers are aware that they need knowledge or skills that they do not possess (McLaughlin & Marsh, 1978). Further, the needs and concerns of teachers change over time (Hall & Loucks, 1978). These changes in needs may have occurred to teachers in North Carolina 4/4 block scheduled schools. Averett (1994) and Jewell (1998) addressed teachers' involvement with block scheduling; however, these studies did not address specific professional development needs of teachers in 4/4 block scheduled schools.

The Averett (1994) study was conducted in the spring of 1994 for the North Carolina State Department of Public Instruction. Its purpose was to determine the status of implementation of 4/4 block scheduling as of 1994, the strengths and weaknesses associated with 4/4 block scheduling, and to list policy issues requiring further study (Averett, 1994). Averett (1994) contacted all 255 high schools in North Carolina and determined the year that each school implemented 4/4 block scheduling. Surveys were then mailed to 600 teachers and 643 students. Averett did not discuss the method of sampling in the study. Averett (1994) found that 67.3% of North Carolina public high school teachers were involved in the decision to adopt block scheduling at the beginning of the adoption process. Additionally, 92.1% of these teachers thought they were adequately trained to teach in a block schedule. Yet, Averett (1994) indicated that there was a lack of professional development about 4/4 block scheduling. The author based his assumption on the following findings: (a) teachers worried about the pacing of instruction after adopting block scheduling (49%), (b) teachers changed their ways of teaching after adopting block scheduling (60%), and (c) teachers were having problems implementing block scheduling in the classroom (16.1%). Specific problems mentioned were (a) that teachers were having trouble maintaining interest, (b) that teachers were having trouble covering the material required by the State Department of Public Instruction, and (c) that the students did not have enough time to understand the material.

While Averett's study indicated that professional development was offered to many secondary school teachers in the North Carolina public high schools, some changes could have been made concerning the types of professional development offered. Perhaps if more was known about the concerns of teachers at different stages in the implementation of block scheduling, professional development for 4/4 block scheduling could be more effective.

North Carolina marketing teachers also indicated that they received professional development concerning 4/4 block scheduling. Swope, Fritz and Goins (1998) surveyed 114 North Carolina marketing education teachers on learning and teaching, program management, Vocational Student Organizations and school-to-work and how they were affected by 4/4 block scheduling. The results were discussed without showing descriptive statistics. Swope, Fritz and Goins (1998, p. 37) found that North Carolina marketing teachers were "comfortable with the way they conduct classes." According to Swope, Fritz and Goins (1998), marketing teachers also indicated that they received staff development concerning 4/4 block scheduling. Yet, no data were available as to what types of preparation were given or if this preparation addressed specific concerns of teachers.

## Theoretical Base

The following section describes the theoretical base that underlies this study of the adoption of the innovation of 4/4 block scheduling in the state of North Carolina.

### Stages of Concern Theory

Persons affected by an innovation are faced with different concerns over time. These concerns or stages are exemplified by the Stages of Concern model (Hall & Loucks, 1979). It is normal for teachers to have concerns in more than one of these stages; however, at any given time, one stage may have more importance than another (Persichitte, Bauer, & Salazar, 1996). Respectively, these stages are: (a) awareness, (b) informational, (c) personal, (d) management, (e) consequence, (f) collaboration and (g) refocusing. A brief discussion of each of these stages follows.

Stage 0--Awareness. At the awareness stage, an individual's concerns are unrelated to the innovation (Kimpston & Anderson, 1988). Thus, teachers may not be aware of the innovation. It is also possible that teachers with stage 0 concerns may be aware of the innovation but unconcerned about it.

Stage 1--Informational. At the informational stage, teachers express (a) interest in an innovation and (b) desire to learn about an innovation. Teachers may experience informational concerns prior to adoption of 4/4 block scheduling at their school.

Stage 2--Personal. At the personal stage, teachers are concerned with how they will be affected by the innovation (Kimpston & Anderson, 1988). Thus, the teacher who is facing implementation of block scheduling may be wondering how to adapt lessons from a 50-minute traditional six-or seven-period day format to a 90-minute, 4/4 block scheduled format.

Stage 3--Management. At the management stage, teachers are concerned with gathering data and implementing the innovation efficiently. This phase may actually occur during the implementation of block scheduling--at the same time that classes are being scheduled and students are being enrolled in 90-minute block-scheduled classes.

Stage 4--Consequence. At the consequence stage, the teachers are concerned with how the innovation will impact students (Kimpston & Anderson, 1988).

Stage 5--Collaboration. At the collaboration stage, teachers cooperate with each other and share information about the innovation.

Stage 6--Refocusing. At the refocusing stage, teachers find methods to improve the innovation or suggest a better innovation (Kimpston & Anderson, 1988). Or, the adopters may reinvent the innovation so that it best suits the organization (Rogers, 1995).

As is shown in stages 0 through 6 listed above, persons experiencing the implementation of an innovation at first express little concern for the innovation (Kimpston & Anderson, 1988). This is followed by a stage in which individual concerns are mainly about the innovation's personal impact upon the teacher. Gradually, the concerns begin to shift toward how best to implement an innovation. In the final stages of implementation, the person adopting an innovation is concerned with how the innovation impacts others (Kimpston & Anderson, 1988). In designing the Stages of Concern instrument, Dr. Hall intended to measure varying degrees of apprehension related to adoption of an innovation. Each of the seven Stages of Concern

(awareness, informational, personal, management, consequence, collaboration, and refocusing) was designed to measure a different type of apprehension about an innovation. Thus, higher mean scores indicate higher levels of apprehension.

At each stage of the Stages of Concern model, the professional development needs of teachers in block-scheduled high schools differ. Many programs may fail without teacher training and support (McKay & Nelson, 1980). Therefore, it is important to know which stage teachers are experiencing so that meaningful and effective professional development programs for 4/4 block scheduling can be implemented.

### The Four Types of Block Scheduling

As mentioned previously, many North Carolina public high schools have adopted block scheduling--a change from the normal six-or seven-period school day to one of several different scheduling models. While there are many different scheduling models, Rettig and Canady (1996), found that four basic models are used most often: (a) the alternate day schedule, (b) the 4/4 semester plan, (c) the trimester plan, and (d) reconfiguration of the school year. Each model of block scheduling is discussed in the paragraphs below.

#### Alternate Day Schedule

Schools that utilized the alternate day schedules arranged them so that students had a different set of classes every other day for blocks of time longer than the traditional class (Rettig & Canady, 1996). Certain classes, for instance, may have met on a Monday, Wednesday, and Friday schedule while other classes would have met on a Tuesday and Thursday schedule. Typically, the schedule was arranged so students had the same number of contact hours per week regardless of when the course met. The number of credits per year attainable by students who participated in an alternate day schedule varied based on whether six courses, seven courses, or eight courses per week were offered (Canady & Rettig, 1996).

#### 4/4 Semester Plan

Schools that utilized the 4/4 semester plan arranged for students to meet for 90 minutes per day for 90 days. Students under the 4/4 semester plan enrolled in four courses per 90-day term and received credit for a year-long course in a semester's time (Rettig & Canady, 1996). The benefit of the 4/4 semester plan was that students received eight credits per year toward a diploma instead of six or seven credits per year under a traditional schedule.

#### Trimester Plan

In the trimester plan, students took between two and three courses every 60 days. This allowed students to earn six to nine credits per year (Rettig & Canady, 1996). A period under the trimester plan varied between 140 and 150 minutes long--depending upon whether year-long skills-dependent courses, such as band, were added into the schedule (Canady & Rettig, 1996).

#### Reconfiguration of the School Year

Reconfiguring the school year utilized many different schedules that divided the regular 180-day school year into a combination of long and short terms (Rettig & Canady, 1996). Essentially, each school system customized its schedule to meet the unique requirements of the school, the students, and the local community.

## Adoption of 4/4 Block Scheduling by North Carolina Public Schools

Many North Carolina public schools adopted 4/4 block scheduling during a relatively short period of time (Averett, 1994). For example, while only 1% (3 schools) of North Carolina public high schools implemented a block schedule in the 1992-1993 school year, almost 10% were block scheduled in the 1993-1994 school year (North Carolina State Department of Public Instruction, 1998a), and 38% were block scheduled by the 1994-1995 school year (Averett, 1994). By the 1995-1996 school year, 56% of North Carolina public high schools had adopted 4/4 block scheduling (North Carolina State Department of Public Instruction, 1997). Goins and Swope (1997) reported that by the 1996-1997 school year, 70% of the North Carolina public high schools were using block scheduling. Thus, North Carolina public high schools adopted block scheduling exponentially for the first few years of adoption--followed by a gradual reduction in the yearly rate of adoption. The reason for this sudden increase in block scheduling adoption by North Carolina public high schools appeared to be the increase in graduation requirements for secondary students by the North Carolina State Board of Education (Averett, 1994). The North Carolina State Board of Education, which increased the graduation requirements, may have indirectly caused changes in the school schedule.

The largest percentage of North Carolina public high schools adopted the 4/4 block scheduling plan (Averett, 1994). Averett (1994) used a survey form in which responders were to mark more than one response. Findings of the Averett study included the following: (a) the 4/4 semester plan was used by 64% of the responders to the survey, (b) summer school was offered for either remediation or for initial credit by 40% of responders, and (c) 34% of responders used some form of extending the school day (Averett, 1994). Because responders were able to mark more than one response, the results of the Averett (1994) study were not cumulative. Jewell (1998) found that there was a trend toward a 4/4 block scheduling model whereby schools used a 90-minute block schedule with four classes per day. From the results of the Averett study and the Jewell study, it appeared that in the North Carolina public high schools, 4/4 block scheduling was becoming the most common scheduling model.

### Local Decision Making

According to Averett (1994), the most common party responsible for initiating the change to block scheduling in the North Carolina public schools was the principal (42.4%). The second most common party responsible for initiating the change to block scheduling was a school-based committee of teachers (36.2%) (Averett, 1994). The local school board initiated the change to block scheduling only 2.1% of the time (Averett, 1994). While it was apparent that the decision to change to block scheduling was made at the local level, little was known concerning the professional development that took place regarding block scheduling in the North Carolina public schools. As evidenced by the Averett (1994) and Goins and Swope (1997) studies, professional development was conducted to assist teachers with the transition from a traditional six-or seven-period day to a 4/4 block schedule. However, Averett (1994) also found that 34% of teachers felt they could have used more professional development prior to the implementation of 4/4 block scheduling in the North Carolina public high schools.

### Teacher Input into Decision Making

In the North Carolina public schools, 67.3% of teachers surveyed indicated that they participated in the decision-making process concerning block scheduling from the beginning of

the block scheduling adoption process until implementation of block scheduling (Averett, 1994). Responders who were not involved in this initial decision-making process were given the option to be involved in later decisions concerning block scheduling (Averett, 1994).

### The Role of Teachers in the Implementation of 4/4 Block Scheduling

Teachers must take a “responsible role in shaping the purposes and conditions of schooling” (Giroux, 1993, p. 275). For instance, some educational professionals have indicated that teachers must be given more voice in the adoption process of all new technologies affecting the public schools. Shedd and Bacharach (1991, p. 7) stated that "If teachers have no influence with administrators who fear that their bureaucratic turf is being invaded, the workers and managers of tomorrow will never develop norms of participation within their organizations." Thus, a teacher who does not feel empowered in the workplace may be unable to empower students to become autonomous, independent learners. The idea of teacher empowerment is best exemplified in the phrase “educational change depends on what teachers do and think...” (Fullan, 1982, p. 107). As schools become more autonomous and independent from state control, it appears teachers could become even more involved in decision-making areas such as the adoption of block scheduling. If so, there may be a need to understand the decision-making needs and concerns of teachers undergoing a change from a traditional schedule to a 4/4 block schedule. Perhaps professional development programs play a role in fostering effective decision-making by teachers.

To implement useful professional development efforts, school administrators and other leaders should be informed about the relevant concerns of teachers. Hall and Loucks (1979) proposed a Stages of Concern model which was comprised of seven Stages of Concern: (a) awareness, (b) informational, (c) personal, (d) management, (e) consequence, (f) collaboration, and (g) refocusing. At each level of concern, the professional development needs of teachers differ. The Stages of Concern of North Carolina secondary school teachers and their professional development needs were not known at the time this study was conducted.

### Statement of the Problem

Innovations succeed or fail at the classroom level (McLaughlin, 1991), and educational innovations are more successful when professional development addresses the individual concerns and beliefs of teachers (Everhart, 1995). The 4/4 block schedule has been adopted by many schools in North Carolina (Averett, 1994). Thus, if 4/4 block scheduling is to be successful in the North Carolina public schools, then professional development that addresses the concerns of teachers should be provided. Prior to this study, research had not been done to examine the concerns of teachers about 4/4 block scheduling. Information about the concerns of teachers regarding 4/4 block scheduling could assist in the design and implementation of professional development programs for classroom teachers in the North Carolina public schools--thereby increasing the effectiveness of instruction to secondary school students. While several studies had indicated that professional development had been offered to teachers in 4/4 block scheduled high schools in North Carolina, no one had previously performed an analysis based on the Stages of Concern. This study was done to examine the Stages of Concern and perceived professional development needs in North Carolina 4/4 block scheduled public schools.

## Research Questions

The following research questions were addressed in this study:

1. What were the indicated Stage-of-Concern levels regarding 4/4 block scheduling of selected teachers in North Carolina 4/4 block scheduled schools?
2. Were there differences in the teachers' Stages of Concern when grouped by their: (a) selected characteristics and (b) years of adoption?
3. What were the perceived professional development needs regarding 4/4 block scheduling of selected teachers in 4/4 block scheduled schools?
4. Were there differences in the teachers' professional development needs when grouped by their: (a) selected characteristics and (b) years of adoption?
5. Were there differences among the teachers' professional development needs when grouped by their primary Stages of Concern?

## Methodology

This study utilized the Stages of Concern questionnaire, an instrument designed in 1974 by Hall and Loucks (Hall, George, & Rutherford, 1986). According to Long (1994), who used the Stages of Concern model to study tech prep programs in Virginia, previous research had indicated that the Stages of Concern instrument was reliable and valid. For instance, in 1974, a pilot study using 27 university professors was conducted (Hall, George & Rutherford, 1986). These 27 persons' scores were compared to the Stages-of-Concern ratings assigned to them by trained employees of the Concerns-Based Adoption Model (CBAM) project. The multiple R between actual scores and rated scores was .58. In 1976, a pilot study of 830 educators found that the alpha coefficients of internal consistency ranged from .64 to .83 with six of the seven coefficients above .70 (Hall, George & Rutherford, 1986).

Two additional sets of questions were combined with the Stages of Concern questionnaire. The first set was adapted from a study by Linnell (1991), and those questions collected demographic data for North Carolina teachers in 4/4 block scheduled high schools. The second set of questions was developed by the researcher to address the professional development skills perceived as needed by teachers. As the questionnaire included three parts, it was possible that reliability and validity were affected. Thus, the instrument was reviewed for validity by educators familiar with block scheduling and survey research.

## Definition of Terms

For clarification of specific terms used in this research, the following words were defined:

A block schedule is a schedule in which students meet for four 90-minute class sessions per day instead of the traditional six- or seven-period day. Although there are other alternate school schedules, for the purposes of this study, block schedule refers to the schedule using four 90-minute courses per day. This schedule is also known as the 4/4 block schedule.

The term career and technical education refers to education designed to prepare a student for employment. In some instances, the term vocational education or workforce development education may be substituted for the term career and technical education.

A Carnegie Unit is a standardized unit of study established by the Carnegie Foundation for the Advancement of Teaching. The Carnegie unit has been used to measure the amount of instruction to which a high school student has been exposed in a given content area. The completion of a certain number of Carnegie units by a secondary school student did not connote mastery of content knowledge--only time that a student has been exposed to the material.

A core course is a class that is intended to be successfully completed by all students in the secondary schools. These core courses vary depending on the interests and abilities of students and the requirements mandated at the state and local level.

The term diffusion is used by Rogers (1995) to describe the adoption of an innovation by increasing numbers of people within a segment of a population.

An innovation is any resource that is perceived as better than a prior resource by the user. An innovation may take the form of hardware (tangible, physical objects manipulated by the user) or software (ideas or instructions which either assist in the use of an innovation or are used as an innovation) (Rogers, 1995). The innovation does not have to be new to society—just new to the culture being studied. Further, innovations can have desirable or undesirable consequences for cultures, organizations, and individuals (Rogers, 1995).

The Stages of Concern is a model comprising seven stages that are experienced by persons implementing an innovation. These stages are (a) awareness, (b) informational, (c) personal, (d) management, (e) consequence, (f) collaboration, and (g) refocusing (Hall & Loucks, 1979).

The term vocational student organization is used interchangeably with the term career and technical student organization by the North Carolina State Department of Public Instruction (2001) on their website. Both terms refer to student organizations intended to supplement classroom instruction in workforce development courses. It appears that the term vocational student organization is being changed to career and technical education in North Carolina.

The term workforce development is used in North Carolina to describe courses or programs that prepare students for specific careers. Other states may use terms such as vocational education and career and technical education—both of which indicate a student's preparation for work. When referencing earlier literature, this researcher always used the term contained in the source. For example, Dennison (1993), used the term vocational to describe courses that prepare students for employment, so that term is used when referring to Dennison's study.

#### Delimitation of the Study

The study was delimited to secondary school teachers in North Carolina high schools that have used a 4/4 block schedule.

#### Limitation of the Study

A sample of 15 schools was randomly selected from the total population of schools that adopted block scheduling between 1996 and 1999. These schools were stratified based upon the year when they adopted 4/4 block scheduling. The 1999-2000 school year was omitted because the year was not completed at the time the pilot study was initiated. Results were obtained via a mailed survey; thus, the primary elements of the study were self-reported. A limitation is that the responders to this study may not have been familiar with the terminology used within the survey instrument.

During the process of calling each school district, it became evident in North Carolina that the more urban school districts have not adopted 4/4 block scheduling as frequently as the more rural school districts. Thus, rural schools had a higher probability of being included in the sample.

### Summary

This chapter contains the background information for this study—including the history of scheduling in American schools, the effect of the Carnegie unit upon American public schools, the increase of Carnegie units required during the 1980s, and the resulting trend toward block scheduling in North Carolina. The researcher found few studies of professional development that related to block scheduling. No studies related to the concerns of teachers in 4/4 block scheduled North Carolina public schools were identified. The purposes of this study were to determine the Stages of Concern of teachers in 4/4 block scheduled schools, their perceived professional development needs, and the relationships between the Stages of Concern, professional development needs, and selected teacher characteristics. Hall and Loucks' Stages of Concern provided the theoretical framework for this study.

### Organization of Dissertation

This dissertation is presented in five chapters. Chapter 1 contains the definition of the problem of the study and statement of research questions. Chapter 2 contains the review of the related literature. In Chapter 3, readers will find information related to the research study design, methodology, data collection procedures, and analysis of data. Chapter 4 contains the discussion of results and data analysis. Chapter 5 contains conclusions and recommendations developed from the findings.

## CHAPTER 2

### Review of Literature

This study was an analysis of teachers' concerns and perceived needs for professional development in 4/4 block scheduled high schools in North Carolina. The literature search was conducted using Virginia Polytechnic Institute and State University's library, East Carolina University's library, and the World Wide Web. This literature review was divided into four main sections: (a) the theoretical base (Hall and Loucks' Stages of Concern), (b) professional development and its use in education, (c) professional development in 4/4 block scheduled schools, and (d) various aspects of secondary education that were affected by 4/4 block scheduling.

#### Theoretical Base

The theoretical base of this study was provided by the Stages of Concern model (Hall & Loucks, 1979). This section includes a description of the model and previous studies in which it was used.

#### Stages of Concern Model

Persons affected by an innovation are faced with different concerns over time (Hall & Loucks, 1979). These concerns are exemplified by the Stages of Concern model. It is normal for individuals to have concerns in more than one of these stages; however, at any given time, one stage may have more importance than another (Persichitte, Bauer, & Salazar, 1996). These stages in the model are: (a) awareness, (b) informational, (c) personal, (d) management, (e) consequence, (f) collaboration and (g) refocusing. Each of these stages is described in more detail in the following paragraphs, and they are discussed as related to teachers' concerns.

Stage 0--Awareness. During the awareness stage, teachers may not be aware of the innovation. Further, teachers at stage 0 who are aware of the innovation are often unconcerned about it. Examples of teachers who may be experiencing the awareness stage even after 4/4 block scheduling adoption include: (a) beginning teachers and (b) lateral-entry teachers (persons with a baccalaureate degree who do not have certification yet are pursuing certification while working as a teacher).

Stage 1--Informational. At the informational stage, teachers become willing to learn more about an innovation. Within any organization, the interest about a particular innovation varies based upon the individual. Some individuals will be proponents of the innovation and actively seek information. Others may attempt to ignore the innovation or resist its implementation (Rogers, 1995).

Stage 2--Personal. At the personal stage, teachers are interested in how they will be affected by the innovation. For many teachers, the personal Stage of Concern may have occurred during the time that the teachers were notified that their individual school was making the change from a traditional six-or seven-period day to a 4/4 block schedule. Beginning teachers and lateral entry teachers may become aware of 4/4 block scheduling during routine activities associated with teaching (workshops, conversations with colleagues and parents, and inservice education experiences).

Stage 3--Management. At the management stage, teachers gather data about the innovation and are interested in how the innovation can best be implemented. This phase may actually occur during the implementation of block scheduling--at the same time that classes are being scheduled and students are being enrolled in 90-minute block-scheduled classes. Each teacher may experience the management stage differently. For example, a veteran teacher may have experienced the awareness stage and moved through the informational stage over a period of several years. Thus, veteran teachers may have given some thought concerning how lessons should be planned for the 90-minute, 4/4 block schedule format. However, a beginning teacher or a lateral entry teacher may have to confront the awareness, informational, personal, and management stages simultaneously. Interim teachers—those hired on short notice to act as long-term substitutes for teachers taking maternity leave, leave due to illness, or a sabbatical—may also have to deal with multiple stages.

Stage 4--Consequence. The consequence stage usually occurs after the school has attempted implementing the innovation. During the consequence stage, teachers are no longer interested in how the innovation affects them. Instead, teachers are concerned with how the innovation will impact students. Thus, a teacher at this stage in the implementation of block scheduling is probably comfortable with the time frame--but may be worried about student achievement. Teachers often modify the innovation during the consequence stage to fit their individual needs. Often, both the organization and the individuals change during the innovation process (Rogers, 1995).

Stage 5--Collaboration. At the collaboration stage, teachers cooperate with each other and share information about the innovation. In the North Carolina public high schools, collaboration may have occurred after block scheduling had been implemented and teachers became comfortable with teaching in 90-minute blocks of time. Teachers in the collaboration stage seek their peers' advice concerning methods of increasing student achievement. Also, teachers experiencing collaboration concerns share with other teachers lesson plans and ideas that have worked in their individual classrooms.

Stage 6--Refocusing. During the refocusing stage, teachers weigh the costs and benefits of the innovation and may decide to use alternatives that work even better. Or, as Rogers (1995) indicated, the adopters may reinvent the innovation so that it best suits the organization. For example, the teachers may decide that some courses offered may actually be better organized under a traditional year-long, 50-minute schedule. This traditionally-scheduled course may be offered at a set time frame in the morning or afternoon so that the traditional course does not interfere with other block-scheduled courses. Or, teachers using the cooperative method of instruction may offer both morning and afternoon cooperative education periods so that students may be able to be present for chosen 90-minute, 4/4 block scheduled courses. Teachers' Stages of Concern will vary as 4/4 block scheduling continues to be implemented in North Carolina. Professional development programs based on teachers' concerns may help teachers to more effectively implement 4/4 block scheduling in their classrooms.

#### Prior Studies Associated with the Stages of Concern Model

The Stages of Concern model has an extensive history of use in education. For instance, Dennison (1993) used the Stages of Concern model to study concerns of secondary and postsecondary vocational and academic educators as related to technical preparation (tech prep)

education programs. Dennison surveyed 541 vocational and academic educators employed by one of the six technical education consortiums in the state of Missouri. Dennison contacted the six consortium tech prep coordinators and obtained the names and addresses of the following personnel from each consortium: vocational educators, academic educators, guidance counselors, and administrators. The entire population of one consortium (N=541) was surveyed. While 353 consortium members responded, only 299 were useable due to missing values in the responses to the 35 questions on the Stages of Concern instrument. The author found that both academic educators (mean = 20.68) and vocational educators (mean = 20.45) had higher mean scores for the informational Stage of Concern. Vocational educators (mean = 23.46), academic educators (mean = 21.00), and guidance counselors (mean = 17.61) had higher mean scores for the personal Stage of Concern. Further, vocational educators (mean = 16.61) also had higher mean scores for the management Stage of Concern. Finally, administrators (mean = 25.55) had higher mean scores for the collaboration Stage of Concern. These scores in the seven Stages of Concern were not mutually exclusive, in that most of the responders had some measurable score in each Stage of Concern.

Long (1994) also examined the implementation of tech prep programs in Virginia using the Stages of Concern model. Long surveyed 322 administrators, academic teachers, vocational teachers, and guidance counselors. Analysis of data was performed using chi-squares. The author found that vocational teachers and counselors showed higher ratings in the awareness Stage of Concern for tech prep than administrators and academic teachers. Thus, vocational teachers and counselors were more knowledgeable about tech prep programs—possibly because tech prep directly affected these two areas. All four groups (academic teachers, administrators, vocational teachers, and academic teachers) had higher ranks in the personal stage and lower ranks on the awareness and informational stages. The higher rankings of teachers and administrators may have occurred because many of the responders were concerned with implementing tech prep at their individual schools. Thus, teachers who have more experience with an innovation may have different concerns from teachers who have less experience with an innovation.

Kirby and Smith (1998) used the Stages of Concern model in their analysis of the Stages of Concern for school-to-work transition among teachers and administrators in North Carolina. Kirby and Smith surveyed a representative sample of 1200 North Carolina academic teachers, superintendents, vocational teachers, vocational directors, principals, assistant principals, and guidance counselors. Analysis of results was performed by multivariate analysis of variance (MANOVA) and analysis of variance (ANOVA) statistical techniques. The authors found that at the time the study was conducted, educators were more concerned with the awareness, informational, and collaboration stages. This concern over the awareness, informational and collaboration stages indicated that all groups were actively seeking information and were sharing information collaboratively. Possibly, the school-to-work transition program had been in effect for a few years—thus the participants of the Kirby and Smith study had resolved personal concerns. Based upon their research, the authors concluded that involvement of educators at all levels was important to the success of school-to-work. Kirby and Smith also suggested that more information should extend to the practitioner level in order for the innovation to succeed. It is possible that teachers in schools where an innovation is recently adopted will have different concerns from teachers in schools where the innovation is more established.

In their study of teacher concerns about microcomputer use in the classroom, Cicchelli and Baecher (1989) utilized the Stages of Concern model to survey 78 teachers in a large metropolitan city. All 78 subjects completed the Stages of Concern survey at the same time and in the same location. The authors found that most teachers surveyed scored highest in the awareness, informational, and personal stages of their concerns related to computer use. According to Cicchelli and Baecher, the findings indicated that teachers were most likely non-users of microcomputers. However, the teachers were concerned about how microcomputers were going to affect them personally, and the teachers were gathering information about the innovation. Therefore, teachers with less experience about an innovation may have different awareness, informational, or personal concerns from teachers who are more experienced with an innovation.

### Professional Development and its Use in Education

Researchers continually discover new knowledge about learning and teaching. As the knowledge base grows, educators should be made aware of these changes—necessitating professional development (Guskey & Huberman, 1995). Guskey and Huberman found that there was considerable variation among the opinions of researchers concerning the professional development of teachers. Some researchers indicated that the best way to provide professional development is to concentrate upon generic professional development programs that reach large groups of teachers relatively inexpensively. Still others reported that any meaningful professional development programs must focus upon the individual needs and concerns of teachers. This study focused upon the needs and concerns of individual teachers.

#### Professional Development of the Individual Teacher

Everhart (1995) used a combination of qualitative and quantitative research methods to assess the views of selected participants of the North Carolina Project for Reform in Science Education—a component of the National Science Teachers Association’s Scope, Sequence and Coordination (SS&C) program. The sample consisted of six purposively selected volunteer teachers attending the 1994 North Carolina (NC) SS&C program, 104 past participants of that program, and four administrators of the program. The past participants completed a survey that contributed to quantitative data collection, while the purposively selected teachers and administrators participated in interviews and focus groups—thus providing qualitative data. The focus groups answered questions related to seven belief statements derived from analysis of the NC SS&C program. These belief statements follow:

Staff development is an intentional process directed at affecting specific changes. The research staff of the NC SS&C program believed it was important to assist teachers to understand the overall philosophy of the two-week inservice program—and not just see it as a new way to teach the same old content. One teacher who was very negative about the staff development program at the onset began to believe the methods demonstrated at the NC SS&C workshop would be of benefit to students. Research staff stated that this teacher was more receptive to trying new teaching strategies by the end of the program (Everhart, 1995). Thus, Everhart (1995) found that staff development tends to be more successful if specific changes are emphasized.

Continuous, multi-directional communications are essential for successful initiation and implementation of change. Trainers at the NC SS&C program stated that learning was a social act. Thus, learning was facilitated if teachers interacted with other teachers as well as staff

members. The researchers found that if social interaction between teachers was reduced, learning was limited to only the content that was presented by staff members (Everhart, 1995). The findings from focus group data revealed that teachers (a) learned more and (b) were more receptive to learning when NC SS&C staff addressed their concerns. The teachers believed they learned more because the NC SS&C staff was interested in the learning of teachers. Further, the teachers believed they had some control over the content covered. This can best be summarized by the quote from an eighth grade teacher who said “It’s our program because we have a say in what’s going on” (p. 136).

Staff development should model desirable behaviors that are to be applied in the classroom. The four NC SS&C administrators interviewed stated that the program was specifically designed to model appropriate teaching behaviors in the classroom. Focus group data revealed that teachers participating in the program stated that the modeling of teaching strategies helped make the material more transferable to their own classrooms. Modeling also alleviated concerns about implementing innovations in the classroom (Everhart, 1995).

In order for change to occur and be sustained over time, teachers must value and willingly engage in reflective practices. Everhart (1995) found that if staff developers did not align current teaching practices with the new innovation, the teachers participating in the program simply tolerated the instruction. However, the teachers were not likely to put any new innovations into practice unless they were allowed time for reflection and discussion with peers. Thus, staff members found that they had to allow teachers to reflect how innovations fit into the ways that the schools operated and the teachers’ day-to-day activities. Also, teachers were encouraged to freely share ideas as to how they would implement the NC SS&C methods into their classrooms. The staff who were interviewed at the NC SS&C program felt that because teachers commonly worked in isolation, they would not have an opportunity to share ideas after they were finished with the NC SS&C program. Thus, administrators of the NC SS&C program believed that allowing reflection by teachers during the NC SS&C program was the best way to ensure classroom implementation of innovations.

Effective staff development is grounded in the practice of its participants and knowledge of the work place. Everhart (1995) found through personal interviews that if teachers were to make changes emphasized by NC SS&C in the classroom, NC SS&C content had to be practical and realistic. The NC SS&C curriculum stressed strategies that could be implemented based upon the equipment found in most NC Public Schools—not the equipment found in the best-equipped schools. As a result, the teachers participating in focus groups stated that the staff development personnel understood what content was conducive to classroom implementation.

The NC SS&C content was not designed for just one group of students. Instead, the materials were designed to assist the teacher who taught students with a varying range of abilities and individual needs. The staff development personnel realized “...kids have problems...and that some theoretical thing isn’t going to work with every child” (p. 148). Thus, goals were set that took into account varying motivational levels of public school students.

Change will not occur without acknowledging individual needs, concerns and beliefs. NC SS&C trainers found that the implementation of change was more successful if teachers shared their personal beliefs and there was an environment of openness and trust. They found it was important to not make teachers feel “uncomfortable or defensive about current practices” (p.

159). Thus, varying opinions were shared and allowed—even if these opinions differed from those of the research staff and fellow teachers (Everhart, 1995).

### Feedback and Support of Professional Development

According to Guskey (1995), feedback methods should not interrupt the process of implementing the innovation. Thus, feedback should not require large amounts of time from the teachers who are implementing the innovation.

There are many problems associated with implementing an innovation that are not evident during the planning stages. According to Guskey (1995) it is at the implementation stage where problems develop that can inhibit an innovation. The best remedies to overcome these problems are (a) support of teachers who are adopting an innovation, and (b) pressure to initiate the innovation for teachers who are not internally motivated (Guskey, 1995). The best way to provide this combination of support and pressure is with personal assistance from administrators, consultants and colleagues (Massarella, 1980). Further, any professional development must take into account the knowledge and experience of each individual teacher. Therefore, teachers in 4/4 block scheduled schools may experience changes in their professional development needs over time.

The professional development needs of teachers. Miller and Wolf (1978) stated that there is a constant conflict between the needs of a changing school and the needs of teachers who work at the changing school. Through the 1980s, according to Fullan (1993), public education entered a period of problems that were perceived as solvable through government intervention. As a result, large amounts of money and effort were channeled toward inservice seminars for teachers that were often disconnected to the way in which teachers work. Many innovations in education, according to Fullan (1993), failed because the innovations were disconnected from the everyday activities of teachers. Fullan's position was supported by the Broyles and Tillman (1985) and the Aneke and Finch (1997) studies described in the following paragraphs.

Broyles and Tillman (1985) studied the relationships between inservice training and teacher Stages of Concern about the workshops sponsored by the National Diffusion Network. Broyles and Tillman surveyed teachers in North Carolina, South Carolina, and Tennessee using a combination of observational research and the Stages of Concern. Trained researchers observed 23 teacher workshops sponsored by the National Diffusion Network. These researchers measured the amount of time in minutes that the workshop instructors spent on presentation, giving examples, application, feedback, and non-instructional activity. The researchers also examined the amount of time in minutes that each instructor spent in introduction, skills, organization, and theory activities. Teachers who attended these workshops completed the Stages of Concern questionnaire before and after attending the workshop. From this data, partial correlations were developed between the seven Stages of Concern and the instructional tasks noted. Broyles and Tillman found that excessive non-instructional time, such as that devoted to introducing the instructor, interfered with resolution of concerns of the participants. However, according to the authors, the correlations between instructional activities and teacher concerns were not significant. The researchers also found that if more time was spent teaching skills content, the intensity of teacher concerns was lower at the end of the workshop. The more teachers were involved with tasks designed to assist them in mastering the innovation, the more likely the teachers were to have their concerns resolved. The researchers also found that the

more that workshop instructors devoted time to theory, the more likely teachers were to still have high personal (stage two) concerns at the end of the workshop. Thus, practical, hands-on applications seemed to alleviate teacher's concerns about innovations in the Broyles and Tillman (1985) study.

Fullan (1993) indicated that isolated inservice programs were not the best way to promote intellectual development among teaching professionals. The improvement of professional development in education instead involved collaboration between all stakeholders in an organization--teachers, administrators, parents, students, and the outside community. A Stages of Concern-based study that supported Fullan's opinion concerning inservice programs was the Aneke and Finch (1997) study. Aneke and Finch sampled 1207 teachers at 19 school sites implementing the High Schools that Work reform in Virginia. Teachers' concerns related to High Schools that Work were stratified depending on whether the teachers had no years of experience, one year of experience, two years of experience, or three years of experience with the High Schools that Work innovation. Analysis of data was performed by multiple analysis of variance (MANOVA) and descriptive statistics such as means and standard deviations. Findings were that teachers moved from the awareness through the consequence and collaboration stage as teachers gained experience with High Schools that Work. Further, the authors indicated that inservice training seemed to alleviate teacher concerns when the training matched teacher concerns. Aneke and Finch also found that when inservice education programs were tailored toward answering teacher concerns, the High Schools that Work reform was more likely to be adopted with fewer problems. The authors stated that persons at the personal Stage of Concern often had some doubt and personal resistance to High Schools that Work. These teachers benefited more from inservice education that addressed their personal concerns--such as time management and hands-on activities. The Aneke and Finch study thus supported the opinion of Fullan that all teachers should have received professional development which best suited individual needs and abilities. Possibly, professional development that addresses the concerns of teachers may result in fewer problems concerning the adoption of 4/4 block scheduling in the classroom.

Fullan (1982) stated that other teachers were often the preferred reference that fellow teachers seek as a source of new ideas. However, Fullan (1982) also found that teachers lacked the time, resources, and energy to innovate, and that their focus toward innovation was often their own classroom. Teachers did not typically become involved in district-wide reforms (Fullan, 1982); yet, the change to block scheduling was usually made at the local level in North Carolina (Averett, 1994). Therefore, teachers may have become involved in important decisions about block scheduling--including professional development. It must be remembered, however, that few changes are easy and all school entities must be willing to be flexible in order for change to be effective (Fullan, 1993).

#### Professional Development for 4/4 Block Scheduling

Teacher preparation for block scheduling was also the topic of the Limback (1998) study. Limback surveyed 669 teachers in 170 block-scheduled Missouri high schools. The Limback questionnaire utilized an instrument reviewed and approved by a panel of colleagues within the author's place of employment. The instrument was then field-tested with 10 business educators. Several open-ended questions were added to the study. These open-ended questions were summarized into seven broad categories. Two of these categories directly concerned professional

development of teachers. The results of the questions in the first category generalized that teachers facing block scheduling implementation should be provided special training. The findings for the second category indicated that teachers should visit other teachers with more experience teaching under the 4/4 block scheduling model. It was hoped that less experienced teachers would gain experience from teachers who had implemented 4/4 block scheduling previously (Limback, 1998). Thus, beginning teachers may benefit from working with more experienced teachers concerning the adoption of 4/4 block scheduling.

#### Areas of Secondary Education Affected by 4/4 Block Scheduling

While all areas of secondary education are probably affected by a change to 4/4 block scheduling, some areas receive emphasis by researchers, teachers and administrators. Below are some of these areas that have received emphasis.

#### Student's Scores on Standardized Tests

Many schools were concerned with gain scores on standardized tests (Osburn, 1999). In North Carolina, there was a trend to shift the burden of accountability for performance on standardized tests to individual schools (Pickett, 1998). As the trend toward accountability for student scores was placed at the local level, some parents and teachers were concerned about how any change in the schools would affect student scores on standardized tests. The following paragraphs illustrate some of the research performed concerning 4/4 block scheduling and standardized testing.

Raphael, Walstrom and McLean (1986) found that student achievement on standardized math tests decreased in Ontario secondary schools that adopted the semester schedule—roughly the equivalent of the 4/4 block schedule in the United States. The authors studied the effect of a semesterized schedule in Ontario upon student scores on a standardized math test by surveying 5,280 students in grades 12 and 13. In contrast, Shortt and Thayer (1999) found that only 1% of teachers and 5% of administrators believed that 4/4 block scheduling had a negative impact on standardized test scores. The data gathered were aggregated from norm-referenced tests given to 11<sup>th</sup> grade students as part of the Virginia State Assessment Program under the Virginia Department of Education.

Canady and Rettig (1996a) disagreed with the ideas expressed by the Raphael, Walstrom and McLean (1986) study in their statement that less material covered well in a 4/4 block schedule may have resulted in “more meaningful learning” (Canady & Rettig, 1996a, p. 14). While Canady and Rettig did not complete a study in this reference, the statement was based upon years of primary and secondary research concerning 4/4 block scheduling.

In contrast to the references mentioned above, Swope, Fritz and Goins (1998) found mixed results. Swope, Fritz and Goins (1998) surveyed 114 marketing teachers in North Carolina using a Likert-type questionnaire. The authors found that while student scores on end-of-course marketing tests had improved under 4/4 block scheduling, teachers believed that they had problems presenting all the competencies required in the state's standard course of study during the normal 4/4 block scheduling semester.

A problem with 4/4 block scheduling is that some students may not take end-of-course tests at the same time as their peers. For instance, a student may complete a subject in the fall semester of the school year and not take the standardized test until the spring of that school year

(Canady & Rettig, 1996a). In some studies, this scheduling problem affected end-of-course scores. The following paragraph describes some of the research on end-of-course standardized tests.

According to Canady and Rettig (1996a), teachers perceived very little difference between the subject matter retention of students who completed prerequisite courses and those who have had extended time lapses between courses. However, Bateson (1990) found that teacher perception of student performance was not the same as actual student performance on standardized tests. Bateson (1990) found that although Canadian teachers also had similar perceptions about their students regardless of the scheduling model used or the time of year the course was taught, the reality was that students performed better if they had the course immediately prior to taking a standardized test. Further, students in year-long classes consistently outperformed students who were in semester-long schedules. Thus, Bateson argued that due to logistical benefits of semesterized schedules, Canadian semesterized schedules contributed to a halo effect which “had an influence on student and teacher perceptions of possible outcomes” (p. 238). Bateson (1990) studied the effects of semester-length courses and full-year courses on the science attitudes and science achievement of 31,116 10<sup>th</sup> grade students in British Columbia. The questionnaire used was pilot-tested and reviewed by a panel of science teachers, administrators, university professors, curriculum specialists and parents.

As indicated in the previous paragraphs, there are differing opinions concerning the results of standardized testing in 4/4 block scheduled schools. Currently, both increased standardized testing and 4/4 block scheduling are trends in the North Carolina public schools (Averett, 1994). No studies were found that determined the professional development needs of teachers concerning standardized tests. If the professional development needs of teachers regarding standardized testing and 4/4 block scheduling were known, more effective professional development programs could result.

#### Teamwork in the Secondary Schools

Fullan (1995) stated that collaboration between teachers is needed in order for teachers to learn in modern society. Collaboration is necessary because teachers are now required to adapt to change; teachers must work both collaboratively and autonomously (Fullan, 1995).

Not all teachers were able to work collaboratively due to existing workplace conditions. For example, Rosenholz (1989) surveyed 1213 teachers from eight Tennessee school districts concerning the school as a workplace. Teachers in the eight districts were categorized according to whether the teachers would (a) fail to interact collaboratively or (b) succeed in interacting together. The information came from a 164-item questionnaire in a Likert format where teachers responded to questions such as “I have the opportunity to learn new things.” The surveys were collected at routine faculty meetings—ensuring a response rate of 70% per school. Rosenholz (1989) found that whether or not teachers seek to work collaboratively depends on the consequences of collaboration. If the disclosure of a knowledge deficit was stigmatizing, teachers avoided working collaboratively with persons who could have helped with specific teacher problems (Rosenholz, 1989). The less threatening the workplace, the more likely teachers were to ask for advice and to work collaboratively. According to Guskey (1995), all aspects of professional development should involve teams of individuals working together. Studies have not been identified that asked teachers about collaborative teaching in a 4/4 block

scheduled model. If teachers' professional development needs concerning teamwork were known, more effective professional development about 4/4 block scheduling may result.

### Vocational Student Organizations

In North Carolina, enrollment and retention in vocational student organizations (also called workforce development student organizations) had decreased due to 4/4 block scheduling. For example, Swope, Fritz and Goins (1998) found that marketing teachers believed that participation in DECA, the Marketing Education vocational student organization in North Carolina, had decreased. Jewell (1998), in a study of business teachers in North Carolina 4/4 block scheduled schools, found that teachers found it more difficult to operate the Future Business Leaders of America (FBLA) program due to 4/4 block scheduling. Further, Jewell (1998) found that while student enrollment in business education courses increased, enrollment in FBLA did not. No studies were found concerning professional development related to vocational student organizations and 4/4 block scheduling. If the professional development needs of teachers concerning vocational student organizations were identified, it could lead to more effective implementation of these organizations.

### Competitive Events

Block scheduling was affecting many extracurricular activities such as club participation and co-curricular activities such as competitive events in vocational education and in music. Jewell (1998) found that it was difficult to develop a strong Future Business Leaders of America (FBLA) program, stating "Under the block schedule, it is more difficult to maintain membership, communicate with members, prepare career development teams, work with the officers and prepare for competitive events." Further, Swope, Fritz and Goins (1998) found that the 4/4 block schedule prepared students for competitive events less adequately than the traditional six- or seven-period schedule.

Miles and Blocher (1997), in their study of 34 Wisconsin public schools, found that scheduling conflicts associated with block scheduling were a primary factor in the reduction of students taking performing arts classes. The authors felt that scheduling conflicts with advanced placement courses were the reasons that students were not continuing to study music classes (Miles & Blocher, 1997). Thus, many students who would otherwise have enrolled in fine arts, and the competitive events associated with them, did not participate.

No studies were found that addressed professional development related to coordinating competitive events in the 4/4 block scheduled schools. Given the potential lack of success concerning competitive events in 4/4 block scheduled schools, it is possible that teachers in these schools need professional development concerning coordinating competitive events.

### Cooperative Education and School-to-Work

Cooperative education has been an important component of many vocational programs. However, 4/4 block scheduling may have changed the emphasis that was placed upon workplace experience. For example, Swope, Fritz and Goins (1998) found that about ¼ of the responders to their survey indicated that 4/4 block scheduling had made the school-to-work component no longer essential to their programs. Further, teachers indicated that they did not feel that there was enough coordination time to keep the school-to-work program flourishing (Swope, Fritz & Goins, 1998). It may be that teachers are unaware of methods to manage cooperative education

successfully in a 4/4 block schedule. Determining the professional development needs of teachers concerning cooperative education may provide teachers with information that leads to more successful implementation of the cooperative method of instruction.

### Activities and Lesson Plans

Shortt and Thayer (1999) found that under the 4/4 block scheduling model, more differentiated instruction was offered—which seemed to meet individual student needs better than the traditional six or seven period school day. However, Hackmann and Schmitt (1997) stated that while block scheduling does offer a chance to use more varied instructional methods, the large blocks of time often cause apprehension for veteran teachers. Veteran teachers were not prepared to teach for the longer 90-minute blocks of time.

Eineder and Bishop (1997) found that teachers under the 4/4 block schedule used more instructional strategies and were more creative in the classroom than teachers under the traditional six or seven period school day. However, Canady and Rettig (1996a) stated that as schools change from a traditional six or seven period day, teachers doubted that students could maintain interest for long periods of time and students doubted that teachers could maintain interest. Teachers could not lecture for the entire 90-minute 4/4 block scheduled period and maintain student interest (Canady & Rettig, 1996).

While some teachers are able to use varying instructional strategies in a 4/4 block scheduled classroom, others rely on lecture. It is possible that the teachers who rely on the lecture method of instruction lack professional development concerning other successful teaching methods.

### Managing Student Behavior

Canady and Rettig (1996a) found that the reduced number of class changes under block scheduling was one reason that schools were changing to 4/4 block scheduling. Eineder and Bishop (1997) found in their study of one high school in Southeastern Ohio that the number of students involved in fights was reduced by 40% by the second year that block scheduling was adopted. Fighting was reduced because 4/4 block scheduling reduced the number of class changes during the school day—and class changes were when most disturbances occurred (Eineder & Bishop, 1997). However, individual teachers in 4/4 block scheduled schools may be managing student behaviors in classes that previously occurred during class transitions. Little information was found concerning the needs of teachers for professional development regarding the management of student behavior in 4/4 block scheduled classes. If these professional development needs were known, it may be possible to design better professional development programs that focus on student behavior management.

### Administrative Duties

Canady and Rettig (1996) found that in a 4/4 block schedule, teachers worked with fewer students during any one semester. Thus, the administrative workload (paper grading, discipline referrals) was decreased. Further, teachers had longer and more useful planning time (Canady & Rettig, 1996). Yet, the researcher found no studies that indicated teachers are able to use this time effectively. If teachers' professional development needs concerning time management were known, then it may be possible to make more effective use of the time allocated in a 4/4 block schedule.

## Classroom Discipline and Safety

Shortt and Thayer (1999) found that there was a positive relationship between adoption of block scheduling and school climate. The authors reported that principals in Virginia found that there was a decline in discipline referrals to administrative offices. Shortt and Thayer also found that 4/4 block scheduling had decreased the amount of unsupervised student movement in the schools. An increase in classroom attendance and discipline was reported in 4/4 block scheduled schools by Swope, Fritz and Goins (1998). It is not known if teachers are able to contribute to the positive school environment in 4/4 block scheduling. Perhaps if teachers' professional development needs concerning maintaining a positive school environment were known, the environment in 4/4 block scheduled schools could be improved further.

### Summary

This literature review contained information related to Hall and Louck's Stages of Concern model, professional development, and specific areas of interest concerning 4/4 block scheduling. The majority of North Carolina secondary schools have adopted 4/4 block scheduling (Averett, 1994). If the innovation is to be as successful as possible, concerns of the teachers need to be documented so that adequate professional development programs can be developed.

The Stages of Concern Theory has been utilized to determine the concerns of teachers on a variety of innovations. The focus of this research was (a) the Stages of Concern of teachers and (b) the perceived professional development needs of teachers in 4/4 block scheduled high schools. A review of the literature identified little information about the professional development that was provided for teachers who teach in 4/4 block scheduled schools.

## CHAPTER 3

### Research Procedures

As stated in Chapter 1, the objectives of this study were to determine the Stages of Concern and the professional development needs of teachers in 4/4 block scheduled high schools. This chapter described the research design, the sample, the survey instruments, the data collection procedures, and the analysis of the data.

### Research Design

The purposes of this study were to determine the Stages of Concern of teachers in 4/4 block scheduled schools, their perceived professional development needs, and the relationships between the Stages of Concern, professional development needs, and selected teacher characteristics. The questionnaire, designed to determine the concerns of teachers in 4/4 block scheduled high schools, was composed of three parts: (a) the concerns questionnaire, (b) the professional development needs portion and (c) teacher information. Based upon the literature review and development of the questionnaire, the following research questions were addressed in this study:

1. What were the indicated Stage-of-Concern levels regarding 4/4 block scheduling of selected teachers in North Carolina 4/4 block scheduled schools?
2. Were there differences in the teachers' Stages of Concern when grouped by their: (a) selected characteristics and (b) years of adoption?
3. What were the perceived professional development needs regarding 4/4 block scheduling of selected teachers in North Carolina 4/4 block scheduled schools?
4. Were there differences in the teacher's professional development needs when grouped by their: (a) selected characteristics and (b) years of adoption?
5. Were there differences among the teachers' professional development needs when grouped by their primary Stages of Concern?

### The Population and the Sample

The population of this study was all teachers in North Carolina 4/4 block-scheduled public schools. The participants in this study were a purposive sample of these secondary school teachers. In the fall of 1998, the researcher telephoned each of the 117 North Carolina school districts and contacted a representative who had participated in the implementation of 4/4 block scheduling. This representative stated what schools had adopted 4/4 block scheduling and when that school had adopted 4/4 block scheduling. If the representative was unsure of the date of adoption of block scheduling, the researcher called that high school and determined the information from a guidance counselor, school secretary, or school administrator. The researcher found that there were 248 4/4 block scheduled schools in North Carolina. Yet, ten of these 4/4 block scheduled schools were Native American reservation schools, 9<sup>th</sup>-grade schools, and schools for students with disciplinary problems. The researcher decided to eliminate these schools from consideration because they were not typical high schools. From the information accumulated from the phone calls, a list was developed containing the name and the school year it implemented 4/4 block scheduling for each of the 238 remaining high schools.

Murnane and Levy (1996) studied the effect of increased funding upon student achievement in fifteen Texas public schools. Using Murnane and Levy's number of schools as a model, the researcher decided to examine the concerns of teachers in fifteen North Carolina 4/4 block scheduled schools. The researcher sorted the list of 4/4 block scheduled schools by year of adoption, and from this list, five schools were randomly selected that adopted block scheduling in the fall of each of the following years: 1996, 1997, and 1998. This provided the desired number of 15 high schools. The locations of the fifteen schools were plotted on a map of North Carolina, and it was determined that they were geographically dispersed across the state.

The researcher mailed letters to the principals asking for the current copy of their teaching roster. In most cases, these rosters contained the subject areas taught. In cases when these subject areas were not listed, the researcher interviewed the principal's support staff member to obtain the subject area for each teacher. These subject areas were then assigned the category of (a) academic, (b) workforce development or (c) special subjects based upon the listing of teacher licensure areas obtained from the North Carolina State Department of Public Instruction website (North Carolina State Department of Public Instruction, 2000). The researcher randomly selected five teachers from the categories (a) academic, (b) workforce development, and (c) special subjects at each school. As a safeguard, teachers were asked to identify their subject area on the survey instrument. Thus, 225 teachers were surveyed in all.

#### Instrumentation

Hall, George, and Rutherford (1986) developed the most recent version of the Stages of Concern questionnaire. When the Concerns-Based Adoption Model Project funding was eliminated at the University of Texas, research and development of the Stages of Concern instrument was moved to the University of Northern Colorado, under the direction of Dr. Gene Hall. The survey was used with Dr. Hall's permission. The permission letter is shown in Appendix A.

The Stages of Concern questionnaire has been used by many different educational researchers in many studies. As a profile is developed for each individual person, comparisons can be made in detail, if necessary (Linnell, 1991). The level of each individual's intensity of concern is provided for each stage.

Reliability of the Stages of Concern Questionnaire. Hall, George, and Rutherford (1986) reported that the coefficients of internal reliability (alpha coefficients) ranged from .64 to .83 on the seven constructs measured: (a) awareness (.64), (b) informational (.78), (c) personal (.83), (d) management (.75), (e) consequence (.76), (f) collaboration (.82), and (g) refocusing (.71). The 1974 study had a sample size of 830 participants. It is important to note that Chronbach's alpha tests internal consistency--not that the constructs measured are homogeneous or the same exact construct (Chronbach, 1951). However, many researchers use Chronbach's alpha as an indicator of homogeneity (Pedhazur & Schmelkin, 1991). Discussing reliability of the survey instrument, Hall, George, and Rutherford (1986, p. 10) stated "Items representing each stage on the questionnaire were selected in a manner that high internal reliability was very likely."

A test-retest of 171 of the original 830 participants was performed that determined consistency of the responses. Results indicated that the Pearson-r coefficients of the 132 participants who responded during the test-retest procedure were as follows: (a) awareness (.65), (b) informational (.86), (c) personal (.82), (d) management (.81), (e) consequence (.76), (f)

collaboration (.84) and (g) refocusing (.71) (Hall, George, & Rutherford, 1986). The Pearson-r coefficient measures the amount of the sum of squares that is due to regression (Pedhazur, 1982). Consequently, the difference between the Pearson-r and 1 indicates the portion of the sum of squares that is due to error (Pedhazur, 1982). Thus, the higher the Pearson-r, the more likely a given researcher is measuring the construct indicated. In this case, the Pearson-r values indicate that responses were consistent when the same persons were administered the Stages of Concern survey.

Validity of the Stages of Concern Questionnaire. Hall, George, and Rutherford (1986) stated that documenting validity was made more difficult by the fact that there were no other concerns-based survey instruments available when the Stages of Concern questionnaire was developed. However, Hall, George, and Rutherford (1986) were able to show that there was high intercorrelation between the constructs measured. Essentially, the high construct intercorrelation means that the instrument may measure the constructs it was intended to measure.

Scoring of the Stages of Concern Questionnaire. The Stages of Concern questionnaire is comprised of 35 items that express a concern about an innovation. In this survey, the innovation selected was 4/4 block scheduling. Responders indicated their level of concern regarding each statement using a rating scale from 0 to 7. The closer the respondent's selection was to 7, the higher the respondent's indicated concern was for the construct indicated by that statement. Conversely, the closer the respondent's selection was to 0, the lower the respondent's concern was for the construct indicated by that statement.

The seven constructs measured by the Stages of Concern questionnaire were (a) awareness, (b) informational, (c) personal, (d) management, (e) consequence, (f) collaboration and (g) refocusing. Each construct was represented by 5 questions within the survey instrument. Thus, there were 35 questions in all (Hall, George, & Rutherford, 1986). A raw score was calculated for each stage by summing the responses for each of the five statements represented by that scale. The Stages of Concern questionnaire was modified by replacing the term "the innovation" with "4/4 block scheduling."

#### Teacher Characteristics and Perceived Professional Development Needs

Teacher characteristics data were collected by the use of items developed by Linnell (1991). The topics covered by the Linnell instrument were (a) gender, (b) age, (c) level of education, (d) amount of experience measured in years and (e) participation in professional development. The original instrument was modified so that the focus of the instrument was changed from technology education to 4/4 block scheduling.

The question concerning primary teaching field (part 3, question 3) was developed based on the teacher licensure materials from the North Carolina State Department of Public Instruction website (North Carolina State Department of Public Instruction, 2000). This source divided licensure areas into three different sections: academic, special subjects, and workforce development.

Additionally, the researcher developed questions regarding professional development needs based on an analysis of the literature review. Research on professional development needs of teachers indicated nine categories applicable to this study: (a) school environment, (b) instructional activities, (c) standardized tests, (d) student organizations, (e) cooperative methods

of instruction, (f) competitive events, (g) student behavior, (h) administrative duties and (i) teamwork. One survey item was written for each category to address the current staff development needs of teachers regarding 4/4 block scheduling. Based on a review of rating scales used in other studies, the researcher developed a scale to indicate teachers' perceived level of need for professional development in which 0 = no need, 1 = little need, 2 = more need, and 3 = great need. The matrix shown in Table 1 indicates the studies from which the nine researcher-developed questions were derived.

Although Linnell performed validation of the original teacher characteristics items in 1991, the questions were modified for this study. These items and the questions on professional development needs were revalidated by a panel of experts in four areas: (a) research, (b) 4/4 block scheduling, (c) English, and (d) the North Carolina public schools. The panel members were selected based on their expertise in their respective disciplines. Robert Canady and Michael Rettig were asked to serve on the panel because of their extensive research and publications regarding 4/4 block scheduling. Craig Hill, a principal, provided experience regarding the instrument's relevance to a 4/4 block scheduled North Carolina public school. A statistician, Scott Thomson, reviewed the appropriateness of the instrument for research. An English professor, Todd Finley, evaluated the wording of the document. Each person on the panel was called by telephone and asked to participate. The persons on the panel also received a letter formally requesting their participation. Each panel reviewer received an envelope containing instructions (Appendix B) and the survey (Appendix C). Minor changes were made to the instrument according to the suggestions of panel members.

#### Pilot Testing the Survey Instrument

According to Isaac and Michael (1990), the purpose of a pilot test is to provide the researcher with "ideas, approaches, and clues not foreseen prior to the pilot study" (p. 34). The pilot test also reduces the number of treatment errors because unforeseen problems may be overcome by survey redesign (Isaac & Michael, 1997). Therefore, a pilot test was completed with selected faculty (n=15) at a large eastern North Carolina high school. This high school has been using the 4/4 block schedule for approximately six years. The principal selected the faculty who participated and was instructed by the researcher to ensure that all departments within the school should have a chance to participate. This school was selected because (a) it is a block-scheduled high school, (b) the high school is conveniently located near the researcher for better two-way communication, and (c) several teachers at the pilot test high school have taken graduate research design courses at East Carolina University. Thus, the participating teachers were able to provide valuable input about the questionnaire. The pilot-test high school was removed from the selection process for the actual survey. This reduced the risk of bias (the faculty members were known by the researcher) and eliminate any effects that the pilot test may have had upon the subsequent survey. Changes were made to the survey instruments based upon suggestions of the faculty at the pilot test high school. The principal at the pilot test high school provided (a) permission to utilize their school for the pilot test, and (b) relevant data concerning the pilot test high school.

After the researcher received the pilot test results, an analysis of the results was conducted to determine possible flaws in data tabulation. The teachers at the pilot test high school recommended some minor changes that could be made that would positively affect readability of the instrument, and the researcher made these changes.

Table 1

Studies Contributing to Researcher-Developed Questions

Number	Question	Study
1	Maintaining a positive school environment in 4/4 block scheduling.	<ul style="list-style-type: none"> <li>• Canady and Rettig (1996a)</li> <li>• Eineder and Bishop (1997)</li> </ul>
2	Developing varied and challenging instructional activities in 4/4 block scheduling.	<ul style="list-style-type: none"> <li>• Shortt and Thayer (1999)</li> <li>• Hackman and Schmitt (1997)</li> <li>• Swope, Fritz and Goins (1998)</li> <li>• Canady and Rettig (1996a)</li> <li>• Canady and Rettig (1996)</li> </ul>
3	Improving standardized test results in 4/4 block scheduled classes.	<ul style="list-style-type: none"> <li>• Osburn (1999)</li> <li>• Pickett (1998, August 8)</li> <li>• Raphael, Walstrom and McLean (1986)</li> <li>• Shortt and Thayer (1999)</li> <li>• Swope, Fritz and Goins (1998)</li> <li>• Canady and Rettig (1996a)</li> <li>• Bateson (1990)</li> </ul>
4	Managing student organizations and 4/4 block scheduling.	<ul style="list-style-type: none"> <li>• Swope, Fritz and Goins (1998)</li> <li>• Jewell (1998)</li> </ul>
5	Implementing work-based programs and 4/4 block scheduling.	<ul style="list-style-type: none"> <li>• Swope, Fritz and Goins (1998)</li> </ul>
6	Coordinating competitive events (i.e. drama, music, workforce development) and 4/4 block scheduling.	<ul style="list-style-type: none"> <li>• Jewell (1998)</li> <li>• Swope, Fritz and Goins (1998)</li> <li>• Miles and Blocher (1997)</li> </ul>

*(table continues)*

Table 1 (*continued*)

Studies Contributing to Researcher-Developed Questions

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Number	Question	Study
7	Managing student behavior in 4/4 block scheduling.	<ul style="list-style-type: none"> <li>• Canady and Rettig (1996a)</li> <li>• Eineder and Bishop (1997)</li> <li>• Shortt and Thayer (1999)</li> <li>• Swope, Fritz and Goins (1998)</li> </ul>
8	Managing time requirements associated with 4/4 block scheduling.	<ul style="list-style-type: none"> <li>• Canady and Rettig (1996)</li> <li>• Everhart (1995)</li> </ul>
9	Working with other teachers regarding implementing or revising 4/4 block scheduling.	<ul style="list-style-type: none"> <li>• Warnatt (1983)</li> <li>• Fullan (1995)</li> <li>• Rosenholz (1989)</li> <li>• Guskey (1995)</li> <li>• Fullan (1991)</li> <li>• Rogers (1995)</li> <li>• Everhart (1995)</li> </ul>

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## Data Collection Procedures

The researcher telephoned employees at the central office of each public school district and obtained the school years of 4/4 block scheduling adoption for each high school. The names of each school and years of adoption were keyed into Microsoft Excel. The information obtained by phone call was sorted by year of adoption and fifteen schools were randomly selected: (a) five schools sampled adopted 4/4 block scheduling in fall 1996, (b) five schools in fall 1997, and (c) five schools in fall 1998. Letters were mailed to the superintendent (Appendix E) and the principal (Appendix F) of each school asking permission for selected teachers to be surveyed. Two school superintendents declined to participate and, replacement schools were randomly selected. Both replacement schools agreed to participate.

Once the principals approved the use of their school, they were asked to send a current teaching roster from the school containing teacher names and subject areas taught. The principals were also asked to supply the name of a support staff person that the researcher could contact. In some cases, the roster was incomplete; this was corrected by notifying the support staff person by telephone and obtaining any missing information. The researcher randomly selected five teachers from each of three areas—academic, workforce development and special subjects. Cover letters, questionnaires and researcher-addressed stamped envelopes were mailed to each support staff member for distribution to the selected teachers. The cover memorandum (Appendix B) explained the purpose of the survey and the procedures to be followed by the responders. The support staff member named by the principal at each school was responsible for distributing each questionnaire to individual teachers randomly selected by the researcher. To ensure confidentiality of responses, the researcher provided teachers with an individual return envelope for the questionnaire. All envelopes containing completed questionnaires were sealed in a researcher-provided stamped envelope and mailed directly back to the researcher. Two weeks after these instruments were mailed to support staff members, reminder postcards were individually addressed to nonresponding teachers. These reminder postcards were distributed by the support staff members at each school. The researcher waited one week after the mailing of the postcards to mail a second set of survey instruments to support staff members for distribution to specified teachers. Cover letters were provided with both mailings. This ensured teachers of the confidentiality of the procedures and informed them of their rights as a participant.

Green (1991) compared differences between responders and nonresponders to a survey of teachers in Wyoming and Nebraska. Based upon a 71.2% response rate, Green conducted follow-up phone calls to nonresponders. The researcher decided that if fewer than 75% of the survey participants were responders, a higher rate than the Green (1991) study, the following procedure would be followed. Fifteen percent of the total number of nonresponders would be selected using random sampling. The researcher called the selected nonresponders during their planning period, and if necessary made arrangements to call back at a more convenient time. They were asked to respond to a limited number of items: the teacher information items, the five items that made up Stage of Concern 3 (management), and two items from the professional development needs section. The answers of the nonresponders were compared to the responders to see if their responses were similar.

## Analysis of Data

Descriptive statistics (means and standard deviations) were used for all five questions. The following sections provide information about the analysis for each part of the instrument.

### Stages of Concern Questionnaire

In the original Stages of Concern instrument, Pearson-r values were used as an indicator of reliability. The Pearson-r values were: (a) awareness (.65), (b) informational (.86), (c) personal (.82), (d) management (.81), (e) consequence (.76), (f) collaboration (.84) and (g) refocusing (.71) (Hall, George, and Rutherford, 1986). A validity study of the Stages of Concern questionnaire was performed in 1976 that compared (a) SoCQ-trained professional observer's ratings of the concerns of interviewed teachers with (b) these teachers' responses on the Stages of Concern questionnaire. The correlations between these ratings were as follows: (a) awareness (.27), (b) informational (.47), (c) personal (.42), (d) management (.30), (e) consequence (.13), (f) collaboration (.54) and (g) refocusing (.31) (Hall, George, and Rutherford, 1986). The fact that these correlations were relatively low may reflect the tendency to respond differently to a personal interview than to a written survey. Pedhazur and Schmelkin (1991) stated that correlating self-ratings with observer-ratings is common in multi-trait, multimethod convergent validity assessments. However, the variables can have different meanings for observer and the actor—increasing error (Pedhazur and Schmelkin, 1991). Thus, it is possible that the low Pearson-r values were due to the tendency for the observer to have a different interpretation of the construct than the self-rater has of that same construct.

Pedhazur and Schmelkin (1991, p. 31) stated that validity refers "...not to the measure in question but to inferences made on the basis of scores obtained on it." Thus, any researcher is really validating the inferences made upon the test—not the test itself. Further, Pedhazur and Schmelkin (1991) stated that any inferences may be more or less valid depending on the purpose of the test and the circumstances under which inferences are made. A number of other studies have been performed using the Stages of Concern questionnaire (Dennison, 1993; Long, 1994; Kirby and Smith, 1998; Cicchelli & Baecher, 1989). All of the researchers found the Stages of Concern questionnaire to be valid based on the inferences that the researchers made.

### Teacher Characteristics and Perceived Staff Development Needs

Analysis of data from the teacher characteristics and professional development needs questions were performed using a version 10.1 of SPSS. Originally, SPSS was an acronym for "Statistical Package for the Social Sciences." Because this statistical package is presently used for many purposes other than education worldwide, SPSS, Incorporated refers to it as SPSS (SPSS, 2001). The researcher will use SPSS to refer to version 10.1 of SPSS throughout this dissertation. Simple means and frequencies were used for analysis.

### Analysis for Each Research Question

The following pages contain the methods of analysis for each research question. Hall, George and Rutherford (1986) stated "When scores are used in statistical analyses, we strongly encourage the use of the raw scores" (p. 28).

**Research Question One: What were the indicated Stage-of-Concern levels regarding 4/4 block scheduling of selected teachers in North Carolina 4/4 block scheduled schools?**

The researcher asked teachers in 4/4 block-scheduled North Carolina public schools to complete the Stages of Concern portion (Part I) of the questionnaire (Appendix C). The 35 questions identified were combined into seven sets of five questions that corresponded to the seven Stages of Concern (Hall, George & Rutherford, 1986, p. 25). Table 2 shows the questions corresponding to each stage. After the teachers completed the questionnaire, data were analyzed on spreadsheets. To ensure reliability of coding, spot checks were performed using SPSS. Hall, George and Rutherford (1986, p. 5) stated “With each person, certain demands of the innovation are perceived as being more important than others at a given time.” Thus, while each respondent may have had other lower levels of concern, the highest level of concern for each respondent was recorded. Frequencies, percentages, means, standard deviations and ranges of the highest levels of concern were used to display the results.

**Research Question Two: Were there differences in the teachers’ Stages of Concern when grouped by their: (a) selected characteristics and (b) years of adoption?**

For analysis of this question, the researcher used information gathered from the Stages of Concern portion (Part I), the Selected Characteristics portion (Part III) of the questionnaire (Appendix C), and the years of adoption. The characteristics chosen for this study were teaching field (academic, special subjects and workforce development), level of education (high school, associate, bachelor’s, master’s, and doctorate), and years of teaching (0 to 10 years, 11 to 20 years, 21 to 30 years, and 31 years and over). From the analysis of research question 1, a Stage of Concern was developed for each respondent to the survey. Analyses were conducted using one-way ANOVA. Post-hoc tests for significance were conducted using the Scheffé procedure to control for Type I error.

To answer the portion of the research question two concerning years of adoption, the researcher used information gathered from the Stages of Concern portion (Part I) of the questionnaire (Appendix C). From the analysis of research question 1, a Stage of Concern was developed for each respondent to the survey. The researcher selected each school based upon whether the school adopted 4/4 block scheduling in the following school years: 1996-1997 (completed four years of adoption), 1997-1998 (completed three years of adoption), or 1998-1999 (completed two years of adoption). Analyses were conducted using one-way ANOVA. Post-hoc tests for significance were conducted using the Scheffé procedure to control for Type I error.

**Research Question Three: What were the perceived professional development needs regarding 4/4 block scheduling of selected teachers in North Carolina 4/4 block scheduled schools?**

The researcher asked teachers in 4/4 block-scheduled North Carolina public schools to complete the Staff Development Needs portion (Part II) of the questionnaire (Appendix C). The nine questions were developed by the researcher based on the literature review. The participants indicated the intensity of their responses using a four-point rating scale in which 0 indicated no need and 3 indicated great need for professional development concerning each of the nine questions. The responses were reported frequencies, percentages, means and standard deviations.

Table 2

Stages of Concern Questions that Comprise Each Stage of Concern

Stage	Item	Statement
0 (Awareness)	3	I don't even know what 4/4 block scheduling is.
	12	I am not concerned about 4/4 block scheduling.
	21	I am completely occupied with other things.
	23	Although I don't know about 4/4 block scheduling, I am concerned about things in the area.
	30	At this time, I am not interested in learning about 4/4 block scheduling.
1 (Informational)	6	I have very limited knowledge about 4/4 block scheduling.
	14	I would like to discuss the possibility of using 4/4 block scheduling.
	15	I would like to know what resources are available if we decide to adopt 4/4 block scheduling.
	26	I would like to know what the use of 4/4 block scheduling will require in the immediate future.
	35	I would like to know how 4/4 block scheduling is better than what we had before.
2 (Personal)	7	I would like to know the effect of 4/4 block scheduling on my professional status.
	13	I would like to know who will make the decisions related to 4/4 block scheduling.
	17	I would like to know how my teaching is supposed to change.
	28	I would like to have more information on time and energy commitments required by 4/4 block scheduling.
	33	I would like to know how my role will change when I am using 4/4 block scheduling.

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*(table continues)*

Table 2 (*continued*)

Stages of Concern Questions that Comprise Each Stage of Concern

Stage	Item	Statement
3 (Management)	4	I am concerned about not having enough time to organize myself each day.
	8	I am concerned about conflict between my interests and my responsibilities.
	16	I am concerned about my inability to manage all that 4/4 block scheduling requires.
	25	I am concerned about the time spent working with non-academic problems related to 4/4 block scheduling.
	34	Coordination of tasks and people is taking too much of my time because of 4/4 block scheduling.
4 (Consequence)	1	I am concerned about students' attitudes toward 4/4 block scheduling.
	11	I am concerned about how 4/4 block scheduling affects students.
	19	I am concerned about evaluating 4/4 block scheduling's impact on students.
	24	I would like to excite my students about their part in 4/4 block scheduling.
	32	I would like to use feedback from students to change the program.
5 (Collaboration)	5	I would like to help other faculty in their use of 4/4 block scheduling.
	10	I would like to develop working relationships with both our faculty and outside faculty using 4/4 block scheduling.
	18	I would like to familiarize other departments or persons with the progress of 4/4 block scheduling.
	27	I would like to coordinate my effort with others to maximize 4/4 block scheduling's effects.
	29	I would like to know what other faculty are doing in this area.

(*table continues*)

Table 2 (*continued*)

Stages of Concern Questions that Comprise Each Stage of Concern

Stage	Item	Statement
6 (Refocusing)	2	I know of some other schedules that might work better.
	9	I am concerned about revising my use of 4/4 block scheduling.
	20	I would like to revise my instructional approach to revise 4/4 block scheduling's effectiveness.
	22	I would like to modify our use of 4/4 block scheduling based on the experiences of our students.
	31	I would like to determine how to supplement, enhance, or replace 4/4 block scheduling.

Note. The information in table 2 is from *Measuring Stages of Concern about the Innovation: A Manual for Use of the SoC Questionnaire* (p. 25), by G. E. Hall, A. A. George and W. A. Rutherford, 1986, Austin: Research and Development Center for Teacher Education. Copyright 1989 Concerns Based Systems International.

**Research Question Four: Were there differences in the teachers' professional development needs when grouped by their: (a) selected characteristics and (b) years of adoption?**

To answer part (a) of this question, the researcher used information gathered from both the Staff Development Needs portion (Part II) and the Selected Characteristics portion (Part III) of the questionnaire (Appendix C). Analyses were conducted using one-way ANOVA. Post-hoc tests for significance were conducted using the Scheffé procedure to control for Type I error.

To answer part (b) of this of research question 4, the researcher used information gathered from the Professional Development portion (Part II) of the questionnaire (Appendix C). From the analysis of research question 2, the perceived staff development needs were identified for each respondent to the survey. The researcher had chosen each school based upon whether the school adopted 4/4 block scheduling in the following school years: 1996-1997, 1997-1998, or 1998-1999. Analyses were conducted using one-way ANOVA. Post-hoc tests for significance were conducted using the Scheffé procedure to control for Type I error.

**Research Question Five: Were there differences among the teachers' professional development needs when grouped by their primary Stages of Concern?**

For Research Question Five, the researcher used information gathered from both the Stages of Concern portion (Part I) and the Staff Development Needs portion (Part II) of the questionnaire (Appendix C). Analyses were conducted using one-way ANOVA. Post-hoc tests for significance were conducted using the Scheffé procedure to control for Type I error.

Summary

Two hundred twenty-five teachers at 15 4/4-block scheduled North Carolina schools were surveyed. These teachers were randomly selected from lists of faculty provided by the principals at each school. The purposes of this study were to determine the Stages of Concern of teachers in 4/4 block scheduled schools, their perceived professional development needs, and the relationships between the Stages of Concern, professional development needs, and selected teacher characteristics. Both Rogers' Diffusion of Innovations theory and Hall and Loucks' Stages of Concern theory provided the theoretical framework for this study. The survey instruments were Halls' Stages of Concern Questionnaire, teacher characteristics items adapted from Linnell, and researcher-developed questions that addressed perceptions of professional development needs. Stages of Concern data were analyzed using the a researcher-developed template in MS Excel and the SPSS statistical package. Teacher characteristics and professional development needs data were analyzed using SPSS. Simple means and frequencies were computed using the SPSS statistical package.

## CHAPTER 4

### FINDINGS

#### Introduction

The purposes of this study were to determine (a) teachers' concerns regarding 4/4 block scheduling and (b) teachers' perceived professional development needs in 4/4 block scheduled high schools in North Carolina. The relationships among the concerns of teachers, their professional development needs, their selected characteristics, and years of adoption were also studied. This chapter presents the analyses of results for the five research questions that provided the framework for this study.

#### Procedures

Cover letters, questionnaires, and researcher-addressed stamped envelopes were mailed to support staff members in 15 high schools for distribution to 15 randomly selected teachers in each school. The cover memorandum (Appendix B) explained the purpose of the survey and the procedures to be followed by the responders. Each teacher was provided an individual return envelope--thus ensuring confidentiality. Two weeks after these instruments were mailed to the teachers, reminder postcards were sent to nonresponders.

One week after the mailing of the postcards, a second set of survey instruments was sent to those who still had not responded. Cover letters were provided with both mailings so that teachers were ensured of the confidentiality of the procedures. The cover letters also informed teachers of their rights as a participant.

Of the 225 sample members, responses were received from 160, for a response rate of 71.1%. The 65 nonresponders comprised 28.9% of the sample--above the 25% cutoff level determined by the researcher to initiate a nonresponse follow-up. Ten nonresponders were randomly selected to receive follow-up phone calls. Only selected questions regarding teacher characteristics, the management (stage 3) questions from the Stages of Concern instrument, and two items regarding professional development needs were presented to each nonresponder during the follow-up phone call. The answers of the nonresponders were compared to the responders using t-tests for independent samples. For the items concerning *developing varied and challenging instructional activities* and *improving standardized test results*, there were no significant differences between means for responders and nonresponders at the 95% confidence level. Yet, there was a difference between the means for the management Stage of Concern for responders and for nonresponders. The difference between the means of the two groups for the management Stage of Concern was  $-5.49$ , and the t-test resulted in a P value of 0.02. The results for Part 1 and Part 2 of the follow-up questions are shown in Table 3.

The respondent group and nonrespondent group both believed that there was a need for professional development regarding *developing varied and challenging instructional activities in 4/4 block scheduling*. As noted in Table 3, the means and standard deviations for this question were similar. Further, there was only slight variation concerning the need for professional development related to *improving standardized test results*.

Table 3

Comparison of Responders and Nonresponders on Selected Items

Scores	Responders			Nonresponders			T-Test	
	<u>Mean</u>	<u>SD</u>	<u>N</u>	<u>Mean</u>	<u>SD</u>	<u>N</u>	<u>Diff</u>	<u>P Value</u>
Management Stage of Concern: Stage 3 <sup>a</sup>	11.30	7.45	158	16.80	4.02	10	-5.49	0.02
Part 2: Professional Development Needs <sup>b</sup>								
Item 2: Developing varied and challenging instructional activities in 4/4 block scheduling.	1.92	0.94	158	1.90	1.10	10	0.02	0.95
Item 3: Improving standardized test results in 4/4 block scheduled classes.	1.99	0.96	157	1.70	1.16	10	0.29	0.35

<sup>a</sup>The Stages of Concern questionnaire is comprised of seven stages with five items in each stage. Responders indicate their responses to each item using a seven-point rating scale in which 0 indicates that the statement is irrelevant and 7 indicates that the statement is very true of them at the time. This results in Stage of Concern scores that can range from 0 to 35 points for each of the seven Stages of Concern.

<sup>b</sup>Means were based on a four-part rating scale concerning professional development needs. In this scale, 0 = no need, 1 = little need, 2 = more need, and 3 = great need.

Characteristics of nonresponders and responders were similar for the variables of gender, teaching field, level of education and participation in professional development. Females represented 62.5% of responders and 60.0% of nonresponders. Academic teachers represented the most common teaching field; 44.4% of responders and 60.0% of nonresponders indicated that they taught in an academic field. The baccalaureate degree was the most frequently indicated level of education by both responders (60.6%) and nonresponders (70.0%). The majority of responders (65.0%) and nonresponders (70.0%) received some professional development concerning 4/4 block scheduling. Information in Table 4 indicates the variables of gender, teaching field, level of education, and participation in professional development for both responders and nonresponders. The mean number of years teaching for responders was 14.35 years with a standard deviation of 9.99 years. The mean number of years teaching for nonresponders was 15.70 years with a standard deviation of 9.26 years.

The similarities between the responders and nonresponders on personal characteristics and perceived professional development needs provides some indication that those who did not initially respond to the questionnaire were not substantially different from those who did respond. However, the difference between the two groups on the management Stage of Concern indicates that caution should be used in generalizing from the results of the study.

#### Profile of Participants

Some of the 160 responders to the survey elected to leave some questions unanswered, which created omitted responses. Omitted responses were tabulated using the system-missing value feature in SPSS. This feature assigns a system-missing value for any omitted variable and calculates any statistical data based upon variables that contain responses.

Part III of the survey instrument (Appendix C) was composed of questions about respondent characteristics. The results for gender, age, level of education, years of teaching, teaching area, whether professional development was received, and the degree to which professional development improved preparation for teaching are displayed in Table 5.

#### Gender

One hundred female participants (62.5% of the total) responded to the study, while the 59 males comprised 36.9% of the participants. One respondent (.6%) declined to complete the question pertaining to gender, and that response was recorded as a system-missing value.

#### Age

Responders were asked to indicate their age in 10-year categories beginning with age category 20-29 and ending with age category 60-69. Of the 160 participants who submitted useable responses, 37.5% were between the ages of 40 and 49 and 23.8% were between the ages of 50 and 59.

#### Level of Education

The survey responders were asked to identify their highest level of education by selecting one of five levels: (a) high school, (b) associate degree, (c) baccalaureate degree, (d) master's degree, or (e) doctoral degree. Table 5 shows that 60.6% of the participants identified their highest level of education as a baccalaureate degree; 31.9% of responders indicated their highest level of education as a master's degree.

Table 4

Characteristics of Responders and Nonresponders

Characteristics	Responders		Nonresponders	
	<u>Number</u>	<u>Percentage</u>	<u>Number</u>	<u>Percentage</u>
Gender				
Female	100	62.5	6	60.0
Male	59	36.9	4	40.0
Teaching Field				
Workforce development	56	35.0	3	30.0
Academic	71	44.4	6	60.0
Special Subjects	31	19.4	1	10.0
Level of Education				
High School	5	3.1	0	0.0
Associate	6	3.8	1	10.0
Baccalaureate	97	60.6	7	70.0
Master's	51	31.9	2	20.0
Doctorate	0	0.0	0	0.0
Participation in Professional Development				
Yes	104	65.0	70	70.0
No	55	34.4	30	30.0
Years of Teaching				
Mean	14.35		15.70	
Standard Deviation	9.99		9.26	

Table 5

Profile of Responders

Variable	Number	Percentage (%)
Gender		
Female	100	62.5
Male	59	36.9
Missing	1	0.6
Age		
20-29	25	15.6
30-39	27	16.9
40-49	60	37.5
50-59	38	23.8
60-69	9	5.6
Missing	1	0.6
Level of Education		
High School	5	3.1
Associate Degree	6	3.8
Baccalaureate Degree	97	60.6
Master's Degree	51	31.9
Doctorate Degree	0	0.0
Missing	1	0.6

*(table continues)*

Table 5 (continued)

Profile of Responders

Variable	Number	Percentage (%)
Years of Teaching		
0-10	66	41.3
11-20	45	28.1
21-30	42	26.3
31-40	5	3.1
Over 40	1	0.6
Missing	1	0.6
Teaching Area		
Academic	71	44.4
Workforce Development	56	35.0
Special Subjects	31	19.4
Missing	2	1.3
Professional Development		
Received	104	65.0
Not Received	55	34.4
Missing	1	0.6
Professional Development Improved Preparation for Teaching		
None	12	11.5
Slightly	48	46.2
Considerably	31	29.8
Greatly	13	12.5
Year of Adoption		
1996-1997	54	33.8
1997-1998	51	31.9
1998-1999	52	32.5

### Years of Teaching

One hundred fifty-nine responders indicated their total years of teaching experience, which ranged from zero to 43 years. The mean number of years teaching was 14.35 years with a standard deviation of 9.99 years. The largest percentage of responders (41.3%) indicated that they had between 0 and 10 years of teaching experience. Further, 28.1% of responders indicated that they had 11 to 20 years of teaching experience.

### Teaching Area

For the purposes of this study, the teaching field for each respondent was categorized as either academic, special subjects or workforce development. In North Carolina, the term “workforce development” is used for what is called vocational or career and technical education in other areas of the United States. The largest group was comprised of the 71 teachers (44.4%) who identified their teaching field as academic as illustrated in Table 5.

Responders were also asked to report their specific teaching area. The largest percentage of responders (12.5%) listed their teaching field as business education. Special education teachers represented 11.9% of responders. Data concerning the specific teaching field of all responders are presented in Table 6.

### Professional Development

As reported on Table 5, the majority of responders indicated that they had received some professional development about 4/4 block scheduling. One hundred four responders (65.0%) indicated that they had received some professional development, while 34.4% indicated that they had received no professional development related to 4/4 block scheduling.

### Improved Teaching Preparation Resulting From Professional Development

The 104 survey participants who had participated in professional development were asked to categorize how well that professional development improved their preparation for teaching in a 4/4 block schedule. The responders were asked to choose: (a) none, (b) slightly, (c) considerably, or (d) greatly. The largest percentage (46.2%) of responders indicated that the professional development slightly improved their preparation for teaching in a 4/4 block schedule. There were 31 responders (29.8%) who indicated their professional development considerably improved their preparation for teaching in a 4/4 block schedule.

### Years of Adoption

Of the 157 teachers who responded to the survey, 54 (33.8%) were from schools that adopted 4/4 block scheduling for the 1996-1997 school year. Fifty-one responders (31.9%) were from schools that adopted 4/4 block scheduling during the 1997-1998 school year and 52 responders (32.5%) were from schools that adopted 4/4 block scheduling during the 1998-1999 school year.

Table 6

Specific Teaching Fields of Responders

Teaching Area	Number	Percentage (%)
Academic		
Special Education	19	11.9
Science	16	10.0
English	12	7.5
Social Studies	12	7.5
Math	8	5.0
Academic Remediation	1	0.6
Special Subjects		
Physical Education	10	6.3
Music	8	5.0
Second Languages	7	4.4
JROTC	2	1.3
Art	1	0.6
Theater Arts	1	0.6
Alternative Education	1	0.6
Workforce Development		
Business	20	12.5
Family and Consumer Sciences	14	8.8
Trade and Industrial	12	7.5
Marketing	4	2.5
Health Occupations	3	1.9
Agricultural Education	2	1.3
Computer Remediation	2	1.3
Technology	1	0.6
Computer Applications, College-Level	1	0.6

## Stages of Concern

Hall, George, and Rutherford (1986) stated: “To be concerned means to be in a mentally aroused state about something” (p. 5). The Stages of Concern questionnaire consisted of 35 items that represented concerns possibly experienced by each respondent. The respondent marked each item on a scale of 0 to 7 in which 0 indicated the item was irrelevant and 7 indicated that the statement was very true of the respondent. There were seven constructs measured in the Stages of Concern: (a) awareness, (b) informational, (c) personal, (d) management, (e) consequence, (f) collaboration and (g) refocusing. Each construct was measured by five items and had a maximum possible rating of 35—indicating a high level of concern for that construct. The minimum possible rating for each of the seven stages was 0.

Means and standard deviations were calculated for each of the 35 questions in the Stages of Concern questionnaire. The highest mean was for Part 1, question 11: I am concerned about how 4/4 block scheduling affects students. The mean for question 11 was 5.045 with a standard deviation of 6.946. The second highest mean (3.662 with a standard deviation of 2.430) was for Part 1, question 19: I am concerned about evaluating 4/4 block scheduling’s impact on students. Data concerning each of the 35 items comprising the Stages of Concern questionnaire are shown in Appendix J.

### Results for Each Research Question

This section includes a description of the data analysis and the results for each of the five research questions. Data are also reported in tabular form.

#### **Research Question One: What were the indicated Stage-of-Concern levels regarding 4/4 block scheduling of selected teachers in North Carolina 4/4 block scheduled schools?**

Results for research question one were obtained from the 35 items comprising the Stages of Concern instrument. The Stages of Concern instrument consists of 35 questions categorized into seven Stages of Concern: (a) awareness, (b) informational, (c) personal, (d) management, (e) consequence, (f) collaboration and (g) refocusing (Hall, George, & Rutherford, 1986). Specific questions that comprise each Stage of Concern are found in Table 2. Stages of Concern scores were calculated using Microsoft Excel.

Means, standard deviations, and ranges of Stages of Concern scores were calculated for the entire sample. The highest mean score was for the consequence (stage 4) construct—with a mean of 17.60 and a standard deviation of 8.32. The second highest mean score, 14.36 with a standard deviation of 8.16, was for refocusing (stage 6) concerns. Means, standard deviations and ranges for each construct are listed in Table 7.

Based on the 35 questions in the Stages of Concern questionnaire, the researcher classified responders’ questions into the appropriate Stage of Concern by using a self-designed MS Excel template. This template was modeled after the scoring guide indicated in Table 2. The researcher then recorded the peak stage score and the highest Stage of Concern for each respondent. SPSS was used to determine the number of responders for whom each stage was categorized as the highest Stage of Concern. As indicated by the information in Table 8,

Table 7

Mean Stages of Concern Scores for All Responders (Highest to Lowest)

Stage of Concern	Mean	SD	Range
Consequence (stage 4)	17.60	8.32	1 to 35
Refocusing (stage 6)	14.36	8.16	1 to 33
Collaboration (stage 5)	14.20	7.73	0 to 35
Management (stage 3)	11.30	7.45	0 to 32
Personal (stage 2)	10.79	8.63	0 to 35
Informational (stage 1)	8.30	6.47	0 to 30
Awareness (stage 0)	6.48	4.66	0 to 20

Note. The Stages of Concern questionnaire is comprised of seven stages with five items in each stage. Responders indicate their responses to each item using a seven-point rating scale in which 0 indicates that the statement is irrelevant and 7 indicates that the statement is very true of them at the time. This results in Stage of Concern scores that can range from 0 to 35 points for each of the seven Stages of Concern.

Table 8

Highest Stages of Concern Frequencies for All Responders (Highest to Lowest)

Stage of Concern	Frequency	Percentage
Consequence (stage 4)	75	46.9
Collaboration (stage 5)	32	20.0
Personal (stage 2)	15	9.4
Awareness (stage 0)	12	7.5
Refocusing (stage 6)	11	6.9
Management (stage 3)	9	5.6
Informational (stage 1)	4	2.5
Missing	2	1.3
Total	160	100.0

Note. The Stages of Concern questionnaire is comprised of seven stages with five items in each stage. Responders indicate their responses to each item using a seven-point rating scale in which 0 indicates that the statement is irrelevant and 7 indicates that the statement is very true of them at the time. This results in Stage of Concern scores that can range from 0 to 35 points for each of the seven Stages of Concern.

consequence (stage 4) was categorized as the highest Stage of Concern for the largest percentage of responders (46.9%). Collaboration (stage 5) was the highest stage for the next largest percentage of responders (20.0%).

**Research Question Two: Were there differences in the teachers' Stages of Concern when grouped by their: (a) selected characteristics and (b) years of adoption?**

The researcher used a one-way ANOVA to determine if differences existed between teachers' Stages of Concern when grouped by their selected characteristics and years of adoption. Table 9 indicates the mean ratings and ANOVA results for Stages of Concern by selected characteristics and Table 10 indicates the mean ratings and ANOVA results for the Stages of Concern by years of adoption.

Stages of Concern by Teaching Field

For the ANOVA concerning Stages of Concern by teaching field, the highest F values were for the refocusing (stage 6) Stage of Concern. The Scheffé post-hoc procedure was used to identify means that were significant at the .05 level. The post-hoc procedure revealed that at the refocusing (stage 6) Stage of Concern, the means of academic teachers were significantly higher than the means of workforce development teachers. The means of special subjects teachers were not different from either academic or workforce development teachers.

Stages of Concern by Education Level

The results of the ANOVA for Stages of Concern by education level did not result in any significant F values. As a result, the use of the Scheffé post-hoc procedure was not necessary.

Stages of Concern by Years of Teaching

For the ANOVA concerning Stages of Concern by years of teaching (Table 10), the highest F values were for the informational (stage 1) Stage of Concern and personal (stage 2) Stage of Concern. The Scheffé post-hoc procedure was used to identify means that were significant at the .05 level. The post-hoc procedure revealed that at the informational (stage 1) Stage of Concern, the means for teachers with 0 to 10 years of experience were significantly higher than those of teachers with 11 to 20 years of experience. The means of teachers with 21 to 30 years of experience and those with 31 years of experience and over were not significantly different from any of the other age categories.

Similarly, the post-hoc procedure revealed that at the personal (stage 2) level of concern, the means for teachers with 0 to 10 years of experience were significantly higher than those of teachers with 11 to 20 years of experience. The means of teachers with 21 to 30 years of experience were not significantly different from teachers with 20 years of experience and below. Yet, for the personal (stage 2) level of concern, the means of teachers with 31 years of experience and over were significantly lower than teachers in any of the other experience categories.

Table 9

Mean Scores and ANOVA Results for the Stages of Concern by Selected Characteristics

	Stage of Concern						
	<u>N</u>	Awareness (Stage 0)		Informational (Stage 1)		Personal (Stage 2)	
		<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
<b>Teaching Field</b>							
Academic	71	5.88	5.03	9.12	6.97	12.00	9.01
Work Dev	55	6.85	4.70	6.69	5.05	8.54	7.86
Spec Sub	31	7.22	3.63	9.51	7.05	12.12	8.58
F		1.14		2.89		2.98	
Sig		0.32		0.05		0.05	
<b>Education Level</b>							
High School	5	7.00	6.20	9.80	8.10	13.20	13.29
Associate	6	9.33	6.31	8.16	9.04	8.83	10.26
Bachelor's	96	6.64	4.68	8.55	6.13	11.17	8.16
Master's	51	5.78	4.22	7.70	6.75	10.05	8.99
F		1.19		0.27		0.41	
Sig		0.31		0.84		0.74	
<b>Years of Teaching</b>							
0 to 10	66	7.12	4.96	10.34 <sup>a</sup>	7.49	13.78 <sup>a</sup>	9.29
11 to 20	45	5.40	3.92	6.33 <sup>b</sup>	5.36	8.46 <sup>b</sup>	7.60
21 to 30	42	6.78	4.58	7.35 <sup>ab</sup>	5.28	9.54 <sup>ab</sup>	7.46
** 31 and Over	5	5.20	6.64	7.00 <sup>ab</sup>	1.58	2.60 <sup>c</sup>	2.07
F		1.41		4.19		6.06	
Sig		0.24		0.01*		0.00*	

Note. The Stages of Concern questionnaire is comprised of seven stages with five items in each stage. Responders indicate their responses to each item using a seven-point rating scale in which 0 indicates that the statement is irrelevant and 7 indicates that the statement is very true of them at the time. This results in Stage of Concern scores that can range from 0 to 35 points for each of the seven Stages of Concern.

\*For comparisons in which there was a significant ( $p < .05$ ) F value for the ANOVA, the Scheffé post-hoc procedure was used to identify individual means that were different.

a, b, ab, c Different superscript letters designate means that were significantly different according to the Scheffé procedure.

\*\*Because there were only four responders with 31-40 years of teaching experience and one responder with over 40 years of teaching experience, these categories were combined for analysis purposes.

(table continues)

Table 9 (continued)

Mean Scores and ANOVA Results for the Stages of Concern by Selected Characteristics

Category	Stage of Concern						
	Management (Stage 3)			Consequence (Stage 4)		Collaboration (Stage 5)	
	<u>N</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
<b>Teaching Field</b>							
Academic	71	12.63	7.61	19.35	8.33	14.56	8.04
Work Dev	55	10.41	7.33	16.38	8.54	13.10	7.70
Spec Sub	31	9.90	7.10	16.00	7.37	15.54	6.99
F		2.08		2.79		1.09	
Sig		0.12		0.06		0.33	
<b>Education Level</b>							
High School	5	11.60	10.78	17.00	9.92	14.40	7.30
Associate	6	9.66	9.66	14.16	5.98	12.33	8.35
Bachelor's	96	11.21	7.34	17.96	8.20	14.36	7.77
Master's	51	11.62	7.25	17.37	8.74	14.09	7.82
F		0.13		0.42		0.13	
Sig		0.94		0.73		0.94	
<b>Years of Teaching</b>							
0 to 10	66	12.81	7.69	19.16	8.13	15.81	7.83
11 to 20	45	9.84	6.85	16.75	9.31	13.00	7.28
21 to 30	42	10.83	7.43	16.09	7.31	13.71	7.93
** 31 and Over	5	8.40	7.63	17.20	8.34	7.80	2.94
F		1.82		1.40		2.59	
Sig		0.15		0.24		0.05	

Note. The Stages of Concern questionnaire is comprised of seven stages with five items in each stage. Responders indicate their responses to each item using a seven-point rating scale in which 0 indicates that the statement is irrelevant and 7 indicates that the statement is very true of them at the time. This results in Stage of Concern scores that can range from 0 to 35 points for each of the seven Stages of Concern.

\*For comparisons in which there was a significant ( $p < .05$ ) F value for the ANOVA, the Scheffé post-hoc procedure was used to identify individual means that were different.

a, b, ab, c Different superscript letters designate means that were significantly different according to the Scheffé procedure.

\*\*Because there were only four responders with 31-40 years of teaching experience and one responder with over 40 years of teaching experience, these categories were combined for analysis purposes.

(table continues)

Table 9 (continued)

Mean Scores and ANOVA Results for the Stages of Concern by Selected Characteristics

Category	Stage of Concern		
	<u>N</u>	<u>M</u>	<u>SD</u>
Refocusing (Stage 6)			
Teaching Field			
Academic	71	17.07 <sup>a</sup>	8.14
Work Dev	55	11.61 <sup>b</sup>	7.60
Spec Sub	31	13.19 <sup>ab</sup>	7.47
F		7.95	
Sig		0.00*	
Education Level			
High School	5	10.40	7.56
Associate	6	9.66	7.06
Bachelor's	96	14.46	8.29
Master's	51	15.09	8.00
F		1.20	
Sig		0.31	
Years of Teaching			
0 to 10	66	15.40	8.92
11 to 20	45	12.97	8.06
21 to 30	42	13.90	6.69
** 31 and Over	5	16.80	9.78
F		0.98	
Sig		0.40	

Note. The Stages of Concern questionnaire is comprised of seven stages with five items in each stage. Responders indicate their responses to each item using a seven-point rating scale in which 0 indicates that the statement is irrelevant and 7 indicates that the statement is very true of them at the time. This results in Stage of Concern scores that can range from 0 to 35 points for each of the seven Stages of Concern.

\*For comparisons in which there was a significant ( $p < .05$ ) F value for the ANOVA, the Scheffé post-hoc procedure was used to identify individual means that were different.

a, b, ab, c

Different superscript letters designate means that were significantly different according to the Scheffé procedure.

\*\*Because there were only four responders with 31-40 years of teaching experience and one responder with over 40 years of teaching experience, these categories were combined for analysis purposes.

Table 10

Mean Scores and ANOVA Results for the Stages of Concern by Years of Adoption

Year of Adoption	Stage of Concern								
	Awareness (Stage 0)			Informational (Stage 1)		Personal (Stage 2)		Management (Stage 3)	
	<u>N</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
1996-1997	53	6.24	4.23	9.26	6.64	11.71	8.21	12.30	6.89
1997-1998	51	6.74	5.24	9.11	6.19	12.13	9.23	12.68	8.33
1998-1999	52	6.28	4.48	6.75	6.37	8.80	8.25	9.26	6.63
F		0.18		2.52		2.32		3.40	
*Sig		0.83		0.08		0.10		0.04	

Note. The Stages of Concern questionnaire is comprised of seven stages with five items in each stage. Responders indicate their responses to each item using a seven-point rating scale in which 0 indicates that the statement is irrelevant and 7 indicates that the statement is very true of them at the time. This results in Stage of Concern scores that can range from 0 to 35 points for each of the seven Stages of Concern.

\*The ANOVA procedure did not result in any significant differences for Stages of Concern by years of adoption.

*(table continues)*

Table 10 (continued)

Mean Scores and ANOVA Results for the Stages of Concern by Years of Adoption (Continued)

Year of Adoption	Stage of Concern						
	Consequence (Stage 4)			Collaboration (Stage 5)		Refocusing (Stage 6)	
	<u>N</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
1996-1997	53	18.66	8.03	15.81	7.82	15.39	7.70
1997-1998	51	18.43	8.19	14.49	7.71	14.88	8.95
1998-1999	52	15.94	8.59	12.48	7.50	13.00	7.84
F		1.73		2.50		1.24	
*Sig		0.18		0.09		0.29	

Note. The Stages of Concern questionnaire is comprised of seven stages with five items in each stage. Responders indicate their responses to each item using a seven-point rating scale in which 0 indicates that the statement is irrelevant and 7 indicates that the statement is very true of them at the time. This results in Stage of Concern scores that can range from 0 to 35 points for each of the seven Stages of Concern.

\*The ANOVA procedure did not result in any significant differences for Stages of Concern by years of adoption.

### Stages of Concern by Years of Adoption

The ANOVA concerning Stages of Concern by years of adoption did not result in any significant F values. As a result, the use of the Scheffé post-hoc procedure was not necessary.

### **Research Question Three: What were the perceived professional development needs regarding 4/4 block scheduling of selected teachers in North Carolina 4/4 block scheduled schools?**

The nine items used in part II of the questionnaire were identified through a review of literature related to 4/4 block scheduling. Respondents indicated their perceived level of need for professional development in each of the nine areas by circling a number corresponding to their level of need on a rating scale. In this rating scale, 0 indicated no need for professional development, 1 indicated little need for professional development, 2 indicated more need concerning professional development, and 3 indicated great need for professional development. This rating scale was modeled after similar rating scales used in other studies reviewed. The researcher used means (Table 11) and percentages (Table 12) to report the teachers' perceived professional development needs regarding 4/4 block scheduling.

### Means for Professional Development Needs

Means and standard deviations for the nine professional development needs are displayed in Table 11. The highest observed mean (1.99 on a scale from 0 to 3) was for the item pertaining to *improving standardized test results in 4/4 block-scheduled classes*. The second highest mean (1.91 on a scale from 0 to 3) was for the item concerning *developing varied and challenging instructional activities*.

### Percentages for Professional Development Needs

Table 12 illustrates the percentages for each of the nine professional development needs. For seven of the professional development needs, the highest percentage of teachers indicated their level of need for professional development at 2 (more need) on a scale of 0 (no need) to 3 (great need). These seven professional development needs were (a) *developing varied and challenging instructional activities in 4/4 block scheduling*, (b) *improving standardized test results in 4/4 block scheduled classes*, (c) *managing student organizations and 4/4 block scheduling*, (d) *implementing work-based programs and 4/4 block scheduling*, (e) *managing student behavior in 4/4 block scheduling*, (f) *managing time requirements associated with 4/4 block scheduling*, and (g) *working with other teachers regarding implementing or revising 4/4 block scheduling*. For the item concerning *maintaining a positive school environment in 4/4 block scheduling*, the highest percentage of respondents indicated 1 (little need) for professional development on a scale of 0 (no need) to 3 (great need). The same percentage of respondents indicated 2 (more need) and 3 (great need) related to professional development for *coordinating competitive events and 4/4 block scheduling*.

Table 11

Means for Professional Development Needs (Highest to Lowest)

Variable	Mean	SD
Improving Standardized Test Results	1.99	0.957
Developing Challenging Activities	1.91	0.937
Managing Student Organizations	1.80	1.049
Managing Time Requirements	1.67	1.051
Coordinating Competitive Events	1.63	1.121
Managing Student Behavior	1.55	1.016
Implementing Work-Based Programs	1.46	1.085
Working with Other Teachers	1.41	1.062
Maintaining a Positive School Environment	1.38	1.036

Note. Respondents were asked to complete a rating scale concerning nine professional development needs. For each of the items, respondents could choose 0 (no need), 1 (little need), 2 (more need), or 3 (great need) to indicate their own professional development needs for each topic.

Table 12

Percentages for Level of Professional Development Need

Professional Development Category	Level of Need							
	No Need		Little Need		More Need		Great Need	
	<u>n</u>	%	<u>n</u>	%	<u>n</u>	%	<u>n</u>	%
Improving Standardized Test Results Total Missing: 3	16	10.0	24	15.0	62	38.8	55	34.4
Developing Challenging Instructional Activities Total Missing: 2	17	10.6	25	15.6	70	43.8	46	28.8
Managing Student Organizations Total Missing: 2	25	15.6	30	18.8	54	33.8	49	30.6
Managing Time Requirements Total Missing: 3	29	18.1	33	20.6	55	34.4	40	25.0
Coordinating Competitive Events Total Missing: 3	35	21.9	32	20.0	45	28.1	45	28.1

Note. Respondents were asked to complete a rating scale concerning nine professional development needs. For each of the items, respondents could choose 0 (no need), 1 (little need), 2 (more need), or 3 (great need) to indicate their own professional development needs for each topic.

*(table continues)*

Table 12 (continued)

Percentages for Level of Professional Development Need

Professional Development Category	Level of Need							
	No Need		Little Need		More Need		Great Need	
	<u>n</u>	%	<u>n</u>	%	<u>n</u>	%	<u>n</u>	%
Managing Student Behavior Total Missing: 1	30	18.8	42	26.3	55	34.4	32	20.0
Implementing Work-Based Programs Total Missing: 4	41	25.6	33	20.6	51	31.9	31	19.4
Working with Other Teachers Total Missing: 3	43	26.9	32	20.0	56	35.0	26	16.3
Maintaining a Positive School Environment Total Missing: 1	38	23.8	50	31.3	43	26.9	28	17.5

Note. Respondents were asked to complete a rating scale concerning nine professional development needs. For each of the items, respondents could choose 0 (no need), 1 (little need), 2 (more need), or 3 (great need) to indicate their own professional development needs for each topic.

#### **Research Question Four: Were there differences in the teachers' professional development needs when grouped by their: (a) selected characteristics and (b) years of adoption?**

The researcher used a one-way ANOVA to determine if differences existed between the perceived professional development needs of teachers when compared by their selected characteristics and years of adoption. Table 13 indicates the mean ratings and ANOVA results for teachers' professional development needs by selected characteristics. Table 14 indicates the mean ratings and ANOVA results for teachers' professional development needs by years of adoption. For comparisons that resulted in a significant F value, the Scheffé post-hoc procedure was used to determine what significant differences existed among variables tested. The Scheffé post-hoc test provides a more conservative assessment of significance than the Tukey post-hoc test. Thus, comparisons are indicated as being significant only if the Scheffé post-hoc test resulted in a significant value.

##### Professional Development Needs by Selected Characteristics

The characteristics studied for research question four included teaching field (academic, workforce development, and special subjects), education level (high school diploma, associate's degree, bachelor's degree, and master's degree), and years of teaching (0 to 10 years, 11 to 20 years, 21 to 30 years, and 31 years and over). Years of adoption (1996-1997, 1997-1998, and 1998-1999) were also compared in terms of professional development needs.

##### Professional Development Needs by Teaching Field

Academic teachers had the highest means for 7 of the 9 items concerning professional development needs. Special subjects teachers had the highest means for professional development needs on the other two items: (a) *coordinating competitive events and 4/4 block scheduling*, and (b) *working with other teachers regarding implementing or revising 4/4 block scheduling*.

For the ANOVA concerning professional development needs by teaching field, the highest F value was for the item concerning *managing time requirements associated with 4/4 block scheduling*. The Scheffé post-hoc procedure was used to identify means that were significant at the .05 level, and revealed that the means of academic teachers were significantly higher than the means of workforce development teachers. Means for special subjects teachers were not significantly different from either workforce development teachers or academic teachers. Two other items—*improving standardized test results in 4/4 block scheduled classes* and *managing student behavior in 4/4 block scheduling*—appeared to have significant F values but the Scheffé test did not indicate significance.

##### Professional Development Needs by Education Level and Years of Teaching

For the variable education level, on 6 of the 9 items, teachers with bachelor's and master's degrees had higher levels of professional development need than teachers with only a high school diploma or associate degree. One item, *improving standardized test results in 4/4 block scheduled classes*, appeared to have a significant F value (0.038). However, the Scheffé post-hoc test did not indicate significance.

Table 13

Mean Ratings and ANOVA Results for Professional Development Needs by Selected Characteristics

Selected Characteristic	Professional Development Needs								
	Improving Standardized Test Results			Developing Challenging Activities			Managing Student Organizations		
	<u>N</u>	<u>M</u>	<u>SD</u>	<u>N</u>	<u>M</u>	<u>SD</u>	<u>N</u>	<u>M</u>	<u>SD</u>
Teaching Field									
Academic	70	2.21	0.86	71	2.04	0.91	71	1.98	0.97
Work Dev	55	1.83	0.99	55	1.78	0.95	55	1.70	1.13
Spec Sub	31	1.80	1.01	31	1.90	0.94	31	1.61	0.98
F		3.28			1.20			1.83	
Sig		0.04			0.30			0.16	
Education Level									
High School	5	1.40	1.34	5	0.80	0.83	5	0.60	0.89
Associate	6	1.16	1.16	6	2.00	1.09	6	1.66	1.36
Bachelor's	96	1.97	0.89	96	1.93	0.91	96	1.81	0.98
Master's	50	2.18	0.96	51	1.98	0.92	51	1.92	1.09
F		2.87			2.54			2.51	
Sig		0.03			0.05			0.06	
Years of Teaching									
0 to 10	64	1.95	0.99	65	2.10	0.93	65	1.98	1.02
11 to 20	45	1.95	0.95	45	1.71	1.01	45	1.73	1.15
21 to 30	42	2.11	0.88	42	1.83	0.79	42	1.64	0.95
** 31 and Over	6	1.83	1.16	6	2.00	1.09	6	1.50	1.04
F		0.35			1.77			1.21	
Sig		0.79			0.16			0.31	

Note. Respondents were asked to complete a rating scale concerning nine professional development needs. For each of the items, respondents could choose 0 (no need), 1 (little need), 2 (more need), or 3 (great need) to indicate their own professional development needs for each topic.

\*For comparisons in which there was a significant ( $p < .05$ ) F value for the ANOVA, the Scheffé post-hoc procedure was used to identify individual means that were different.

<sup>a, b, ab</sup> Different superscript letters designate means that were significantly different according to the Scheffé procedure.

\*\*Because there were only four responders with 31-40 years of teaching experience and one responder with over 40 years of teaching experience, these categories were combined for analysis purposes.

(table continues)

Table 13 (continued)

## Mean Ratings and ANOVA Results for Professional Development Needs by Selected Characteristics

Selected Characteristic	Professional Development Needs								
	Managing Time Requirements			Coordinating Competitive Events			Managing Student Behavior		
	<u>N</u>	<u>M</u>	<u>SD</u>	<u>N</u>	<u>M</u>	<u>SD</u>	<u>N</u>	<u>M</u>	<u>SD</u>
Teaching Field									
Academic	70	1.94 <sup>a</sup>	1.04	69	1.62	1.08	71	1.78	0.99
Work Dev	55	1.36 <sup>b</sup>	1.02	56	1.50	1.19	56	1.35	1.06
Spec Sub	31	1.64 <sup>ab</sup>	0.98	31	1.96	1.01	31	1.41	0.88
F		4.91			1.79			3.28	
Sig		0.00*			0.17			0.04	
Education Level									
High School	5	0.80	0.83	5	0.60	0.89	5	1.20	0.83
Associate	6	1.33	1.21	6	1.33	1.50	6	1.33	1.21
Bachelor's	96	1.69	1.04	97	1.57	1.10	97	1.61	1.00
Master's	50	1.76	1.04	49	1.89	1.06	51	1.50	1.04
F		1.50			2.62			0.45	
Sig		0.21			0.05			0.71	
Years of Teaching									
0 to 10	65	1.76	0.96	66	1.89	1.11	66	1.72	0.98
11 to 20	44	1.36	1.16	44	1.45	1.13	45	1.22	1.02
21 to 30	42	1.85	1.02	42	1.47	1.01	42	1.69	1.02
** 31 and Over	6	1.66	1.03	5	1.20	1.64	6	1.33	0.81
F		1.91			2.13			2.67	
Sig		0.13			0.10			0.05	

Note. Respondents were asked to complete a rating scale concerning nine professional development needs. For each of the items, respondents could choose 0 (no need), 1 (little need), 2 (more need), or 3 (great need) to indicate their own professional development needs for each topic.

\*For comparisons in which there was a significant ( $p < .05$ ) F value for the ANOVA, the Scheffé post-hoc procedure was used to identify individual means that were different.

<sup>a, b, ab</sup> Different superscript letters designate means that were significantly different according to the Scheffé procedure.

\*\*Because there were only four responders with 31-40 years of teaching experience and one responder with over 40 years of teaching experience, these categories were combined for analysis purposes.

(table continues)

Table 13 (continued)

## Mean Ratings and ANOVA Results for Professional Development Needs by Selected Characteristics

Selected Characteristic	Professional Development Needs								
	Implementing Work- Based Programs			Working with Other Teachers			Maintaining a Positive School Environment		
	<u>N</u>	<u>M</u>	<u>SD</u>	<u>N</u>	<u>M</u>	<u>SD</u>	<u>N</u>	<u>M</u>	<u>SD</u>
Teaching Field									
Academic	70	1.58	1.05	70	1.44	1.11	71	1.56	1.09
Work Dev	55	1.40	1.19	55	1.21	1.04	56	1.14	0.98
Spec Sub	30	1.33	0.92	31	1.70	0.93	31	1.41	0.95
F		0.75			2.18			2.63	
Sig		0.47			0.11			0.07	
Education Level									
High School	5	0.40	0.89	5	0.60	0.89	5	0.80	0.83
Associate	6	1.33	1.50	6	1.66	1.36	6	1.00	1.26
Bachelor's	95	1.53	1.04	96	1.44	1.03	97	1.45	1.03
Master's	50	1.44	1.09	50	1.40	1.08	51	1.35	1.03
F		1.80			1.13			0.96	
Sig		0.14			0.33			0.41	
Years of Teaching									
0 to 10	65	1.64	1.06	65	1.58	1.08	66	1.57	1.05
11 to 20	44	1.40	1.18	44	1.25	0.99	45	1.13	1.01
21 to 30	41	1.29	0.98	42	1.38	1.08	42	1.35	1.00
** 31 and Over	6	1.00	1.09	6	1.00	1.09	6	1.33	1.03
F		1.36			1.23			1.67	
Sig		0.26			0.30			0.18	

Note. Respondents were asked to complete a rating scale concerning nine professional development needs. For each of the items, respondents could choose 0 (no need), 1 (little need), 2 (more need), or 3 (great need) to indicate their own professional development needs for each topic.

\*For comparisons in which there was a significant ( $p < .05$ ) F value for the ANOVA, the Scheffé post-hoc procedure was used to identify individual means that were different.

a, b, ab Different superscript letters designate means that were significantly different according to the Scheffé procedure.

\*\*Because there were only four responders with 31-40 years of teaching experience and one responder with over 40 years of teaching experience, these categories were combined for analysis purposes.

Table 14

Mean Ratings and ANOVA Results for Professional Development Needs by Years of Adoption

Year of Adoption	Professional Development Needs											
	Improving Standardized Test Results			Developing Challenging Activities			Managing Student Organizations			Managing Time Requirements		
	<u>N</u>	<u>M</u>	<u>SD</u>	<u>N</u>	<u>M</u>	<u>SD</u>	<u>N</u>	<u>M</u>	<u>SD</u>	<u>N</u>	<u>M</u>	<u>SD</u>
1996-1997	54	2.09	0.99	54	2.03	0.86	54	1.90	0.93	54	1.87 <sup>a</sup>	0.97
1997-1998	51	2.05	0.92	51	2.03	0.99	51	1.96	1.09	51	1.80 <sup>a</sup>	1.13
1998-1999	50	1.78	0.93	51	1.70	0.90	51	1.54	1.06	50	1.36 <sup>b</sup>	0.98
F		1.65			2.22			2.41			3.69	
Sig		0.20			0.11			0.09			0.03*	

Note. Respondents were asked to complete a rating scale concerning nine professional development needs. For each of the items, respondents could choose 0 (no need), 1 (little need), 2 (more need), or 3 (great need) to indicate their own professional development needs for each topic.

\*For comparisons in which there was a significant ( $p < .05$ ) F value for the ANOVA, the Scheffé post-hoc procedure was used to identify individual means that were different.

a, a, b Different superscript letters designate means that were significantly different according to the Scheffé procedure.

(table continues)

Table 14 (continued)

Mean Ratings and ANOVA Results for Professional Development Needs by Years of Adoption

Year of Adoption	Professional Development Needs											
	Coordinating Competitive Events			Managing Student Behavior			Implementing Work-Based Programs			Working with Other Teachers		
	<u>N</u>	<u>M</u>	<u>SD</u>	<u>N</u>	<u>M</u>	<u>SD</u>	<u>N</u>	<u>M</u>	<u>SD</u>	<u>N</u>	<u>M</u>	<u>SD</u>
1996-1997	54	1.88 <sup>a</sup>	1.14	54	1.57	0.96	54	1.64	1.04	54	1.64 <sup>a</sup>	1.01
1997-1998	51	1.72 <sup>a</sup>	1.11	51	1.64	1.12	51	1.49	1.12	51	1.56 <sup>a</sup>	1.11
1998-1999	50	1.24 <sup>b</sup>	1.02	52	1.48	0.95	49	1.24	1.07	50	1.00 <sup>b</sup>	0.92
F		4.86			0.35			1.81			6.10	
Sig		0.01*			0.71			0.17			0.00*	

Note. Respondents were asked to complete a rating scale concerning nine professional development needs. For each of the items, respondents could choose 0 (no need), 1 (little need), 2 (more need), or 3 (great need) to indicate their own professional development needs for each topic.

\*For comparisons in which there was a significant ( $p < .05$ ) F value for the ANOVA, the Scheffé post-hoc procedure was used to identify individual means that were different.

a, a, b Different superscript letters designate means that were significantly different according to the Scheffé procedure.

(table continues)

Table 14 (*continued*)

Mean Ratings and ANOVA Results for Professional Development Needs by Years of Adoption

Year of Adoption	Professional Development Needs		
	Maintaining a Positive School Environment		
	<u>N</u>	<u>M</u>	<u>SD</u>
Year of Adoption			
1996-1997	54	1.57 <sup>a</sup>	1.00
1997-1998	51	1.54 <sup>a</sup>	1.13
1998-1999	52	1.01 <sup>b</sup>	0.85
F		5.10	
Sig		0.01*	

Note. Respondents were asked to complete a rating scale concerning nine professional development needs such as *Maintaining a positive school environment in 4/4 block scheduling*. For each of the nine questions, respondents could choose 0 (no need), 1 (little need), 2 (more need), or 3 (great need) concerning professional development for each topic.

\*For comparisons in which there was a significant ( $p < .05$ ) F value for the ANOVA, the Scheffé post-hoc procedure was used to identify individual means that were different.

a, a, b Different superscript letters designate means that were significantly different according to the Scheffé procedure.

For the variable years of teaching, on 7 of the 9 items, teachers with 0 to 10 years of experience had higher levels of need than teachers with 11 years experience and over. One item, *managing student behavior in 4/4 block scheduling*, appeared to have a significant F value (0.050), yet the Scheffé post-hoc test did not indicate significance.

#### Professional Development Needs by Years of Adoption

For all nine professional development needs, teachers from schools that adopted 4/4 block scheduling most recently, during the 1998-1999 school year, had lower means than teachers from schools that adopted 4/4 block scheduling in the previous two years. The Scheffé post-hoc test revealed that four items were significant at the .05 level: (a) *managing time requirements associated with 4/4 block scheduling*, (b) *coordinating competitive events and 4/4 block scheduling*, (c) *working with other teachers regarding implementing or revising 4/4 block scheduling*, and (d) *maintaining a positive school environment in 4/4 block scheduling*. For each of these items, means for teachers in schools that adopted 4/4 block scheduling during the 1998-1999 school year were significantly lower than the means for teachers in schools that adopted 4/4 block scheduling in 1996-1997 and in 1997-1998. The means of teachers in schools that adopted 4/4 block scheduling in 1996-1997 were not significantly different from the means of teachers in schools that adopted 4/4 block scheduling in 1997-1998.

#### **Research Question Five: Were there differences among the teachers' professional development needs when grouped by their primary Stages of Concern?**

A one-way ANOVA was used to determine if differences existed among the professional needs of teachers when these needs were grouped by their primary Stages of Concern. Table 15 illustrates the mean ratings and ANOVA results for this analysis.

Teachers whose primary Stage of Concern was awareness (stage 0) had the lowest mean scores of all groups on all nine professional development items. For five of the professional development needs studied, the highest mean was for teachers whose primary Stage of Concern was personal (stage 2). These professional development needs were *managing time requirements associated with 4/4 block scheduling* ( $\underline{M} = 2.06$ ), *coordinating competitive events and 4/4 block scheduling* ( $\underline{M} = 2.00$ ), *implementing work-based programs and 4/4 block scheduling* ( $M = 1.80$ ), *working with other teachers regarding implementing or revising 4/4 block scheduling* ( $\underline{M} = 2.06$ ), and *maintaining a positive school environment in 4/4 block scheduling* ( $\underline{M} = 1.80$ ). Two of the professional development needs studied received the highest means from teachers at the management (stage 3) Stage of Concern. These needs were *improving standardized test results in 4/4 block scheduled classes* ( $\underline{M} = 2.44$ ), and *managing student organizations and 4/4 block scheduling* ( $\underline{M} = 2.33$ ). The highest means for the items *managing student behavior in 4/4 block scheduling* ( $\underline{M} = 2.18$ ) and *developing varied and challenging activities in 4/4 block scheduling* ( $\underline{M} = 2.18$ ) were for teachers whose primary stage was the refocusing (stage 6) Stage of Concern.

Five of the items had F values that appeared significant, but the Scheffé post-hoc test revealed that these items were not significant. Only one item, *working with other teachers regarding implementing or revising 4/4 block scheduling*, was significant according to the Scheffé post-hoc test.

Table 15

Mean Ratings and ANOVA Results for Professional Development Needs by Primary Stages of Concern

Primary Stage of Concern	Professional Development Needs								
	Improving Standardized Test Results			Developing Challenging Activities			Managing Student Organizations		
	<u>N</u>	<u>M</u>	<u>SD</u>	<u>N</u>	<u>M</u>	<u>SD</u>	<u>N</u>	<u>M</u>	<u>SD</u>
Awareness: Stage 0	11	1.00	1.18	11	0.90	1.13	11	0.90	1.13
Informational: Stage 1	3	1.33	1.52	4	1.75	1.50	4	1.50	1.29
Personal: Stage 2	15	2.13	0.91	15	2.00	0.84	15	2.00	0.84
Management: Stage 3	9	2.44	0.72	9	2.11	0.92	9	2.33	1.11
Consequence: Stage 4	75	2.04	0.95	75	1.94	0.91	75	1.90	1.01
Collaboration: Stage 5	32	2.00	0.80	32	2.00	0.84	32	1.62	1.03
Refocusing: Stage 6	11	2.27	0.78	11	2.18	0.60	11	1.90	1.04
F		2.987			2.587			2.24	
Sig		0.010			0.02			0.04	

Note. For this analysis, teachers were grouped and compared by their primary Stage of Concern, which was the stage for which responders had the highest total score. For example, 12 teachers had their highest scores for stage 0: awareness, but not all 12 responded to each professional development item. Respondents were asked to complete a rating scale concerning nine professional development needs. For each of the items, respondents could choose 0 (no need), 1 (little need), 2 (more need), or 3 (great need) to indicate their own professional development needs for each topic.

\*For comparisons in which there was a significant ( $p < .05$ ) F value for the ANOVA, the Scheffé post-hoc procedure was used to identify individual means that were different.

a, b, ab, c Different superscript letters designate means that were significantly different according to the Scheffé procedure.

(table continues)

Table 15 (continued)

Mean Ratings and ANOVA Results for Professional Development Needs by Primary Stages of Concern

Primary Stage of Concern	Professional Development Needs								
	Managing Time Requirements			Coordinating Competitive Events			Managing Student Behavior		
	<u>N</u>	<u>M</u>	<u>SD</u>	<u>N</u>	<u>M</u>	<u>SD</u>	<u>N</u>	<u>M</u>	<u>SD</u>
Awareness: Stage 0	11	0.90	1.04	12	1.16	1.19	12	1.08	1.08
Informational: Stage 1	4	1.50	1.29	4	1.50	1.00	4	1.50	1.29
Personal: Stage 2	15	2.06	0.88	15	2.00	0.92	15	1.80	0.94
Management: Stage 3	9	1.88	1.05	9	1.77	1.09	9	1.44	1.13
Consequence: Stage 4	75	1.73	1.01	74	1.63	1.18	75	1.69	0.95
Collaboration: Stage 5	31	1.45	1.12	31	1.70	0.97	32	1.12	1.00
Refocusing: Stage 6	11	2.00	1.00	11	1.27	1.27	11	2.18	0.87
F		1.90			0.85			2.62	
Sig		0.08			0.53			0.02	

Note. For this analysis, teachers were grouped and compared by their primary Stage of Concern, which was the stage for which responders had the highest total score. For example, 12 teachers had their highest scores for stage 0: awareness, but not all 12 responded to each professional development item. Respondents were asked to complete a rating scale concerning nine professional development needs. For each of the items, respondents could choose 0 (no need), 1 (little need), 2 (more need), or 3 (great need) to indicate their own professional development needs for each topic.

\*For comparisons in which there was a significant ( $p < .05$ ) F value for the ANOVA, the Scheffé post-hoc procedure was used to identify individual means that were different.

a, b, ab, c Different superscript letters designate means that were significantly different according to the Scheffé procedure.

(table continues)

Table 15 (continued)

Mean Ratings and ANOVA Results for Professional Development Needs by Primary Stages of Concern

Primary Stage of Concern	Professional Development Needs								
	Implementing Work-Based Programs			Working with Other Teachers			Maintaining a Positive School Environment		
	<u>N</u>	<u>M</u>	<u>SD</u>	<u>N</u>	<u>M</u>	<u>SD</u>	<u>N</u>	<u>M</u>	<u>SD</u>
Awareness: Stage 0	11	1.09	1.22	11	0.45 <sup>c</sup>	0.68	12	0.58	0.79
Informational: Stage 1	4	1.25	1.50	4	1.00 <sup>c</sup>	1.41	1	1.25	1.50
Personal: Stage 2	15	1.80	0.86	15	2.06 <sup>a</sup>	0.79	15	1.80	0.86
Management: Stage 3	9	1.77	0.97	9	0.88 <sup>c</sup>	0.92	9	1.11	1.26
Consequence: Stage 4	74	1.51	1.12	75	1.42 <sup>b</sup>	1.02	75	1.49	0.99
Collaboration: Stage 5	31	1.22	1.02	31	1.48 <sup>b</sup>	1.06	32	1.15	0.98
Refocusing: Stage 6	11	1.45	1.12	11	1.72 <sup>ab</sup>	1.27	11	1.72	1.10
F		0.87			3.36			2.46	
Sig		0.52			0.00*			0.03	

Note. For this analysis, teachers were grouped and compared by their primary Stage of Concern, which was the stage for which responders had the highest total score. For example, 12 teachers had their highest scores for stage 0: awareness, but not all 12 responded to each professional development item. Respondents were asked to complete a rating scale concerning nine professional development needs. For each of the items, respondents could choose 0 (no need), 1 (little need), 2 (more need), or 3 (great need) to indicate their own professional development needs for each topic.

\*For comparisons in which there was a significant ( $p < .05$ ) F value for the ANOVA, the Scheffé post-hoc procedure was used to identify individual means that were different.

a, b, ab, c Different superscript letters designate means that were significantly different according to the Scheffé procedure.

### Working with Other Teachers

For the item *working with other teachers regarding implementing or revising 4/4 block scheduling*, teachers with primary concerns at the personal (stage 2) Stage of Concern had significantly higher means than all other groups except refocusing (stage 6). Teachers at the awareness, informational, and management stages had significantly lower means for the item *working with other teachers regarding implementing or revising 4/4 block scheduling* than those whose primary stages were at all other Stages of Concern.

### Summary

This study was conducted to determine the concerns of teachers and their perceived professional development needs concerning 4/4 block scheduling. Data were obtained from a questionnaire completed by 160 North Carolina public school teachers in 4/4 block scheduled high schools. A profile of respondents was presented and the following findings were reported:

1. The primary Stage of Concern for the highest number of teachers (75; 46.9%) was the consequence (stage 4) Stage of Concern.
2. For the informational (stage 1) and personal (stage 2) Stages of Concern, the means of teachers with 0 to 10 years of experience were higher than teachers with more experience.
3. For the refocusing (stage 6) level of concern, the means of academic teachers were significantly higher than the means of workforce development teachers. The means of special subjects teachers were not significantly different from the other groups studied.
4. For 7 of the 9 professional development needs studied, the highest percentage of teachers indicated “more need” (a rating of 2 on a scale of 0 to 3).
5. Teachers with bachelor’s degrees and master’s degrees indicated higher levels of professional development needs than teachers with high school diplomas and associate degrees on 6 of the 9 professional development needs studied.
6. Teachers in schools that adopted 4/4 block scheduling during the 1996-1997 and 1997-1998 school years tended to report higher levels of need for professional development than more recent adopters (1998-1999) of 4/4 block scheduling.

## CHAPTER 5 CONCLUSIONS AND IMPLICATIONS

### Introduction

The purpose of this study was to determine the concerns of North Carolina public school teachers and their perceived professional development needs regarding 4/4 block scheduling. This chapter includes a summary of the study, discussion of findings and conclusions about the findings. Recommendations for practice and further research are provided.

### Summary of the Study Procedures

This study was conducted to determine the Stages of Concern of teachers and their perceived professional development needs related to 4/4 block scheduling in North Carolina high schools that have adopted this scheduling. The relationships among the concerns of teachers, professional development needs, their selected characteristics, and years of adoption of 4/4 block scheduling were also studied.

The research questions examined were:

1. What were the indicated Stage-of-Concern levels regarding 4/4 block scheduling of selected teachers in North Carolina 4/4 block scheduled schools?
2. Were there differences in the teachers' Stages of Concern when grouped by their: (a) selected characteristics and (b) years of adoption?
3. What were the perceived professional development needs regarding 4/4 block scheduling of selected teachers in North Carolina 4/4 block scheduled schools?
4. Were there differences in the teachers' professional development needs when grouped by their: (a) selected characteristics and (b) years of adoption?
5. Were there differences among the teachers' professional development needs when grouped by their primary Stages of Concern?

For each of the 117 school districts in North Carolina, the researcher telephoned a central office employee who had participated in the implementation of 4/4 block scheduling. These employees provided the names and implementation dates of schools that had adopted 4/4 block scheduling within each school district. If the central office employee was unsure of the date of adoption of 4/4 block scheduling at a high school, the researcher obtained the date of adoption from that high school's guidance counselor, school secretary, or school administrator. From these contacts at high schools and central offices, a list of public schools was developed that contained the adoption dates of 4/4 block scheduling for each school. Thus, the researcher determined that there were 238 schools using the 4/4 block schedule.

Murnane and Levy (1996) sampled 15 public schools to determine the effect of increased funding on student achievement in Texas public schools. Using Murnane and Levy's sample size as a model, fifteen schools were chosen for participation in this study. Five schools were randomly selected that had implemented block scheduling in each of the following school years: 1996-1997, 1997-1998, and 1998-1999. Principals and superintendents representing each of the schools were allowed to accept or decline their schools' participation in the study. Fifteen teachers were randomly selected from each school's most current teaching roster, using a

stratification method to include five academic teachers, five workforce development teachers, and five teachers of other electives. The sampling method above resulted in 225 teachers who were potential participants.

The instrument was comprised of three parts: the Stages of Concern section (Part I), the Professional Development Needs section (Part II), and the Teacher Information section (Part III). The Stages of Concern section was originally developed by Hall and Loucks (1979) and is comprised of 35 questions. These questions are divided into seven Stages of Concern: (a) awareness, (b) informational, (c) personal, (d) management, (e) consequence, (f) collaboration, and (g) refocusing. The Professional Development Needs section was developed from the literature review. Table 1, which appears in Chapter 2, contains a list of studies that contributed to the composition of the nine professional development items in Part II of the survey instrument. The Teacher Information section was adapted from an earlier study by Linnell (1991).

Data were obtained from responses to the questionnaire from 161 of the 225 selected teachers in North Carolina 4/4 block scheduled public high schools. A sample of ten nonresponders was randomly selected to receive follow-up phone calls. The nonresponder group was compared to the responder group, and the comparisons indicated similarity between responders and nonresponders. In some cases, responders did not complete all questions. In these cases, the responses that were completed were included and omitted responses were cataloged using the system-missing data feature in SPSS.

#### Profile of Responders

Responders had an average of 14.35 years of teaching experience and the greatest percentage, 37.5%, were between the ages of 40 and 49. Most responders, 60.0%, indicated that their highest level of education was a baccalaureate degree. Further, the greatest percentage of teachers, 44.4%, indicated that they taught in an academic field; while 35% of responders stated that they taught workforce development subjects. Sixty-five percent of responders reported that they had received some professional development related to 4/4 block scheduling. The responders, 46.2%, who received professional development concerning 4/4 block scheduling indicated that the professional development slightly improved their preparation for teaching in this schedule.

#### Summary and Discussion of Results

This section provides a brief overview of the findings related to each research question. Included is a discussion of possible reasons for the results and their relationship to the literature reviewed for the study.

#### **Research Question One: What were the indicated Stage-of-Concern levels regarding 4/4 block scheduling of selected teachers in North Carolina 4/4 block scheduled schools?**

##### Summary of Results

The researcher calculated mean scores for each Stage of Concern for the total group of responders. Results indicated that the highest level of concern was for the consequence (stage 4) Stage of Concern ( $M = 17.60$ ,  $SD = 8.32$ ). The second-highest level was for the refocusing (stage 6) Stage of Concern ( $M = 14.36$ ,  $SD = 8.16$ ). Consequence (stage 4) was the primary Stage of Concern for the largest percentage of responders; 46.9% of responders had primary

stage scores at the consequence Stage of Concern. Collaboration (stage 5) was the highest Stage of Concern for the second largest percentage of responders, 20.0%.

### Discussion

Hall and Loucks (1979) indicated that teachers had different concerns as they adopted innovations. For example, teachers with high consequence levels of concern focused upon how an innovation affected students. These teachers were less focused upon how the innovation affected them professionally and personally. Alternatively, teachers with high refocusing levels of concern analyzed alternatives that made an innovation better for students. And, teachers at the collaboration Stage of Concern cooperated with each other and shared information about an innovation.

Fullan (1982) found that teachers prefer using other teachers as the source of new ideas—and that the focus toward innovation is often their own classroom. Similarly, Everhart (1995) found that change occurs best when teachers shared ideas with other teachers—because they felt their opinions were valued. This view was also expressed by Guskey (1995), who found that discomfort increased if teachers felt isolated when dealing with change. Further, collaboration and teamwork reduced the degree of discomfort that teachers felt when implementing an educational innovation.

### **Research Question Two: Were there differences in the teachers' Stages of Concern when grouped by their: (a) selected characteristics and (b) years of adoption?**

#### Summary of Results

For research question two, the researcher used a one-way ANOVA to determine differences in teacher's Stages of Concern when grouped by selected characteristics and years of adoption. For the analysis of Stages of Concern by teaching field, the highest F value (7.959) was at the refocusing Stage of Concern. The Scheffe' post-hoc procedure indicated that means of academic teachers with primary refocusing concerns were significantly higher than workforce development teachers with primary refocusing concerns.

For the analysis of Stages of Concern by years of teaching, the Scheffe' post-hoc procedure indicated that at the informational (stage 1) level of concern and at the personal (stage 2) level of concern, the means for teachers with 0 – 10 years of experience were significantly higher than those of teachers with 11 – 20 years of experience. Further, at the personal level of concern, the means of teachers with 31 years of experience and over were significantly lower than teachers with less experience.

### Discussion

According to Hall and Loucks (1979), teachers with informational concerns often sought more information about an innovation. In contrast, teachers at the personal Stage of Concern were interested in how the innovation affected them personally. Yet, teachers with refocusing concerns desired to change the innovation. Kirby and Smith (1998) indicated that Stages of Concern may differ between educators concerning an innovation. For example, their study indicated that teachers were more likely to have more awareness, informational, and collaboration stages than administrators. According to Kirby and Smith, Stages of Concern differed between educators who had varying degrees of experience with an innovation.

Similarly, Ciccelli and Baecher (1989) also indicated that teachers' concerns differed based upon their experience with an innovation.

### **Research Question Three: What were the perceived professional development needs regarding 4/4 block scheduling of selected teachers in North Carolina 4/4 block scheduled schools?**

#### Summary of Results

Means and percentages were used to determine the perceived professional development needs of teachers concerning 4/4 block scheduling. The nine items that represented professional development needs were identified through a review of the literature related to 4/4 block scheduling. Respondents indicated their level of need for professional development concerning each of the nine items by circling a response on a rating scale where 0 = no need, 1 = little need, 2 = more need, and 3 = great need for professional development. The highest observed mean was for the item concerning *improving standardized test results in 4/4 block scheduled classes* ( $M = 1.99$ ). The second highest mean was for the item concerning *developing varied and challenging instructional activities* ( $M = 1.91$ ).

Regarding the question concerning professional development for *coordinating competitive events and 4/4 block scheduling*, the same percentage of teachers, 28.1%, marked ratings of "more need" and "great need." The greatest percentage of teachers gave a "2" rating ("more need") for seven areas of professional development needs: (a) *developing varied and challenging instructional activities in 4/4 block scheduling* (43.8%), (b) *improving standardized test results in 4/4 block scheduled classes* (38.8%), (c) *managing student organizations and 4/4 block scheduling* (33.8%), (d) *implementing work-based programs and 4/4 block scheduling* (31.9%), (e) *managing student behavior in 4/4 block scheduling* (34.4%), (f) *managing time requirements associated with 4/4 block scheduling* (34.4%), and (g) *working with other teachers regarding implementing or revising 4/4 block scheduling* (35.0%). The greatest percentage of respondents indicated "little need" for professional development concerning *maintaining a positive school environment in 4/4 block scheduling* (31.3%).

#### Discussion

Results of this study determined that teachers perceived "more need" for professional development concerning *improving standardized test results in 4/4 block scheduled classes*. Teachers' indication of need for professional development concerning *improving standardized test results in 4/4 block scheduled classes* is reinforced by Eineder and Bishop (1997), who reported that there were mixed results concerning 4/4 block scheduling and standardized testing. For example, achievement in standardized tests decreased in math and science under the Canadian semesterized schedule—which was similar to the 4/4 block schedule found in North Carolina. Yet, other studies found no significant differences in student achievement between 4/4 block scheduling and the traditional 6 or 7 period schedule (Eineder & Bishop, 1997).

The greatest percentage of teachers (43.8%) also indicated "more" need for professional development related to *developing varied and challenging instructional activities in 4/4 block scheduled classes*. This finding is supported by the Goins and Swope (1997) study in which teachers had to implement new methods of instruction in order to match the time demands of 4/4 block scheduled classes. Also, Queen, Algozzine, and Eaddy (1997) found that teachers who implemented 4/4 block-scheduled classes had content-related problems. These teachers often

relied upon the lecture method of instruction. In addition, teachers indicated “more need” for professional development regarding *managing student organizations in 4/4 block scheduling* and *implementing work-based programs in 4/4 block scheduling*. This finding was reinforced by Jewell (1998), who indicated that North Carolina business teachers experienced difficulty managing Future Business Leaders of America (FBLA) chapter activities. Similarly, Goins and Swope (1997) found that 4/4 block scheduling negatively affected participation in some workforce development student organizations.

The most common response of teachers, 34.4%, was that they had “more” need for professional development concerning *managing student behavior in 4/4 block scheduled classes*. This finding conflicted with the results determined by Queen and Gaskey (1997), who indicated that 4/4 block scheduled schools have fewer discipline problems and less absenteeism (Queen & Gaskey, 1997).

There was “more need” perceived by teachers for professional development about *working with other teachers regarding implementing or revising 4/4 block scheduling*. This finding supports research by Fullan (1982), who found that teachers are often the preferred reference that fellow teachers seek as a source of new ideas and that teachers often lack the time and resources to implement innovations in the classroom. Limback (1998) also indicated that less experienced teachers may benefit from teamwork with more experienced teachers. Further, teamwork is necessary because teachers must adapt to change (Fullan, 1995). There was also “more need” for *managing time requirements associated with 4/4 block scheduling*. This finding was not supported by Canady and Rettig (1996), who indicated that teachers have longer and more useful planning time under the 4/4 block schedule.

The greatest percentage of teachers indicated “more need” (28.2%) and “great need” (28.1%) concerning *coordinating competitive events and 4/4 block scheduling*. The difficulty that teachers expressed concerning coordinating competitive events was supported by Swope, Fritz and Goins (1998), who found that the 4/4 block schedule prepared marketing students less adequately for competitive events than the traditional 6 or 7 period schedule. Despite the need for professional development concerning coordinating competitive events, teachers indicated “little need” for professional development concerning *maintaining a positive school environment*. This was similar to the finding of Canady and Rettig (1996), who indicated that for teachers in 4/4 block scheduled schools, school environment actually improved due to shorter classes, more time for individual interaction with students, and a reduced number of courses each semester.

#### **Research Question Four: Were there differences in the teachers’ professional development needs when grouped by their: (a) selected characteristics and (b) years of adoption?**

##### Summary of Results

A one-way ANOVA was used to determine if differences existed in teachers’ professional development needs when grouped by their selected characteristics and years of adoption. For the analysis of professional development needs by teaching field, academic teachers had the highest means for seven of the nine professional development needs studied. These items included (a) *maintaining a positive school environment*, (b) *developing varied and challenging instructional activities*, (c) *improving standardized test results*, (d) *managing student organizations*, (e) *implementing work-based programs*, (f) *managing student behavior*,

and (g) *managing time requirements*. Special subjects teachers had the highest means on the items related to *coordinating competitive events* and *working with other teachers regarding implementing or revising 4/4 block scheduling*. The highest F value was for the item concerning *managing time requirements*, and the Scheffe' post-hoc procedure revealed that the means of academic teachers were significantly higher than the means of workforce development teachers.

For the variable of education level, teachers with bachelor's and master's degrees had higher levels of need for six of the nine professional development needs studied. Yet, none of the comparisons of professional development needs by educational level resulted in a significant difference among variables. For the variable concerning years of teaching, teachers with 0 to 10 years of experience had higher levels of need than more experienced teachers on 7 of the 9 professional development items. There were no significant F values in the comparisons of professional development needs by years of teaching.

For the analysis of professional development needs by years of adoption, for all nine items the means for those who had adopted 4/4 block scheduling beginning in the 1998-1999 school year were lower than for those making this change in previous years. The Scheffe' post-hoc procedure identified four items with significant F values: (a) *managing time requirements*, (b) *coordinating competitive events*, (c) *working with other teachers*, and (d) *maintaining a positive school environment*. For each of these four items, the means were significantly lower for teachers in schools that adopted 4/4 block scheduling more recently.

## Discussion

In this study, academic teachers had significantly higher mean scores than workforce development teachers for the item concerning need for professional development regarding *managing time requirements*. This supports research by Queen, Algozzine and Eaddy (1997), who indicated that while 4/4 block scheduling increases time in class each day, the total amount of available time in a class actually decreases by up to 10%. The indication that professional development needs concerning *managing time requirements*, *coordinating competitive events*, *working with other teachers*, and *maintaining a positive school environment* increased over time was supported by Bateson (1990). Bateson concluded that the logistical benefits of block scheduling creates a "halo effect" (p. 239) that influences teacher and student perceptions about 4/4 block scheduling when it is first adopted.

### **Research Question Five: Were there differences among the teachers' professional development needs when grouped by their primary Stages of Concern?**

#### Summary of Results

A one-way ANOVA was used to determine if differences existed among the professional needs of teachers when grouped by their primary Stage of Concern. The Scheffe' post-hoc procedure indicated that one item, *working with other teachers regarding implementing or revising 4/4 block schedule*, had a significant F value. Results indicated that for this staff development item, teachers whose primary Stage of Concern was the personal (stage 2) level had significantly higher mean scores than those whose primary stages were at five of the six other Stages of Concern. The means on this item for teachers at the personal level of concern did not significantly differ from the mean scores of those at the refocusing Stage of Concern. Teachers whose primary stages were at the awareness (stage 0), informational (stage 1) and management

(stage 3) stages had significantly lower mean scores than teachers at the other four Stages of Concern.

### Discussion

According to Hall, George and Rutherford (1986), teachers with high personal (stage 2) concerns are interested in how an innovation affects them personally. If so, this would support the findings of Rogers (1995), who indicated that adopters of innovations will often consult members of a trusted peer group concerning innovations. It also supports the findings of Fullan (1982), who found that teachers often consult other teachers regarding innovation in the classroom. Further, Hall, George and Rutherford (1986) indicated that teachers with high awareness, informational, and management concerns are at stages where they are unaware of an innovation, seeking information about an innovation, or concerned with managing the innovation in the classroom.

### Conclusions

This study examined the Stages of Concern of teachers in 4/4 block scheduled schools, their perceived professional development needs, their selected characteristics, and the relationships among these variables. Based on the results of the study, several conclusions may be drawn regarding teachers in North Carolina schools that have implemented 4/4 block schedules.

#### Conclusion Concerning the Survey Instrument

The results of this study for the Stages of Concern questionnaire indicated relatively little variability in the scores of the teachers. In addition, there was a significant difference between the initial responders to the survey and the nonresponders who were interviewed by telephone to secure their perceptions regarding items in one of the stages. It may be that the Stages of Concern instrument is inadequate for assessing the concerns of teachers about 4/4 block scheduling. While the Stages of Concern instrument has been used numerous times for assessing various educational innovations (Dennison, 1993; Long, 1994; Kirby & Smith, 1998; Kimpston & Anderson, 1988), the instrument may be inappropriate for a thorough examination of 4/4 block scheduling. Readers of this study should consider the possible limitations of the survey instrument when reflecting upon this study's research findings.

#### Conclusions for the Research Questions

##### **Research Question One: What were the indicated Stage-of-Concern levels regarding 4/4 block scheduling of selected teachers in North Carolina 4/4 block scheduled schools?**

Kirby (1998) reported that accountability for student performance is being placed at the local school level. There have been recent changes in the amount of accountability placed upon teachers as a result of the *ABCs of Public Education for High Schools* (North Carolina State Department of Public Instruction, 1998a). The results of this study indicated that teachers are experiencing some stress that may be related to accountability measures, because their highest level of concern was consequence (stage 4). Also, the consequence Stage of Concern was the primary stage for the largest percentage of responders. Thus, teachers are focused upon the effects of 4/4 block scheduling in their individual classroom. It is possible that the emphasis upon accountability is causing some anxiety regarding the adoption of 4/4 block scheduling.

Canady and Rettig (1996a) found that 4/4 block scheduling results in more meaningful, thorough learning of less content, and this implies that 4/4 block scheduling may not be the best schedule for student retention of factual knowledge that is assessed by multiple-choice and true-false tests. Many of the standardized tests in North Carolina utilize a multiple-choice/true-false format. Thus, 4/4 block scheduling may have disadvantages given the current emphasis on standardized testing.

Teachers' second-highest level was the refocusing (stage 6) Stage of Concern. This indicates that teachers desire to alter 4/4 block scheduling in their classroom or school. It may also indicate that teachers are somewhat dissatisfied with 4/4 block scheduling. However, collaboration was the highest Stage of Concern for the second-largest percentage of responders. This indicates that teachers are willing to work collaboratively to alter 4/4 block scheduling so that it becomes more effective for students. Teachers are more likely to collaborate in an environment where teamwork is valued (Rosenholz, 1989). Thus, the amount of collaboration concerns could indicate that 4/4 block scheduling could provide a school environment where teamwork is rewarded and encouraged.

**Research Question Two: Were there differences in the teachers' Stages of Concern when grouped by their: (a) selected characteristics and (b) years of adoption?**

The finding that academic teachers had significantly higher refocusing concerns than workforce development teachers was not parallel to any of the results of previous studies found by this researcher. One plausible explanation for the difference between the refocusing concerns of academic teachers and workforce development teachers relates to the nature of the two disciplines. For example, workforce development teachers often teach in a laboratory-type setting where students learn by doing and through other student-centered methods. Thus, the workforce development teachers may have lower refocusing concerns than academic teachers because the longer periods in the 4/4 block schedule complement the types of learning activities in workforce development classrooms.

In contrast, Queen and Gaskey (1997) indicated that most teachers were still using the lecture method of instruction in the classroom. Students exposed to the lecture method of instruction had fewer chances for hands-on learning activities. It is possible that academic teachers do not have the experience and preparation necessary to facilitate activities other than lecture. Therefore, academic teachers' refocusing concerns are higher because their current teaching methodologies are not well accommodated by the longer class periods in the 4/4 block schedule.

Both Cichelli and Baecher (1989) and Kirby and Smith (1998) indicated that teachers' concerns varied with experience. Thus, teachers with less experience were more likely to have higher awareness, informational, and personal concerns than teachers with more experience. The findings of this study were consistent with the findings of Cichelli and Baecher and Kirby and Smith. Simply, teachers with 0-10 years of experience had significantly higher informational and personal concerns than teachers with more experience. Thus, it appears that beginning teachers are not being adequately informed about 4/4 block scheduling during their internships or their initial years of teaching. This is reinforced by the fact that teachers with 31 years of experience and over had significantly lower personal concerns about 4/4 block scheduling.

### **Research Question Three: What were the perceived professional development needs regarding 4/4 block scheduling of selected teachers in North Carolina 4/4 block scheduled schools?**

The U. S. Department of Education (2001) is emphasizing standardized tests as one component of a nationwide accountability program. Also, the North Carolina State Department of Public Instruction (2001a) has implemented statewide student accountability standards at the high school level. Respondents to this study indicated that they needed professional development concerning *improving standardized test results in 4/4 block scheduled classes*. Thus, it appears that teachers feel ill-prepared to adequately prepare their students for the standardized tests in the semester allocated under a 4/4 block schedule.

Teachers also indicated that they needed professional development related to *developing varied and challenging instructional activities in 4/4 block scheduled classes*. This implies a need for resources to be allocated for professional development on alternative instructional activities needed to enhance student learning in 4/4 block scheduled classes.

Bateson (1990) indicated that many students had scheduling conflicts under the 4/4 block schedule, and it appears that 4/4 block scheduling has caused teachers some scheduling conflicts as well. For example, teachers' indication of need for professional development concerning *managing student organizations in 4/4 block scheduling, implementing work-based programs in 4/4 block scheduling, and coordinating competitive events and 4/4 block scheduling* may have related to time allocation. Most student organizations and work-based programs were developed under the traditional 6 or 7 period day. When schools changed to 4/4 block scheduling, the student organizations did not initially change their yearly schedules of activities in order to accommodate the 4/4 block schedule. In North Carolina, many work-based programs were designed to allow students to attend class for part of the school day and work for the remainder of the school day. These activities were expected to continue throughout the school year under a traditional 6 or 7 period schedule. Many students in 4/4 block scheduled schools may not have been able to enroll in the courses that they preferred at the same time as they met the requirements of the work-based experiences that they had chosen. Participation in competitive events that are traditionally scheduled in the spring may not be compatible with block classes taught in the fall semester. While it is important not to extend conclusions beyond the findings of this study, it is possible that Bateson (1990) was correct in the assumption that the flaws of 4/4 block scheduling are overlooked due to a "halo effect" (p. 239).

Teachers reported that they needed professional development concerning *managing student behavior in 4/4 block scheduled classes*. This is contrary to many studies that emphasize that 4/4 block scheduling results in an improvement in student behavior. It is possible that the reduction in behavior problems due to the classroom changes in the traditional 6 or 7 period day may not have carried over to fewer instances of student misbehavior in the classroom. Thus, while the behavior problems of students are less noticeable by administrators in the hallways, they still have to be managed by the teacher in the classroom.

Teachers indicated that a need for staff development related to *working with other teachers regarding implementing or revising 4/4 block scheduling*. This finding indicated that at least some aspects of the 4/4 block schedule did not satisfy the needs of teachers, and that they desired to collaborate and find better alternatives. Further, the indication by teachers of a need for professional development concerning *managing time requirements associated with 4/4 block*

*scheduling* implies that some of the allocated classroom time in the 4/4 block schedule is under-utilized time.

**Research Question Four: Were there differences in the teachers' professional development needs when grouped by their: (a) selected characteristics and (b) years of adoption?**

Academic teachers had significantly higher mean scores for professional development related to *managing time requirements associated with 4/4 block scheduling* than either workforce development teachers or special subjects teachers. This finding, and the fact that academic teachers had the highest means for seven of the nine professional development needs in this study, indicates that 4/4 block scheduling may not be meeting the needs of academic teachers. It is possible that academic teachers are unprepared to replicate the variety of student-centered activities that often occur in special subjects classes and workforce development classes. These types of activities may complement the 4/4 block schedule—and may explain why workforce development teachers and special subjects teachers have a lower need for professional development about time management.

There are difficulties with the adoption of 4/4 block scheduling that appear to increase over time. For example, teachers in schools that adopted 4/4 block scheduling most recently (1998-1999) had significantly lower means concerning the need for professional development concerning *managing time requirements, coordinating competitive events, working with other teachers, and maintaining a positive school environment*. This may related to the finding of Queen, Algozzine and Eaddy (1997) that while 4/4 block scheduling increases time in class each day, the total amount of available time in the course actually decreases. Further, the finding of Swope, Fritz and Goins (1998) that teachers had difficulty coordinating competitive events is reinforced by this study—and the difficulty in managing competitive events appears to increase over time.

**Research Question Five: Were there differences among the teachers' professional development needs when grouped by their primary Stages of Concern?**

Teachers whose primary concerns were at the awareness, informational and management stages had significantly lower mean scores for the item *working with other teachers regarding implementing or revising 4/4 block scheduling* than teachers at the other four Stages of Concern. Thus, teachers at the awareness, informational, and management Stages of Concern may be more concerned with their own day-to-day classroom activities. Possibly, these teachers perceive that they don't have time to devote to collaborative efforts with other teachers. They may also believe that working with other teachers would not be helpful in alleviating their particular concerns about 4/4 block scheduling.

Implications for Practice

Based on the findings and conclusions developed in this study, the researcher recommends the following implications for practice.

1. Because the highest percentage of responders were at the consequence stage of concern, professional development activities should be focused upon strategies that are effective in increasing the success of students in 4/4 block scheduled classes.
2. Due to teachers' concerns about student organizations, work-based programs, and competitive events, alternative schedules should be considered to facilitate student

participation in these types of activities. If this is not possible, staff development programs should be offered that focus upon changing these programs so that they accommodate the 4/4 block schedule.

3. Because academic teachers indicated having more difficulty managing time requirements than either workforce development teachers or special subjects teachers, academic teachers should be provided with additional resources and professional development in order to facilitate the use of more varied classroom activities.
4. Because teachers at the awareness, informational and management Stages of Concern had significantly lower mean scores for the item *working with other teachers regarding implementing or revising 4/4 block scheduling* than teachers at the other four Stages of Concern, teachers' organizations and school administrators should plan collaborative activities that are designed to alleviate the concerns that teachers actually report.
5. Teachers with more experience had fewer concerns about managing 4/4 block scheduling than less-experienced teachers. Veteran teachers should be encouraged to mentor beginning teachers concerning teaching methods that are successful in 4/4 block scheduled classrooms, and release time should be allowed for both veteran teachers and beginning teachers in order to ensure that this happens.
6. Bateson (1990) indicated that the logistical benefits of 4/4 block scheduling create the illusion that 4/4 block scheduling is a panacea that cures many ills in education. It may be worthwhile for schools to re-examine whether 4/4 block scheduling is meeting the current needs of their students and personnel.

#### Recommendations for Further Research

Based on the literature review and the findings of this study, the following recommendations for further research are offered:

1. The long-term effects of 4/4 block scheduling upon student achievement need to be examined. Researchers should consider using both standardized tests and more comprehensive measures of assessment.
2. Research should be conducted concerning the best methods to deliver staff development about 4/4 block scheduling to entry-level teachers.
3. Researchers need to determine the differences between 4/4 block scheduled schools that have student organizations experiencing increases in membership and participation and those where student organizations have had membership decreases. The procedures for implementing organizations in schools that have been successful in promoting membership and participation in competitive events could serve as a model for other schools.
4. Studies of effective time utilization in 4/4 block scheduled classrooms could provide information relevant to preservice and inservice education of teachers.
5. Researchers need to explore more completely the specific professional development needs of academic teachers in 4/4 block scheduled schools.

6. A study should be conducted to examine the effectiveness of various instructional methods in the 4/4 block scheduled classroom. Possible variables for study include student achievement and characteristics of the teaching-learning environment.

#### Summary

The concerns of teachers and their perceived professional development needs were examined in this study. Findings indicated that teachers are concerned about the success of students in the classroom, they are willing to work collaboratively in order to make 4/4 block scheduling more effective for students, and they need additional professional development concerning 4/4 block scheduling. Recommendations for practice and further research were provided.

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Appendix A: Letter to Dr. Hall requesting permission to use the SoCQ



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March 26, 2000

Dr. Gene Hall  
Department of Educational Leadership  
418 McKee Hall  
University of Northern Colorado  
Greeley, CO 80639

Dear Dr. Hall:

As a doctoral candidate at Virginia Polytechnic Institute and State University, I am working on a dissertation pertaining to the stages of concern of North Carolina teachers in 4/4 block scheduled high schools. I have determined that your Stages of Concern questionnaire would address the needs of the study.

I have changed the questionnaire to include the term 4/4 block scheduling instead of the term the innovation, and I have enclosed the revised questionnaire with this letter. Would you please consider granting permission to reproduce the Stages of Concern questionnaire in its modified form as the measurement instrument in my dissertation? At this time, I will be selecting a stratified random sample of North Carolina public school teachers for my study. Proper credit for use and reproduction of the SoCQ will be given. If there are any questions concerning this matter, you may call me at 252-328-6549. Alternatively, you may e-mail me at [Williamssc@mail.ecu.edu](mailto:Williamssc@mail.ecu.edu).

For your convenience, I have enclosed a signature block below, along with a self-addressed, stamped envelope. Thank you for your assistance.

Sincerely,

A handwritten signature in cursive that reads "Scott A. Williams".

Scott A. Williams

Enclosure

Check one. Approved  Disapproved

Signature Gene S Hall  
Dr. Gene Hall

Date 16 April 00



## Appendix B: Survey cover memorandum

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---

To: Selected Teachers

From: Scott A. Williams

Date: October 05, 2000

Subject: Block Scheduling Survey

Please take a few minutes to complete the enclosed survey designed to collect information regarding the concerns and characteristics of teachers in 4/4 block scheduled North Carolina high schools. This information will be used to assist in developing effective professional development programs for teachers in 4/4 block scheduled high schools and schools considering adopting this schedule. These professional development programs may benefit you and other teachers as you work with students in your classes.

Your responses are strictly confidential and they will not be disclosed individually to anyone in your school or in any publication. Results of the study will be made available in summary form to responders via the Internet.

Please return the completed survey as soon as possible—no later than October 01, 2000. If you would like additional information regarding this survey or if you have questions, please contact me at (252) 328-6549. By completing and returning this survey, you have given consent to participate in the survey.

The researcher, Mr. Scott Williams, agrees not to disclose specific information about teachers, schools, or students. All information disclosed will take the form of statistical data. Thank you for your time and assistance.

Appendix C: Questionnaire

**Part I. Concerns Questionnaire**

The purpose of this questionnaire is to determine what people who are using or thinking about using various programs are concerned about at various times during the innovation adoption process. The items were developed from typical responses of school and college teachers who ranged from no knowledge at all about various programs to many years experience in using them. **Therefore, a few of the items on this questionnaire may be of little relevance or irrelevant to you at this time.** For the completely irrelevant items, please circle “0” on the scale. Other items will represent those concerns you **do** have, in varying degrees of intensity, and should be marked higher on the scale.

For example:

- |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|
| This statement is very true of me at this time.       | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| This statement is somewhat true of me now.            | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| This statement is not at all true of me at this time. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| This statement is irrelevant to me.                   | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Please respond to the items in terms of your present concerns, or how you feel about your involvement or potential involvement with **4/4 block scheduling**. We do not hold to any one definition of this program, so please think of it in terms of **your own perceptions** of what it involves. Remember to respond to each item in terms of **your present concerns** about your involvement or potential involvement with **4/4 block scheduling**.

Thank you for taking time to complete this task.

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Concerns Based Systems International*

	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	
	<b>Irrelevant</b>	<b>Not true of me now</b>		<b>Somewhat true of me now</b>			<b>Very true of me now</b>		
1.	I am concerned about students' attitudes toward 4/4 block scheduling.	0	1	2	3	4	5	6	7
2.	I now know some other schedules that might work better.	0	1	2	3	4	5	6	7
3.	I don't even know what 4/4 block scheduling is.	0	1	2	3	4	5	6	7
4.	I am concerned about not having enough time to organize myself each day.	0	1	2	3	4	5	6	7
5.	I would like to help other faculty in their use of 4/4 block scheduling.	0	1	2	3	4	5	6	7
6.	I have a very limited knowledge about 4/4 block scheduling.	0	1	2	3	4	5	6	7
7.	I would like to know the effect of 4/4 block scheduling on my professional status.	0	1	2	3	4	5	6	7
8.	I am concerned about conflict between my interests and my responsibilities.	0	1	2	3	4	5	6	7
9.	I am concerned about revising my use of 4/4 block scheduling.	0	1	2	3	4	5	6	7
10.	I would like to develop working relationships with both our faculty and outside faculty using 4/4 block scheduling.	0	1	2	3	4	5	6	7
11.	I am concerned about how 4/4 block scheduling affects students.	0	1	2	3	4	5	6	7
12.	I am not concerned about 4/4 block scheduling.	0	1	2	3	4	5	6	7
13.	I would like to know who will make the decisions related to 4/4 block scheduling.	0	1	2	3	4	5	6	7
14.	I would like to discuss the possibility of using 4/4 block scheduling.	0	1	2	3	4	5	6	7

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	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	
	<b>Irrelevant</b>	<b>Not true of me now</b>		<b>Somewhat true of me now</b>			<b>Very true of me now</b>		
15.	I would like to know what resources are available if we decide to adopt 4/4 block scheduling.						0	1	2 3 4 5 6 7
16.	I am concerned about my inability to manage all that 4/4 block scheduling requires.						0	1	2 3 4 5 6 7
17.	I would like to know how my teaching is supposed to change.						0	1	2 3 4 5 6 7
18.	I would like to familiarize other departments or persons with the progress of 4/4 block scheduling.						0	1	2 3 4 5 6 7
19.	I am concerned about evaluating 4/4 block scheduling's impact on students.						0	1	2 3 4 5 6 7
20.	I would like to revise my instructional approach to enhance 4/4 block scheduling's effectiveness.						0	1	2 3 4 5 6 7
21.	I am completely occupied with other things.						0	1	2 3 4 5 6 7
22.	I would like to modify our use of 4/4 block scheduling based on the experiences of our students.						0	1	2 3 4 5 6 7
23.	Although I don't know about 4/4 block scheduling, I am concerned about things in the area.						0	1	2 3 4 5 6 7
24.	I would like to excite my students about their part in 4/4 block scheduling.						0	1	2 3 4 5 6 7
25.	I am concerned about time spent working with nonacademic problems related to 4/4 block scheduling.						0	1	2 3 4 5 6 7
26.	I would like to know what the use of 4/4 block scheduling will require in the immediate future.						0	1	2 3 4 5 6 7
27.	I would like to coordinate my efforts with others to maximize 4/4 block scheduling's effects.						0	1	2 3 4 5 6 7

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		<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
		<b>Irrelevant</b>	<b>Not true of me now</b>		<b>Somewhat true of me now</b>			<b>Very true of me now</b>	
28.	I would like to have more information on time and energy commitments required by 4/4 block scheduling.	0	1	2	3	4	5	6	7
29.	I would like to know what other faculty are doing in this area.	0	1	2	3	4	5	6	7
30.	At this time, I am not interested in learning about 4/4 block scheduling.	0	1	2	3	4	5	6	7
31.	I would like to determine how to supplement, enhance, or replace 4/4 block scheduling.	0	1	2	3	4	5	6	7
32.	I would like to use feedback from students to change the program.	0	1	2	3	4	5	6	7
33.	I would like to know how my role will change when I am using 4/4 block scheduling.	0	1	2	3	4	5	6	7
34.	Coordination of tasks and people is taking too much time because of 4/4 block scheduling.	0	1	2	3	4	5	6	7
35.	I would like to know how 4/4 block scheduling is better than what we had before.	0	1	2	3	4	5	6	7

## Part II. Professional Development Needs

Please indicate the extent that you believe you need professional development in the following areas by circling the most appropriate number. Assume that 0 indicates that you do not need professional development in that area and 3 indicates that you need much professional development in that area.

0	1	2	3
No Need	Little Need	More Need	Great Need
1. Maintaining a positive school environment in 4/4 block scheduling.			0 1 2 3
2. Developing varied and challenging instructional activities in 4/4 block scheduling.			0 1 2 3
3. Improving standardized test results in 4/4 block scheduled classes.			0 1 2 3
4. Managing student organizations and 4/4 block scheduling.			0 1 2 3
5. Implementing work-based programs and 4/4 block scheduling.			0 1 2 3
6. Coordinating competitive events (i.e. drama, music, vocational) and 4/4 block scheduling.			0 1 2 3
7. Managing student behavior in 4/4 block scheduling.			0 1 2 3
8. Managing time requirements associated with 4/4 block scheduling.			0 1 2 3
9. Working with other teachers regarding implementing or revising 4/4 block scheduling.			0 1 2 3

### Part III. Teacher Information

Please complete the following questions by placing a check mark in the appropriate blanks and providing the information requested.

1. Gender: Female \_\_\_\_\_ Male \_\_\_\_\_
2. Age: 20-29 \_\_\_\_\_ 30-39 \_\_\_\_\_ 40-49 \_\_\_\_\_ 50-59 \_\_\_\_\_ 60 and above \_\_\_\_\_
3. Please indicate your primary teaching field by checking **one** of these North Carolina teacher licensure areas:

Academic:

English \_\_\_\_\_

Mathematics \_\_\_\_\_

Science \_\_\_\_\_

Social Studies \_\_\_\_\_

Special Education \_\_\_\_\_

Other (Specify):  
\_\_\_\_\_

Special Subjects:

Art \_\_\_\_\_

Dance \_\_\_\_\_

Physical Education \_\_\_\_\_

Second Languages \_\_\_\_\_

Theater Arts \_\_\_\_\_

Other (Specify):  
\_\_\_\_\_

Workforce Development:

Agricultural Education \_\_\_\_\_

Business Education \_\_\_\_\_

Family & Consumer Sciences Education \_\_\_\_\_

Health Occupations Education \_\_\_\_\_

Marketing Education \_\_\_\_\_

Technology Education \_\_\_\_\_

Trade and Industrial Education \_\_\_\_\_

Other (Specify) \_\_\_\_\_

4. Highest level of education completed: High School \_\_\_\_\_ Associate \_\_\_\_\_  
Bachelor's \_\_\_\_\_ Master's \_\_\_\_\_ Doctorate \_\_\_\_\_
5. Total years teaching: \_\_\_\_\_
6. Have you participated in professional development (workshops, courses, etc.) about 4/4 block scheduling? Yes \_\_\_\_\_ No \_\_\_\_\_
7. If you answered "yes" to item 6, to what extent did your participation in professional development concerning 4/4 block scheduling improve your preparation for teaching in a 4/4 block schedule? None \_\_\_\_\_ Slightly \_\_\_\_\_ Considerably \_\_\_\_\_ Greatly \_\_\_\_\_
8. Please share any other comments you have regarding the implementation of block scheduling in your school.

Thank you for taking time to complete this survey. Please mail it in the enclosed envelope to: **Scott Williams, 2312 GCB, BVTE Department, East Carolina University, Greenville, NC 27834.**



## Appendix D: Letter to panel members evaluating the questionnaire

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---

Title. \_\_\_\_\_

Address

City, NC Zip Code

Dear Title. \_\_\_\_\_:

As a doctoral candidate at Virginia Polytechnic Institute and State University, I am developing a questionnaire in order to survey the concerns of North Carolina public school teachers related to 4/4 block scheduling. The 4/4 block scheduling model is the most popular scheduling model in North Carolina at the present time—with over 70% of high schools utilizing this model.

You have been identified as an expert in the area of \_\_\_\_\_. If possible, could you please make suggestions that would strengthen the enclosed questionnaire? You may mail your comments and the questionnaire via the self-addressed, stamped envelope. If you need to contact me, you may reach me at 252-328-6549. My email address is [Williamssc@mail.ecu.edu](mailto:Williamssc@mail.ecu.edu). Your name, title and contribution will be cited in my study. Thank you for your time and consideration of this request.

Sincerely,

Scott A. Williams

Enclosure



## Appendix E: Letter to superintendents

Department of Business, Vocational, and Technical Education

School of Education

East Carolina University

2318 General Classroom Building • Greenville, NC 27858-4353

252-328-6983 office • 252-328-6535 fax • [www.bvte.ecu.edu](http://www.bvte.ecu.edu)

---

Title. \_\_\_\_\_  
Superintendent  
\_\_\_\_\_ County Schools  
City, NC Zip Code

Dear \_\_\_\_\_:

As a doctoral candidate at Virginia Polytechnic Institute and State University, I am interested in surveying 15 randomly selected faculty members from \_\_\_\_\_ High School. The purpose of my study is to determine the concerns that teachers may have about 4/4 block scheduling and their perceived professional development needs regarding this schedule. The instrument does not address performance issues related to the school or to the administration. Instead, it provides input needed to improve the professional development efforts of local schools, teacher education institutions, departments of public instruction and professional organizations. A sample of this survey is enclosed for your examination.

No teacher names or administrator names will be disclosed in the findings of this survey. A summary of statistical results and comments will be included in my dissertation and possibly journal articles, but specific information on individuals and schools will not be included. The names of participating schools will also be kept confidential. On the next page is a permission form that will serve to indicate whether you accept or decline my request to survey 15 teachers at «High\_School». If you agree, please forward a copy of this survey and the permission form that you have signed to the principal at \_\_\_\_\_ High School to secure permission.

A self-addressed, stamped envelope and a second copy of this letter are provided for your convenience. Please keep the second copy for your records. If you need to contact me, please feel free to call me at (252) 328-6549. You may also email me at [Williamssc@mail.ecu.edu](mailto:Williamssc@mail.ecu.edu). If I haven't heard from you by September 05, 2000, I may call to determine your interest in participating in this study. Thank you for your time and consideration.

Sincerely,

Scott A. Williams

Enclosures

\*Please turn to the following page for the approval form →

Appendix F: Permission form to be signed by both the superintendent and principal



Department of Business, Vocational, and Technical Education

School of Education  
East Carolina University  
2318 General Classroom Building • Greenville, NC 27858-4353  
252-328-6983 office • 252-328-6535 fax • [www.bvte.ecu.edu](http://www.bvte.ecu.edu)

---

**Superintendent of Schools**

I \_\_\_\_\_ accept \_\_\_\_\_ decline this request for teachers from \_\_\_\_\_ to participate in this survey.

Signature \_\_\_\_\_

Title. \_\_\_\_\_, Superintendent

Date \_\_\_\_\_

**Principal**

I \_\_\_\_\_ accept \_\_\_\_\_ decline this request for teachers from \_\_\_\_\_ to participate in this survey.

Signature \_\_\_\_\_

Title. \_\_\_\_\_, Principal

Date \_\_\_\_\_

Appendix G: Letter to the principal of each school surveyed

Department of Business, Vocational, and Technical Education



E A S T  
CAROLINA  
UNIVERSITY

School of Education  
East Carolina University  
2318 General Classroom Building • Greenville, NC 27858-4353  
252-328-6983 office • 252-328-6535 fax • [www.bvte.ecu.edu](http://www.bvte.ecu.edu)

---

September 12, 2000

Title. \_\_\_\_\_, Principal

\_\_\_\_\_ High School

City, NC Zip Code

Dear Title. \_\_\_\_\_:

As you are aware from our previous correspondence, I am interested in surveying faculty at \_\_\_\_\_ High School. The purpose of my study is to determine the concerns that teachers may have about 4/4 block scheduling and their perceived professional development needs regarding this schedule. I appreciate the fact that Title. \_\_\_\_\_, the superintendent of «County» county schools, and you have both given permission for me to contact you about this study.

You may recall from your review of the instrument that it does not address performance issues related to the school or to the administration. Instead, it provides input needed to improve professional development efforts of local schools, teacher education institutions, departments of public instruction and professional organizations. The study focuses upon 4/4 block scheduling and the concerns that teachers face when implementing 4/4 block scheduling.

No teacher names or administrator names will be disclosed in the findings of this survey. A summary of statistical results and comments will be included in my dissertation and possibly journal articles, but specific information on individuals and schools will not be included. The names of participating schools will also be kept confidential.

Please mail to me a copy of your most recent teaching staff roster indicating their names and their departments or teaching fields. This roster will only be used to randomly select the teachers participating in the study. Also, to prevent my intrusion on your valuable time, please indicate below a member of your support staff to whom I can send the surveys for distribution. A self-addressed, stamped envelope has been provided for you to send me both the form and the teaching staff roster. I would appreciate receiving this by October 06, 2000.

If you need to contact me, please feel free to call me at (252) 328-6549. You may also email me at [Williamssc@mail.ecu.edu](mailto:Williamssc@mail.ecu.edu). Thank you for your time assistance with this project.

Sincerely,

Scott A. Williams  
Enclosures

Appendix H: Support staff form mailed to principals

Support Staff for \_\_\_\_\_ High School

Please provide below information about a support staff member who will receive the surveys from me and place them in the mailboxes of randomly selected teachers. The teachers will mail the surveys directly back to me. Thanks!

**Name:** \_\_\_\_\_

**Phone:** \_\_\_\_\_

**Email (if applicable):** \_\_\_\_\_

Appendix I: Letter to teachers conducting the pilot test



Department of Business, Vocational, and Technical Education

School of Education  
East Carolina University  
2318 General Classroom Building • Greenville, NC 27858-4353  
252-328-6983 office • 252-328-6535 fax • www.bvte.ecu.edu

---

May 22, 2000

\_\_\_\_\_ High School  
Address  
\_\_\_\_\_, NC Zip Code

Dear Teachers:

Thank you for agreeing to pilot test my survey concerning 4/4 block scheduling. The purpose of this pilot test is to eliminate any “bugs” in the survey instrument and the mailing procedure—thus strengthening the validity of the study. Below are a few suggestions that may help you as you examine the instrument.

1. Complete the questionnaire as best as you can. After you have taken the survey, please write any concerns, questions, or corrections on the survey itself. Also make note of any questions that are poorly worded or unclear.
2. Feel free to add any survey questions that you feel are pertinent to 4/4 block scheduling.
3. React to the letters and consent forms by writing directly on the forms. Comments that would make the letters more “returnable” or “appealing” are especially welcomed. Let me know if the issues of “confidentiality” and “privacy” are not adequately discussed by writing on the form.
4. Write the time, in minutes, that it took you to complete the questionnaire. This will help me with the redesign process.

After you are finished, please mail the questionnaire and letters back to me in the self-addressed, stamped envelope. Again, your assistance with this pilot test is appreciated.

Sincerely,

Scott Williams

Appendix J: Means and Standard Deviations for the Stages of Concern

Means SoC Scores (Highest to Lowest)

SoC Number	Stage	Question	Mean	Standard Deviation
11	4	I am concerned about how 4/4 block scheduling affects students.	5.045	6.946
19	4	I am concerned about evaluating 4/4 block scheduling's impact on students.	3.662	2.430
29	5	I would like to know what other faculty are doing in this area.	3.558	2.424
32	4	I would like to use feedback from students to change the program.	3.506	2.315
31	6	I would like to determine how to supplement, enhance, or replace 4/4 block scheduling.	3.474	2.633
35	1	I would like to know how 4/4 block scheduling is better than what we had before.	3.387	2.816
13	2	I would like to know who will make the decisions related to 4/4 block scheduling.	3.338	2.728
27	5	I would like to coordinate my efforts with others to maximize 4/4 block scheduling's effects.	3.277	2.301
20	6	I would like to revise my instructional approach to enhance 4/4 block scheduling's effectiveness.	3.224	2.365
22	6	I would like to modify our use of 4/4 block scheduling based on the experiences of our students.	3.123	2.292

Appendix J: Means and Standard Deviations for the Stages of Concern

Means SoC Scores (Highest to Lowest) Continued

SoC Number	Stage	Question	Mean	Standard Deviation
24	4	I would like to excite my students about their part in 4/4 block scheduling.	3.071	2.486
1	4	I am concerned about students' attitudes toward 4/4 block scheduling.	3.019	2.056
25	3	I am concerned about time spent working with nonacademic problems related to 4/4 block scheduling.	2.848	2.308
10	5	I would like to develop working relationships with both our faculty and outside faculty using 4/4 block scheduling.	2.822	2.018
18	5	I would like to familiarize other departments or persons with the progress of 4/4 block scheduling.	2.675	5.810
7	2	I would like to know the effect of 4/4 block scheduling on my professional status.	2.542	2.271
5	5	I would like to help other faculty in their use of 4/4 block scheduling.	2.478	1.835
2	6	I now know some other schedules that might work better.	2.439	2.089
8	3	I am concerned about conflict between my interests and my responsibilities.	2.432	2.048
12	0	I am not concerned about 4/4 block scheduling.	2.391	2.279
4	3	I am concerned about not having enough time to organize myself each day.	2.385	2.065

Appendix J: Means and Standard Deviations for the Stages of Concern

Means SoC Scores (Highest to Lowest) Continued

SoC Number	Stage	Question	Mean	Standard Deviation
9	6	I am concerned about revising my use of 4/4 block scheduling.	2.244	1.826
28	2	I would like to have more information on time and energy commitments required by 4/4 block scheduling.	2.218	2.235
26	1	I would like to know what the use of 4/4 block scheduling will require in the immediate future.	1.962	2.283
16	3	I am concerned about my inability to manage all that 4/4 block scheduling requires.	1.918	2.159
34	3	Coordination of tasks and people is taking too much time because of 4/4 block scheduling.	1.826	1.890
17	2	I would like to know how my teaching is supposed to change.	1.641	2.000
21	0	I am completely occupied with other things.	1.481	1.872
30	0	At this time, I am not interested in learning about 4/4 block scheduling.	1.250	2.018
6	1	I have a very limited knowledge about 4/4 block scheduling.	1.312	1.120
33	2	I would like to know how my role will change when I am using 4/4 block scheduling.	1.194	1.862

Appendix J: Means and Standard Deviations for the Stages of Concern

Means SoC Scores (Highest to Lowest)

SoC Number	Stage	Question	Mean	Standard Deviation
15	1	I would like to know what resources are available if we decide to adopt 4/4 block scheduling.	.936	1.876
3	0	I don't even know what 4/4 block scheduling is.	.822	.693
14	1	I would like to discuss the possibility of using 4/4 block scheduling.	.810	1.536
23	0	Although I don't know about 4/4 block scheduling, I am concerned about things in the area.	.641	1.329

1514 Pocosin Road Phone (252) 756-6614  
Winterville, NC E-mail  
28590 Williamssc@mail.ecu.edu

# Vita

## Scott Allyn Williams

---

### Education

Awarded Virginia Tech Blacksburg, VA  
October 2001

Ph.D.

- Specialization: Marketing
- Dissertation Title: *Stages of Concern of Teachers in 4/4 Block Scheduled North Carolina Public High Schools.*
- Defense date: October 18, 2001

1991 - 1992 United States Army Fort Bragg, NC  
Diploma (Practical Nursing)

- Received the Army Commendation Medal for achieving the highest overall course average in my nursing class.

1989 - 1991 East Carolina University Greenville, NC  
M.A.Ed. Concentration: Business and Marketing Education

1985 - 1988 East Carolina University Greenville, NC  
B.S.B.A. Concentration: Banking

1983 - 1985 Coastal Carolina Community College Jacksonville, NC  
A.S. Concentration: Pre-Veterinary Medicine

### Professional Experience

1998 - Present East Carolina University Greenville, NC  
Instructor (Specific Courses Are Below)

ASIP 2000 *Introduction to Computers*

ASIP 2112 *Introduction to Computers*

ASIP 2311 *Financial Information Systems*

BVTE 3301 *Advertising*

BVTE 3302 *Industrial Selling*

BVTE 4324 *Student Internship*

**Professional  
Experience (Cont'd)**

1997 - Present            East Carolina University            Greenville, NC  
Part-Time Instructor

- Taught ASIP 2112 (Introduction to Computers) during the Spring 1997 and Fall 1997 semesters while working as a teacher for the Pitt County Public School System. Student evaluations for this section were above the East Carolina University average.

1996 - 1997            Pitt County Schools            Greenville, NC  
Business Teacher

- Taught Keyboarding and Introduction to Business at J. H. Rose High School. Evaluations from the Assistant Principal were all above average or superior ratings.

1995 - 1997            Skilled Creations Inc.            Winterville, NC  
Practical Nurse

- Administered medications and planned the care for 12 mentally handicapped residents at a local group home.

1995 - 1996            Pitt County Schools            Greenville, NC  
Substitute Teacher

- Long-term substitute teacher for D. H. Conley High School in both the ROTC department and the History department.

1990 - 1998            United States Army            Various Locations  
Assistant Wardmaster

- Counseled subordinates. Taught nursing skills to subordinates. Taught map reading and land navigation skills to students entering various Army professional development schools.

1988 - 1989            Weyerhaeuser            Ayden, NC  
Site Auditor

- Audited financial records of Simons-Becon Corporation and Brown & Root, Inc. Recommended and implemented several procedures to improve bookkeeping procedures at the Ayden-Grifton Finished Lumber Facility.

## Publications

### Nationally Refereed Publications

- Joyner, Randy L. and Scott A. Williams. "Students May Be Correct When They Say: I Didn't See the Error!" *AERA/SIG Business Education and Information Systems Research*, (1994), pp. 3-4.

### Book Chapters

- Joyner, Randy L. and Scott A. Williams. "Educational Environment." *1980-1990 Review and Synthesis of Research in Business Education*, (1994, B. June Schmidt, Robert C. Magee, and Jerry Kandies, editors), pp. 82-105.
- Williams, Scott A. and John Swope. "Advertising Agencies." **Encyclopedia of Business & Finance**, (2000). New York: Macmillan.

### Non-Refereed Publications

- Williams, Scott A. "Microsoft Works—A Sure Winner!", 16<sup>th</sup> Annual Atlantic Coast Business & Marketing Education Conference, Raleigh, NC, February 19-20, 1999.
- Swope, J and Scott A. Williams. "Marketing Education's Response to Block Scheduling: The North Carolina Story", **Association for Career and Technical Education Annual Convention**, Orlando, FL, December 13, 1999.
- Tucker, S, Williams, S and Krystie Grubb. "Course Technology's Blackboard vs. HTML: Online Instruction as it Advances into a New Millenium", 17<sup>th</sup> Annual Atlantic Coast Business & Marketing Education Conference, Raleigh, NC, February 18-19, 2000.

## Presentations

### Regional Presentations

- Joyner, Randy L. "What are the Existing Articulation Procedures Between Secondary and Postsecondary Education Agencies in North Carolina?", American Education Research Association Vocational Education Interest Group, New Orleans, Louisiana, April 4-8, 1994; with Scott A. Williams.
- Williams, Scott A. "Microsoft Works—A Sure Winner!", 16<sup>th</sup> Annual Atlantic Coast Business & Marketing Education Conference, Raleigh, NC, February 19-20, 1999.
- Swope, J and Scott A. Williams. "Marketing Education's Response to Block Scheduling: The North Carolina Story", **Association for Career and Technical Education Annual Convention**, Orlando, FL, December 13, 1999.

## Presentations (Cont'd)

- Tucker, S, Williams, S and Krystie Grubb. "Course Technology's Blackboard vs. HTML: Online Instruction as it Advances into a New Millenium", 17<sup>th</sup> Annual Atlantic Coast Business & Marketing Education Conference, Raleigh, NC, February 18-19, 2000.
- Williams, S and David Parke. "How Much is that Doggie on the Internet?—Teaching E-Commerce." **74<sup>th</sup> Annual Southern Business Education Association Conference**, Norfolk, VA, October 27, 2000.
- Williams, S and Krystie Grubb. "E-Commerce" Teachers helping teachers.", 18<sup>th</sup> Annual Atlantic Coast Business & Marketing Education Conference, Raleigh, NC, February 16-17, 2001.
- Williams, S and Krystie Grubb. "Computer Basics Workshop." **2001 Marketing Education Conclave**, Cleveland, OH, July, 2001

## Service

### Committees and Special Projects

- Developed four performance-based examinations that are currently used as placement tests for ASIP 2000. Scoring rubrics and training modules for proctors were also developed.
- Surveyed 100% of the BVTE department graduates from 1991-Present concerning employment status and satisfaction with the program. This survey summary is available within the BVTE department.
- Traffic Committee Member (2000-2001)
- Faculty Senate Member
- Curriculum Committee Member (2001)
- Writing Across the Curriculum Committee Member (2000-Present)
- Code Committee Member (2001), Position: Secretary
- Planning Committee Member (2001)
- Representative for the Pitt County Schools NATEF Certification meeting, J. H. Rose High School, Greenville, NC, April 23, 2001-Present
- Faculty Marshall, School of Education Graduation Ceremony, Spring 2001

**Professional Organizations**

## Vocational Education

- Omicron Tau Theta
- ACTE (Association for Career and Technical Education)
- NBEA (National Business Education Association)

**Awards Received**

## Service Awards

- Outstanding Young Men of America, 1992

## Military Awards

- Army Commendation Medal, 1993