CHAPTER I

INTRODUCTION

Now is a crucial time in the history of American public education. Programs to reform public schools abound and teachers are called on to design learning experiences for increasingly diverse populations of children who are not academically oriented. Classrooms contain greater numbers of nontraditional and educationally disadvantaged students today than in the past. Demographic patterns such as declining overall birth rates, expansion of minority groups, widening gaps between the rich and poor, and the decline of the traditional family increase the complexity of the school experience (Reeves, 1988).

These sociological trends dramatically affect teachers who must rely upon personal endurance and inventiveness to perform successfully within the open social system called school.

Throughout the past decade support for beginning teachers has increased substantially. New state programs tend to mandate particular kinds of assistance for-and assessments of beginning teachers. The first of these
teacher induction programs was inaugurated in 1980 (Ishler 1988). According to its provisions, if new teachers fail to demonstrate the behaviors designated as indicators, they receive assistance from a team or attend staff development (Goertz 1988). Success is focused on specific behaviors rather than on actual problems of practice. Success is defined as competencies with discipline, content knowledge, and record keeping. Assistance may take any form that supports the beginning teacher’s growth and completion of a successful first year. Teachers who still fail to master competencies cannot receive tenure.

A recent study of 81,000 teaching records by the North Carolina Department of Public Instruction points to a potential shortage of qualified teachers (News & Observer 1996). In North Carolina, more than forty percent of the beginning teachers leave the classroom before the end of the third year. Many beginning teachers cited teaching assignment, classroom location, improper equipment, and lack of teaching materials as factors for leaving. Another major facet of the study suggests that a basic problem facing beginning teachers is a lack of perceived support from parents and administrators.

Many beginning teachers who survive the first year develop survival
techniques, new teaching strategies, and realistic outlooks based on observations of master teachers.
Theoretical Constructs

In recent years, researchers in teacher education documented the challenges facing first-year teachers and their need for support (Bullough, 1987; Goodman, 1987; Grant and Zeichner, 1981; Little, 1984; McDonald, 1978; Veeman, 1984). Each of these studies dealt with beginning teacher population, teachers of science in secondary schools and specifically, science teachers in their first year of teaching.

The following questions provide the theoretical constructs for this study.

1. What are the perceived problems and issues faced during the first year and what differences exist between expectations and realities?

2. Does acculturation of first-year secondary science teachers promote better teaching skills? Is there any relationship between the two? How does this happen?

3. What kind of support do first-year secondary science teachers feel they need from school-based
4. What kinds of system-wide in-service programs exist for these teachers?

5. What are the problems of first-year secondary science teachers as determined by the administration, department chairpersons and lead teachers directly responsible for these teachers? How do the administrators, chairpersons and lead teachers support the teachers?

McDonald in 1991 studied first-year secondary science classroom teachers and found that they had difficulties anticipating and preparing for the teaching experience. A significant experiential gap existed between learning about and actually performing the work of a teacher. Because of this, schools have an obligation to assist first-year secondary science teachers with all facets of the school environment.

Clear communication between the principal, mentor, and other support persons are essential and first-year secondary science teachers benefit from opportunities to observe effective teaching. From this experience, they obtain strategies for classroom organization, questioning techniques, student learning
activities, and lesson planning for different ability groups. Demonstration teaching allows the first-year secondary science teacher to observe a master teacher diagnose students’ needs, set learn objectives, plan lessons, and evaluate results.

Some first-year secondary science teachers use creative skills to maintain appropriate tension among the requirements of their contradictory roles. Other first-year secondary science teachers never recover from the initial impact of teaching and simply refuse or fail to achieve balance between the educational mission and their own social adjustment. In some cases this results in their exist from the teaching profession (Ryan, 1986).

Over the past decade, many schools of education at universities in North Carolina changed their teacher preparation programs to incorporate both instrumental and conceptual approaches. This connection allows first-year secondary science teachers to reframe patterns of classroom interactions into exploration, experimentation, and subsequently greater student achievement. Aspects of these programs allow first-year secondary science teachers to acquire a firm grounding in teaching skills while completing their academic training. These university/college programs provide a greater
foundation for understanding school law, budgeting, state health requirements, and current reforms in education. In addition, first-year secondary science teachers learn not only their subject matter but also how to stimulate and understand students. One of the first-year secondary science teacher’s most important tasks is to explore conceptions that help students to achieve and understand. First-year secondary science teachers provide experiences that help students recognize the cognitive processing of learning information during instruction.

First-year secondary science teachers may or may not have had support from an expert mentor during their first year of teaching. Research showed that such support improves both teacher effectiveness and retention (Austin, 1989). After conducting research on induction programs in eight states, Huling-Austin and Murphy (1987) concluded that:

The assignment of a support teacher may well be the most powerful and cost-effective induction practice available to program development. First-year teachers who were assigned designated support teachers consistently reported that those persons were who they relied upon most heavily for assistance (pp. 35-36).

First-year secondary science teachers need support in the areas of
student discipline, lesson planning, grading, establishing realistic expectations. Assistance in locating materials also help, as does having someone with whom to talk. Thus, first-year secondary science teachers throughout their first year should have ongoing opportunities to perfect their skills and to work on problems of practice directly connected to their teaching.

Other principle problems faced by first-year secondary science teachers were isolation and time management. Why do experienced teachers avoid assisting first-year teachers? Veteran teachers not assigned as a mentor are not likely to offer assistance to first-year secondary science teachers, even when first-year secondary science teachers are experiencing severe difficulties. Veteran teachers view this role as the responsibility of the principal (Ryan, 1979).

A typical school setting may not provide opportunities for first-year secondary science teachers to talk with one another about student learning and how to improve teaching. Many first-year secondary science teachers report having almost no opportunity to observe other teachers or to use video equipment to assess their own practice. Moreover, first-year secondary
science teachers needed time during the workday to reflect on daily and future issues and problems.

This research provides a theoretical construct for further study of the problems and issues of and support needed by first-year secondary science teachers. Based on case study interviews of teachers and surveys of those teachers’ administrator/lead teachers, this research utilizes data analysis to understand the behaviors used to successfully complete the first year of teaching.
Purpose of the Study

The purpose of this study is to identify the major problems and concerns of first-year secondary science teachers.

This study addresses the following questions:

1. What are some of the major problems confronting first-year secondary science teachers.

2. What are some of the supportive practices supplied by the school-based administration and district-wide programs for first-year secondary science teachers.

Limitations of the Study

This is a case study of the problems and issues faced by and support given to first-year secondary science teachers. Previous research on teacher induction was based on self-reported data (Eisner, 1991; Zeichner, Tabachnick, & Densmore, 1987), and provided a glimpse into development of beginning teachers in general. Little qualitative research has been conducted (1) to establish definitely what beginning science teachers actually believe, think, and feel; (2) to examine their interaction with their new environment; (3) to determine their needs for surviving the first year in the classroom.

This study comprises interviews with eight secondary (high school) science teachers who had completed one year of science teaching and had received a contract for the coming year. Each interviewee held a certification in science grades 9-12.

All subjects participated voluntarily. All subjects were employed within educational regions identified by the North Carolina Department of
Public Instruction Division of Licensure. Subjects were guaranteed anonymity and all data collected were used strictly for the purpose of fulfilling the requirements of this study.

This study was designed to analyze and the perceptions of (1) first-year secondary science teachers and (2) their administrators with regard to problems and issues confronting the teachers and support given to the teachers during the first year of teaching.

The study (1) analyzes the perceptions, as revealed on interviews, of eight first-year secondary science teachers under contract at the start of the 1996-1997 school year and (2) analyzes the perceptions, as revealed in written responses to survey questions, of these same teachers’ administrators over the course of one year. More specifically, these teachers are novice by definition and somewhat limits their perceptions of specific support activities which can move them from initially licensed to tenure career status.
Definitions

**Issues.** As identified by the subjects in the research study: site-based management, interdisciplinary instruction, heterogeneous grouping, and professional affiliations.

**Problems.** As identified by the subjects in the research study: discipline of students, classroom management, extracurricular duties, parent communication, conflict resolution, time management, isolation, and absenteeism.

**Need assessment.** As identified by the subjects: frequent visits to the classroom by school-based mentor teacher, administration support, partnerships with other beginning teachers, development of a professional support system, a year-long in-service only for first-year science teachers, and alternative strategies for improving student behavior.
**First-year secondary science teachers.** Teachers completing one year in a full-time position as a teacher of physical science, biology, chemistry, physics, or environmental science, or a combination thereof.

**Acculturation.** The process of intercultural borrowing between diverse people that results in new and blended patterns. Various forms of learning across domains takes place within the school environment for adaptability, shared experiences, and learning.
Significance of the Study

This study addresses aspects of a recent report by the North Carolina Department of Public Instruction that showed that the greatest attrition of teachers occurs within the first three years of teaching. In particular, the area of science education continues to suffer from a shortage of certified teachers. Teachers certified in physical education or foods and nutrition have frequently been called upon to teach science only because their college training included courses in the sciences.

What are the causes of high attrition rates in the early years of teaching? Why are fewer students choosing the field of science teaching? The literature shows that many difficulties encountered by first-year secondary science teachers originate in the school environment, the fundamental tenets of the teaching profession and various conditions in the workplace.

Findings of this study will (1) help school personnel develop strategies for retaining secondary science teachers; (2) reveal pre-service preparation, extended assessment, and continuing professional development programs to be effective methods for building needed skills; (3) decrease the tension and stress associated with the first year of teaching. Sheehy (1976) defined a
mentor as a nonparental career model who actively provides assistance, support, and opportunities for the protégé.

Results of this study may be used by local educational agencies to identify perceptions of professional support and develop strategies to help first-year teachers survive difficult conditions in the classroom. A science teacher’s experience during his/her first year on the job affects students’ attitude toward science and his/her own attitude concerning teaching over time.

This study will provide a pivotal avenue for colleges to prepare programs in teacher education that direct teaching as a continuous, developmental approach in a substantial lifelong progression of professional growth. Providing programs in science which places emphases on the relationship of society with science content and offering ethical science tenets as a part of the academic requirements. These college programs should extend course offerings to include intellectual and emotional resources which strengthen the teaching model which allows first-year teachers to formulate increased techniques and strategies over time.
Overview

Chapter 1 of this study introduced the challenges confronting first-year secondary science teachers. It listed questions that frame the issues and problems these teachers confront. Chapter 2 presents the literature review, which focuses on research into first-year secondary science teachers’ adaptation to the reality of their teaching experience. Chapter 3 explains the methodology used and the structure of the data analysis, providing guidelines for identifying valid behaviors for quality teaching and skills to accomplish evaluation objectives. Chapter 4 presents and describes the data analysis of the thematical conceptual interactive tactics used in the interviews. Chapter 5 offers conclusions, recommendations for further studies, recommendations for practice, and suggestions for the professional development of first-year secondary science teachers.