

THE RELATIONSHIP OF SELECTED VARIABLES TO  
PERSISTING AND NONPERSISTING STUDENTS  
IN SELECTED ENGINEERING  
TECHNOLOGY PROGRAMS  
AT TULSA JUNIOR  
COLLEGE

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## CHAPTER I

### INTRODUCTION

In the past few years Tulsa Junior College (T.J.C.) has been justifiably concerned with its freshman attrition. Each year large numbers of freshmen enroll in public junior colleges and subsequently withdraw without completing their two year program.

Tulsa Junior College has an attrition rate of approximately forty percent in engineering technology. The number of nonpersisting students combined with projected decreases in college age students and increased recruitment competition among institutions have concerned the school's administration and staff. Recently "Recruitment and Retention" (R and R) of students have been stressed by the President of T.J.C. as being of vital importance to all who are part of the T.J.C. team.

These factors resulted in emphasis being placed on the identification and consultation with potential non-persisters. There is hope that if an early identification system for potential nonpersisters could be developed, it would allow focusing of student advisement and guidance on those who could profit most from the services.



Given the nature of higher education today greater attention has been given to the dropout problem. The dropout is often referred to as a drain on national resources. He is presumed to represent wasted talent, so that a dropout rate of forty percent is taken to mean the loss to the national economy and welfare of forty percent of the most talented population, which then becomes a cause for national concern. Therefore, study of the dropout problem, in order to keep students in college, has become a vital issue.

As applied to engineering technology, this concern becomes particularly acute. Society is presently confronted with the urgent challenge of what is being called "the explosion of high technology" (Brooking, 1983). Society is living in an age of increasingly complex technology and promises still more rapid change and increased use in the immediate future. These cumulative changes require more and more of technicians in the field and therefore changes in their preparation.

In the face of growing need, the year-by-year decline in engineering technology enrollments and graduation pose a severe threat to our nation's wholesome industrial and economic growth. The nation's influence as a stabilizing force in the world is also threatened.

#### Statement of the Problem

The problem with which this study was concerned is that of student attrition and the lack of information relating to

the early identification of potential nonpersisting students in engineering technology. The engineering technology division of Tulsa Junior College was losing many beginning students too quickly.

#### Purpose of the Study

The purpose of this study was to evaluate these selected variables to determine if they could identify beginning students with a high probability for leaving T.J.C. during the first year in engineering technology.

1. How do first semester students in engineering technology perceive the 65 items on the new student questionnaire?

2. Is there a significant difference between potential nonpersisters and potential persisters according to the following factors:

- a. family encouragement,
- b. college importance,
- c. finance,
- d. advise,
- e. self concept.
- f. educational expectation,
- g. anxiety,
- h. high school performance,
- i. institute perception,
- j. first semester college grade point average?

### Need for the Study

It is important to both T.J.C. and the students of the institution that the number of nonpersisting students be reduced. It is necessary for an institution to utilize all available resources and explore various methods of meeting the educational needs of the students. It is also important to identify these students since the school has committed its educational and financial resources to their recruitment and enrollment on the premise that they will continue in their program of study until graduation. Reduced numbers of students increase the cost of operation through reduced effective use of resources. The needs of the potential nonpersisters cannot be met unless he can be identified early.

### Limitations of the Study

In terms of limitations the major goal of this study was to evaluate the afore-mentioned variables in a two-year junior college in Tulsa. The following points were the limitations of this study.

1. This was a case study limited to a single institution and five programs of study.
2. This study was limited to ten selected variables developed by Heiserman (1978).

### Assumptions

The following assumptions were made for the purposes of this study. These assumptions are necessary to assist in

the development of limitations that this study may have.

1. The students studied in this research were representative of beginning technology students in T.J.C.

2. The first few weeks of the first semester of school are the most critical for purposes of identifying nonpersisting beginning students.

3. Students will respond honestly to each item making up the questionnaire.

#### Definition of Terms

The following definitions were developed to help clarify how these terms are used in this report.

Academic Year--A period of time consisting of a fall and a spring semester.

Beginning Students--Those new students enrolled for the first semester in Biomedical Equipment, Drafting and Design, Electromechanical, Electronics, Welding programs of study at T.J.C. in Tulsa, Oklahoma.

Dropouts--Students who leave school to engage in an activity other than organized education.

Engineering Technology--That part of the engineering field which requires the application of scientific and engineering knowledge and methods combined with technical skills in support of engineering activities. It lies in the occupational area between the craftsman and the engineer.

Engineering Technology Programs--Those programs designed to meet the requirements for the preparation of a particular

kind of technician within a stated period of time.

Influencing Variables--A selection of variables that students give for dropping out. The variables chosen are: family encouragement, importance of college to self, concern about finances, sources of advice, self concept, educational expectations, anxiety, high school performance, perception of the institute attended, and first semester GPA in college.

Nonpersisters--Those beginning students who leave T.J.C. during the first semester of school. They may be dropouts, stopouts or transfer to another school or program of study.

Persisters--A beginning student who remains in his initial program of study at T.J.C. for the first two semesters.

#### Organization of Study

The present research has five chapters. Chapter I is the introduction, which includes statement of the problem of attrition, purpose of the study, limitations of the study, assumptions, and the definitions of terms. The second chapter produces the review of the related literature, characteristics of persisting students, characteristics of nonpersisting students, nonpersisting students and selected influences, and a summary of the dropping out process. Chapter III deals with the selection of the subject, selection of the instrument, collection of data, and analysis of data. Chapter IV presents the results of the study, and Chapter V contains a summary, conclusions, and recommendations found from the research.

## CHAPTER II

### REVIEW OF LITERATURE

This chapter was designed to review the major studies related to nonpersisters/persisters and has been divided into five major sections. These sections are: (1) Research related to Engineering Technology Students, (2) Characteristics of Persisting Students, (3) Characteristics of Nonpersisting Students, (4) Nonpersisting Students and Selected Influences, and (5) A Summary of the Dropout Process.

According to Vaezi (1981) the problem of the college dropout has been the subject of many detailed studies for a great many years. As colleges and universities encountered potential enrollment declines, attention on the problem of attrition became more intensified.

Much of the literature reviewed is concerned with dropouts instead of nonpersisters. Dropping out connotes leaving school while nonpersisting may include transferring to another school or area of study. Characteristics or processes involved for the two groups are similar

#### Research Related to Engineering Technology Students

Miller (1966) conducted a study of engineering technology freshman at Oklahoma State University School of Technology.

He found that the dropout student had a greater need for nurture and had greater social needs than the nondropout.

According to Foster (1975), in a three-part study concerning differences between persisters and nonpersisters in engineering programs, motivation, commitment to engineering, and strong high school records were indices of persisters in engineering. The self-image of persisters is stronger than those who leave and they view their academic environment in a more positive way.

MacMillam (1969) in a three year study of junior college freshmen in northern California indicated that nine percent of a 112 item questionnaire accounted for the attrition--persistence of students in college. These items dealt with sex, race, dad's job, major, parental encouragement, importance of college to self, parent's education, keeping a job, need for financial aid, sources of advice, anxiety, and self-concept.

According to Woolsey and Paulsen (1972), who studied student withdrawal at North Central Technical Institute it was found that the Intelligence Quotient (I.Q.) of dropouts was significantly higher than the I.Q. of continuing students. Of particular interest was the combination of high I.Q. and relative low high school achievement of dropouts.

Rightland (1965) found that the characteristics which differentiate the technical institute dropout from the persisting student is the combination pattern of the mathematics portion of the Science Aptitude Test and the score on the Survey of Study and Attitudes Test. He concluded that

this study also substantiated the importance of the role of mathematics in technical education.

Blanchfield (1971) found that the social consciousness score proved significant in his study. He found that the successful student has greater concern for social issues. He also found that percentage of college costs financed by grants was significant, but high school grade point average was not significant. Also the first semester college grades were significant, while all other variables used did not prove significant.

#### Characteristics of Persisting Students

According to Baumgart and Johnstone (1977) in an analysis of undergraduate students in an Australian university, persisting students tend to have higher high school composite scores, to be more interested in obtaining a degree, to work longer hours, to have more friends, to have fewer friends who considered withdrawing, and to be more satisfied with a number of academic aspects of university life. Here, persisting students seem to be better integrated into both the academic and the social systems of the university.

Holland and Nichols (1964) conducted a study of engineering students. They found that persisters were responsible, non-original, intolerant of ambiguity and simple in outlook.

Rose and Elton (1966) found significant differences among four types of persisting and nonpersisting students. They found persisters to be conforming, and more willing to



accept authority. Persisters also denied socially undesirable behaviors.

Watley (1965) compared four groups of engineering students in academic success and persistence. Persisters were found to be emotionally more stable than nonpersisters.

Elton and Rose (1976) using a combination of the Omnibus Personality Inventory and the American College Testing Program (ACT) composite score, found significant differences between those who stayed in engineering and those who transferred to another college. The students remaining in engineering compared to those who transferred were described as being interested in practical matters, dependent upon authority and unable to rebel against the structures of family, school, church or state. Persisters were also unlikely to protest the infringements of individual rights, intolerant and unrealistic in dependence upon rules and rituals, immature, conventional, rigid, prejudiced, and emotionally suppressed. Studies reviewed indicated that the engineering student who persists can be described as responsible, conforming, willing to accept authority, and emotionally stable.

Mercer (1941) in a study of freshmen students at a New York State College found that the typical student who leaves the college without receiving a degree may be described as one who is undecided on a vocation or whose choice is based upon inadequate information. The nonpersister has probably not taken an active part in high school activities and high school grades are in the low 80's.

According to Panos and Astin (1968), the nonpersister was one who had relatively low grades in high school, who does not plan at the time of college entrance to take graduate or professional work, who comes from a relatively low socioeconomic background, and whose racial background is either American Indian or "other." He is more likely than the persister to have declared business, engineering, or secretarial work as his (or her) probable career occupation at the time of entrance to college. He is also most likely to be married when he started college.

Sexton (1965) showed that successful students not only reported that they did more work than they estimated the average student did, but also did more work than they themselves estimated that the average student should do. Successful students had been reported as having participated in more activities and as having held important and responsible high school offices. These students tend to devote themselves to cultural clubs, departmental clubs, and school publications.

Trent and Medsker (1968) showed that persisters compared to nonpersisters entered college with considerably more intent to attend classes and graduate. They were more selective in choosing their colleges and saw more reasons for attending. They studied harder and were less prone to allow social life to interfere with their studies. They tended to be more intellectual, self-reliant, and open-minded before entering college. Persisters entered college

with the necessary predisposition, the state of readiness to persist and develop in college.

#### Characteristics of Nonpersisting Students

According to Demitroff (1974), a nonpersister is likely to be a freshman undecided upon his/her academic major with no specific vocational plans. Furthermore, this student would be one who lacks motivation and has less confidence in the effectiveness of his/her study habits and in his/her ability to complete the baccalaureate degree.

Pantages and Creedon (1978) stated that the personality traits that have been found to be characteristic of dropouts are numerous and negative. It has been shown that dropouts are more unable to adapt to "the college milieu", aloof, assertive, critical, disagreeable, immature, impulsive, impetuous, nonconforming, and unconventional. Furthermore, dropouts are likely to overemphasize personal pleasures, rebellious against authority, resentful of college academic and social regulations, self-centered, lacking self-sufficiency, uncertain about the future, and more uncooperative.

Rose and Elton (1966) suggested that those students with high hostility tend to direct it toward the institution and transfer to another college, whereas those students who have both high hostility and are maladjusted generally drop out of college permanently. Dropouts tend to show most maladjustment; to be least interested in literature, art, and

and philosophy; to be illogical, irrational, uncritical in the approach to problem-solving; and to dislike reflective and abstract thought.

According to Spadey (1970), indecision and procrastination are characteristics of dropouts. Pattern of evercompliance or over rebellion toward parents, he argued, impair the normal functioning of the student in task-related activities. Passivity was linked to lower frustration in the classroom. Dropouts were more assertive and had more problems with impulse control.

Tinto (1975) in a longitudinal study indicated that dropouts tend to be more impulsive than persisters, lacking in any deep emotional commitment to education and unable to profit as much from their past experiences. Such dropouts also seem to be more unstable, more anxious, and overly active and restless relative to their successful college counterparts.

According to Chickering and Hannah (1969), leavers lacked purpose. Future plans - education, vocational, life style - are in flux. Religious beliefs, values, and attitudes are also unsettled and shifting.

Other studies have found nonpersisters to be irresponsible, original, tolerant of ambiguity, complex in outlook (Holland and Nichols, 1964). In further studies nonpersisters are shown to be moody, irritable, depressed, withdrawn, and nonconforming (Watley, 1965).

An empirical study that tried to link characteristics of students and institutions in terms of retention involved

23 community colleges from northern California (MacMillan and Kester, 1973). The colleges formed a consortium for research called NORCAL. The name NORCAL refers to Northern California.

Among the primary findings of the initial phases were:

1. Dropouts were most likely to be black, least likely to be Oriental.

2. Dropouts come from less affluent families and expressed the greatest concerns over matters of finance and employment.

3. Dropouts showed less perceived parental encouragement for their pursuit of college.

4. Dropouts showed a lower sense of personal importance attached to college.

5. Dropouts were likely to have lower educational aspirations than persisters.

6. Ability was the key factor for differentiating dropouts and persisters when grouped by sex; low-ability males were three times more likely to drop out than low-ability females.

### Nonpersisting Students and Selected Influences

#### Influence of Family Encouragement

Student decisions to attend college and persistence through to graduation were found to be related to

encouragement received from parents to attend college. This encouragement was related to parents' attitudes toward college, their education, and their incomes.

According to Hackman and Dysinger (1970), the student's home family may be highly important in determining his reaction to the college experience. Students who view their relationship with their parents as good tend to be more committed to college. The more parents indicate that they believe the student will perform well in college, the stronger the measured commitment. Parents' own commitment to their child's college education (and their perceptions of his commitment) is significant in understanding who persists and who does not.

Sexton (1965) and Morrissey (1971) proposed that parental aspirations are directly related to the students education and their influence on the likelihood of persistence in college. Furthermore, this persistence is mediated by the quality of the relationship between the student and the parents. The better the relationship the more influence parental aspirations are, the greater will be the effect on the students' persistence or withdrawal from college.

Tinto (1971) in a longitudinal study found that college persisters seem not only to get more parental advice, praise, and expressed interest in their college experience, but they also have parents who express greater expectations for their children's further education. In this respect it appears that parental levels of expectations may have as much

influence upon the child's persistence in college as the child's own expectations for himself.

Trent and Medsker (1968) showed that one prime source of academic motivation is parental influence. Parents communicated their educational values and encouragement, temperaments and interactions to their children. Thus successful completion of college is extensively derived from very early family environment.

#### Influence of College Importance

According to Kamens (1971), the greater the prestige of the college, the more dependent upon school the students are for realizing the status that it can confer, and thus the greater value they place on "membership" in the college. There is a negative relation between college prestige and attrition: high prestige (with some notable exceptions) yield lower attrition rates. On the whole, the more prestigious the college, the less the attrition probably because the perceived benefits for a student outweigh the dissatisfactions.

Douvan and Kaye (1964) discovered that men tended to view college as a means to an end: Their college goals were specifically related to their vocational plans. Women, however, viewed college as an end in itself and did not relate college with vocational goals. There were no differences by sex in the perceived importance of vocational goals. When a particular vocational orientation is coupled

with the appropriate college orientation, a student tends to persist in college. Conversely, those students whose vocational orientation do not match the college's orientation generally drop out. Students who are undecided about their career choice tend to adopt the vocational values of the college.

Tinto (1975) suggested that intellectual development was related to persistence in college. He also found that persisters, more than dropouts, are likely to value their college education as a process of gaining knowledge and of appreciating ideas. He further pointed out that it was not simply the absence or presence of intellectual development that is important in persistence, but the degree of congruency between the intellectual development of the individual and the prevailing intellectual climate of the institution.

According to Chickering and Hannah (1969), many dropouts lacked purpose in college. Their academic achievement suffered and was not commensurate with ability and aspirations. College and student no longer fit together well. The college is partly to blame. It makes great claims and falls far short. Curricular offering and extra curricular activities are limited and do not suit students' particular needs.



### Influence of Finances

One of the most obvious causes of attrition is economic, students drop out if they cannot afford to continue in college. According to Summerskill (1962), 16 to 21 studies showed that finance was rated as one of the three most important factors in attrition. Among the leading causes of dropouts financial problems rank next to motivation and study problems. Iffert (1957) found that financial difficulties were ranked third in importance by students as a reason for dropping out.

According to Astin (1973), receiving a grant will increase the odds of graduating in four years. Blanchfield (1971) indicated that the size of the scholarship is positively correlated with the probability of persisting. He further showed that the relationship between receiving a grant and attrition is not merely an artifact that results from giving such awards primarily to more able students who, in any case, have better chances of persisting than the less able student.

Blanchfield (1971) also found that the percentage of college expenses financed by loans did not correlate significantly with attrition. He hypothesizes that a grant is not only reinforcing but gives a greater security than a loan. Thus a grant provides more incentive to persist while loans on the other hand, do not provide motivational support for the student.

Iffert (1957) found no significant relationship between earned college expenses and persistence in college. He did find, however, that the amount of time per week spent working is significantly related to attrition. Astin (1973) noted that if a student does not receive any financial aid from the college the chances of graduating in four years are slightly reduced. However, Fields and LeMay (1973) have indicated that receiving financial aid will increase the chances of the student enrolling in college.

#### Influence of Advice

Academic-advising is a service that can improve persistence. Those who use academic-advising assistance show greater persistence.

According to Demos (1968), the students' decision to drop out is usually the product of much thought over a considerable period of time. Studies endeavored to learn the pattern of communication common to potential dropouts. They found that the discussions of the student's withdrawal plans take place almost exclusively with the student's friends and parents.

Chickering and Hannah (1969) verified that student's plans take place almost exclusively with the student's friends and parents, and withdrawal topics were freely discussed. Any communication with college personnel generally occurred when students began to withdraw. However, the main subjects of conversation with college personnel were

only topics dealing with educational matters. These matters neither reached fundamental problems and implications nor some of the feelings of ambiguity and conflict which predominate.

Hannah (1969) found that initial discussion concerning withdrawal was with friends of the same sex, parents next, then a friend of the opposite sex. Faculty and other college personnel, when consulted, entered the process later. He further showed that the most common reactions of those with whom the student talked were advised to stay in school. These recommendations were more frequently made by student's friends and parents than by college personnel.

Both studies found that withdrawing students generally felt that their talks with the deans and/or counselors were very valuable. However, since these discussions occurred after the student had already decided to drop out, they had little effect in persuading the student to reevaluate his or her decision.

### Influence of Anxiety

The role played by personality characteristics in attrition has been widely studied. According to Rose (1965) there were no differences in the anxiety level of persisting students and dropouts-- both groups scored high on this variable, as measured by Rotter's Incomplete Sentences Blank. This high anxiety level did not disrupt the functioning of the students who persist. However, other factors

affecting the dropouts made this anxiety level much more intolerable for them and played a much more important role in their eventual attrition from college.

Other studies have employed finer discriminations and provide more information and understanding of the role of personality factors in attrition. These studies identify the characteristics that typify different types of dropouts and persisters. Using the four categories: (a) successful persister, (b) probation persister, (c) defaulter (GPA below 2.00), and (d) dropout (GPA above 2.00), Rose and Elton (1966) found personality traits that distinguish all four groups. They reported that probation persisters are significantly less anxious than any of the other three groups, and attach more value to social contact and social affairs than to academic activity. They concluded that high anxiety levels may be necessary to motivate college students to achieve academically.

Barger and Hall (1965) have suggested that the end-of-semester periods are characterized by stress and anxiety for the student. Apparently the actual decision to drop out is made when away from college, usually just after these stressful periods when feeling of relief are high, and the pressure (as well as the desire) to reenroll is low, because that is the time when noncollege influences upon the student are strongest.

### Influence of Self Concept

Individuals enter institutions of higher education with a variety of attributes, precollege experiences and family backgrounds. Each of these has direct and indirect impact upon performance in college.

A review by Pervin, Reik and Dalrymple (1966) noted that the reason for dropping out was found to be the problem of poor motivation and immaturity: however, his study on students' satisfaction with college proved his hypothesis that the greater the discrepancy between the way a student sees himself and his image of the college, the more are the chances that he will be dissatisfied with college, and consider dropping out. One dropout testified:

During my three years at Princeton, I never felt a whole person, one who could identify himself with himself and have individual meaning, with time off, I found the pleasures and challenges available to an interested, seeking mind. I gained self-satisfaction, maturity and a broadening of perspective (p. 290).

According to Kesselman (1976), students leave for one of three reasons - financial, personal or academic. The real causes often have to do with the students' expectations about college, as well as his feelings about himself. Many students left school expressly to learn who they were, as much as to learn what the world was all about; they wanted to make mistakes and grow from the consequences; they wanted to produce tangible achievements and grow from the pleasures; they wanted the beginnings of self-fulfillment.

Some students step out because they do not belong in college right now. While their intellects have raced ahead, their social growth kept slower pace. They need some time to catch up emotionally.

Kamens (1971) suggested that a students' commitment can be strengthened by the college:

To the extent that a college can facilitate the status transition from 'studenthood' to adult economic and occupational roles that its students value. It gains in its capacity to influence their commitments and self-concepts (p. 271).

Timmons (1978) reports that both male and female dropouts had poorer self-concepts and were more dissatisfied with their lives at college entrance than were persisters. The study also indicates that dropouts, particularly males who left school voluntarily, seemed to consider dropping out as a positive step toward improving their self-concepts and breaking away from their parents.

#### Influence of Educational Expectations

Marks (1967) attempted to measure motivational level in terms of the students' own expectations about their chances of dropping out. His findings indicate that these expectations are related to the students' level of aspiration, fear of failure, and parental attitudes. Marks' other pertinent findings were: (a) those students who expect to drop out actually do drop out in significantly high percentages; (b) there is no correlation between the expectation

of dropping out and the student's scholastic ability; (c) those students most likely to drop out were uncommitted to college and had low aspirations and educational values. They were more concerned with parental attitudes and expectations than with their own; and (d) those students who dropped out had difficulty resolving conflicts concerning their commitment to educational values.

According to Ramist (1981), the student's precollege attitude may be a strong influence. For some students, expectation may be self-fulfilling prophecies. However, high expectations (perhaps unrealistically high) can lead to disappointment, and low expectations may surprisingly lead to satisfaction. Also although commitment is usually helpful, a compulsion to achieve may lead to, or be a symptom of, psychological stress, which in turn could lead to dissatisfaction with the college, poor performance, and dropping out.

Sexton (1965) found that passing grades do not have the same significance for all students. Students who fail to achieve the grade expected on the basis of their high school performance may not persist in college. While a feeling of success in the first semester is essential for all students, it is especially significant for those students who rank in the lower-third of their high school class. This feeling of success depends not merely on grades, but on the degree to which they approach the students' level of

aspiration. It seems clear that to experience a sense of achievement and to persist in college, students must have a realistic level of aspirations.

Tinto (1975) has shown that background characteristics and individual attributes also influence the development of the educational expectations and commitments the individual brings with him into the college environment. It is these goals and institutional commitments that are both important predictors of and reflections of the person's experiences, his disappointments and satisfactions, in that collegial environment.

Tinto (1975) has shown that the higher the level of plans, the more likely the individual is to stay in college. The level of educational plans held by the individual was by far the strongest independent influence upon college completion, once family social status and ability were taken into account.

#### Influence of High School Performance

A majority of studies have found GPA and class rank in high school differentiate dropouts from persisters (Blanchfield 1971; Panos and Astin, 1968). Other studies have pointed out that although high school performance is an accurate predictor of academic success, it does not predict persistence at the college level (Morrisey, 1971; Sexton, 1965).

According to Chase (1970), those destined to leave college seem to have felt ill-prepared to attack college work



and their ranks in their high school class validated this belief. Not having the skills to cope with academic problems, skills that might have been developed through rigorous involvement in high school affairs, the adjustment to a large university milieu becomes burdensome and the student therefore departs.

Demitroff (1974), in a study at three midwestern universities, indicated that high school rank in class is the most effective discriminator of those who left the university and those who stayed.

Panos and Astin conducted a follow-up study of freshmen from 248 colleges and universities. They indicated that high school grade average is monotonically related to completing four or more years of college.

Summerskill (1962) found that secondary grades are generally recognized as the best existing predictors of college grades. Dropouts had lower average grades in secondary school than did graduates. The more successful students held more favorable attitudes regarding their secondary school than did graduates. The more successful students held more favorable attitudes regarding their secondary school preparation. Conversely unsuccessful students at other colleges were found to be less satisfied with their high school preparation and with school in general. There are identifiable attitudes to school and to school work that affect chances of graduation from college in later years.

### Influence of the Institute Attended

According to Pantages and Creedon (1978), the college environment is now considered a major factor in the retention or attrition of students. Institutional influences on retention can be divided into three categories: objective environment, the environment of student involvement, and the policies and procedures of the institution. The objective environment refers here to the institution without the component of student involvement. Environment in this sense includes image, cost, size and kind of institution, services, and residential conditions.

According to Astin (1975), the key factor in retention is student involvement in campus activities. He attributes the positive effects of part-time employment on the campus, of residential living, of student activities, and of other categories of involvement to the fact that the student is involved in the life of the institution and subsequently is more apt to persist there. Factors influencing student retention include extracurricular activities, close friends, student-faculty relationships, and academic programs.

In one study, students were found to persist to a greater extent when policies did not impose punitive measures for early withdrawal. Lenning, Beal and Sauer, (1980) suggest that procedures should not impede matriculation or reenrollment at an institution. Policies pertaining to the withdrawal procedure should enhance the opportunity for students to have personal contact with university staff, and more

attention should be given to such contact before a student decides to withdraw. Pantages and Creedon (1978) indicate that humanizing the interactions between students and college staff would benefit both the institution and the student.

The dominant theme in retention research today is that retention and attrition result from the interactions that take place between students and the institution. This hypothesis is a form of the "college fit" theory, which states that the more congruence there is between the students' values, goals, and attitudes and those of the college, the more likely it is that the student will persist at that college (Pantages and Creedon, 1978).

Astin (1975) does suggest that persistence is enhanced if students attend institutions where many of the students are similar to them on social background factors such as town, size, religion, and race. He found no evidence that students persist better when attending colleges with students of similar ability. Cope (1978) stresses the importance of enhancing the social, academic, and intellectual integration of students to improve retention.

#### Influence of first Semester Grade Point Average

According to Ramist (1971), most studies have found a significant relationship between performance in college and attrition, even after other variables are controlled. The causation may be in either direction, though. Poor grades may be a result of a decision to drop out, or poor grades may be the cause of a "failure identity."

Summerskill (1962) found a highly significant relation between attrition and first semester college grades in 35 studies. These data support the interpretation that good grades are extremely effective reinforcers that maintain and strengthen a student's academic performance and decrease the chances of that student's dropping out.

Thayer's (1973) study revealed that college students receiving a D or F on their first examinations are more likely to drop out than students receiving any other grade. Students who do well on the first test do even better on the next, whereas students who do poorly initially do neither better nor worse on the next test.

Summerskill (1962) cautioned that poor grades are a far more stable predictor of attrition than good grades are a predictor of retention, since successful students drop out in larger numbers than would be expected. Barger and Hall (1964) also showed that scholastic aptitude measures correlate with first semester grades at only the 0.50 level. Slocum (1956) discovered that while 54 percent of the dropouts had poor grades, only 34 percent of the students considered their grades to be an important factor in their decision to drop out.

Sexton (1965) in a review of 25 years of research showed that the most difficult year for dropouts is the first year. Dropouts are due largely to poor academic performance.

### Summary of the Dropping Out Process

Hannah (1969) points out that while many students have compared "leavers" and "stayers", few have analyzed the process of leaving, the thoughts and attitudes of students, and those other persons involved while the decision is debated. Cope and Hannah (1975) ask the questions:

1. What first precipitated the idea to withdraw?
2. When did it occur?
3. What feeling accompanied discussion and the final discussion?
4. With whom was the idea discussed? At what point along the way?
5. How did the decision become solidified?
6. What was the effect of various responses by college, parents, and friends?

Anyone attempting to learn directly from students their reasons for leaving an institution must recognize the problems inherent in the self-report process. First, students may not really understand their motivations for leaving; consequently they may cite reasons that are superficial. Often a decision results from a combination of reasons, no one of which may have made the difference between staying and leaving.

Leon (1975) identified four temporal phases in the development of the dropout rationale. These phases are: (1) original rationale for entering college, (2) deterioration of original rationale, (3) transition from original

to leaving rationale, and (4) adoption of leaving rationale.

According to Chickering and Hannah (1969) most dropouts, in a study, described their feelings as ambiguous and in conflict; they lacked purpose. This picture of disorientation, lack of purpose coupled with minimal interaction with institutional personnel during the entire withdrawal-preparation process suggests that a problem of student-college fit existed.

Research has shown that the dropout decision is not usually impulsive: it is the product of much thought over a considerable period of time. Initial discussions are made with friends of the same sex, then parents, and then with friends of the opposite sex. Communication with faculty or college personnel occurs much later, after the decision is crystallized.

Chickering and Hannah (1969) further reported that the most frequent topics of discussion between the student and those to whom the student talked about withdrawing include: academic underachievement or difficulty, educational plans and purposes, vocational plans. These topics were discussed freely between the student and the student's friends and parents. Conversation with college personnel only dealt with educational matters.

The advice to stay in school was recommended most of the time by the student's friends and parents. College personnel were least helpful (Hannah, 1969). This may reflect the difference in when the decision-making process and contact was made.

Cope and Hannah (1975) also found that for more than three-quarters of the withdrawals, the final decision was made during the summer vacation or during a time when college was not in session. They concluded that end-of-semester periods of stress and anxiety as an emotional problem are related to withdrawal.

Most of the researchers agreed that dropping out was a true process. Dropping out begins early in the student's career and reaches the final stages of decision making prior to the eighth week of school.

#### Summary

The literature suggests that identification of potential non-persisters must begin early during the first weeks of the beginning semester. These identification activities should be concluded as soon as possible prior to the eight weeks of school.

It appeared reasonable in the identification of non-persisters to lump dropouts, transfer students and stopouts in a group having similar characteristics. It also appeared more feasible to consider the characteristics and factors affecting attrition as a multifaceted problem with various characteristics and factors involved. Thus, it was more equitable to utilize groups of characteristics and factors rather than trying to detect a single reason for attrition.

The questionnaire is very useful as a data-gathering instrument. Due to the flexibility and adaptability

of a questionnaire, it seemed as though utilization of such an instrument would investigate how the student perceived many aspects of his involvement with education.

The Freshman Questionnaire developed by Heiserman (1978) reflects factors identified in the literature as being significant in identifying potential nonpersisters. Therefore, if the instrument were adapted by the institution, it seems probable that it could be used effectively to aid in the early identification of students with a high expectancy for withdrawing.



## CHAPTER III

### METHODOLOGY

This chapter discusses (1) the selection of the population and sample, (2) the selection of the instrument, (3) the method used for data collection and analysis, and (4) the hypothesis to be tested.

#### Selection of the Subjects

The students selected for this study were students enrolled in the Science and Engineering Technology Division during the fall semester of 1982. They were enrolled in the Freshman Orientation courses, DRF 1323-BASIC DRAFTING, ELE 1303-DC CIRCUIT ANALYSIS, WEL 1313-WELDING /BLUEPRINT READING, and WEL 1326-FUNDAMENTALS OF WELDING, WEL 1336-INTERMEDIATE WELDING, and WEL 2326-PIPE WELDING I. They were enrolled for the first time in beginning courses of Biomedical Equipment, Drafting and Design, Electromechanical, Electronics, and Welding programs of study. These students were selected because their program of study was involved in a higher degree of mathematical and theoretical orientation in the curricula. Those students who enrolled and whose records indicated that this was their first enrollment in a

post-high school program were the subjects selected for this study. The researcher felt that these students would closely parallel those students in the Heiserman (1978) study.

#### Selection of the Instrument

The questionnaire used in this study was developed by Heiserman (1978) to seek student responses in the following areas: (1) family encouragement, (2) importance of college to self, (3) concern about finances, (4) sources of advice, (5) anxiety, (6) self concept, (7) educational expectations, (8) high school performance, (9) perception of the institute being attended, and (10) first semester GPA in college.

Table I is a summary of those questions which are associated with each area .

The instrument was designed with the following considerations: sample familiarization questions, lengthiness to counter remembering responses, questions asked in both a positive and negative form, Likert-type response scale and a Semantic Differential Scale to develop a self-image profile.

Heiserman (1978) utilized a questionnaire and developed an evaluation model that would identify potential students with a high expectancy of leaving school. The  $t$  test was used to identify significant questions and then the questions were programmed through a Stepwise Discriminate Analysis Function using a univariate analysis of variance approach that produced coefficients, a constant, and a threshold

number that was used as prediction models. The models were used to classify students as persisters and nonpersisters. The most effective model developed by Heiserman had an effectiveness of 77.8 percent on the first administration and was 62.5 percent effective when administered for validation purposes. Heiserman theorized the questionnaire could be effectively utilized in the identification of potential nonpersisters.

TABLE I  
QUESTIONS ASSOCIATED WITH PARTICULAR  
AREAS OF STUDY

Area of Inquiry	Questions
1. Family Encouragement	3,13,21,23,25,30,40,46,51
2. Importance of college to self	4,10,14,22,24,32,35
3. Concern about finances	5,16,26,37,38,49
4. Sources of advice	6,17,27,34,39,48
5. Self concept	12,29,45,52,53,54,55,56,57,58,59,60,61,62,63,64,65
6. Educational expectations	9,11,15,19,20,33,44
7. Anxiety	8,18,31,42
8. High school performance	1,43
9. Perception of institute being attended	2,7,28,36,41,47,50

The Heiserman (1979) Freshman questionnaire was revised by rewording selected items. The final revision of the instrument resulted in the New Student Questionnaire. See Appendix A for a copy of the revised questionnaire. These revisions were minor, mainly relating to situation/school change. Permission was obtained from Heiserman (1978) to use his freshman questionnaire in this study. The letter of permission is found in Appendix B. Table II is a summary of the revision of the wording used on the instrument.

#### Collection of Data

The instrument was administered to engineering technology students during the third week of the fall semester,

TABLE II  
A COMPARISON OF SEMANTIC REVISION  
MADE FOR THIS STUDY

Freshman Questionnaire	New Student Questionnaire
1. Freshman Questionnaire	New Student Questionnaire
2. O.S.U.	T.J.C.
3. Freshman	New Student
4. Technologist	Technician
5. Graduate School	Pursue a degree
6. School of Technology	Tulsa Junior College

### Collection of Data

The instrument was administered to engineering technology students during the third week of the fall semester, 1982. The third week was selected since it followed the end of the drop and add enrollment period.

All students were informed that the questionnaire was to be voluntary, that the information requested was confidential, and that no one but the researcher would review the questionnaire. All new students enrolled for the first semester in Biomedical Equipment, Drafting and Design, Electromechanical, Electronics, and Welding completed the instrument in class and returned it to their instructors at the end of the class period. The questionnaire was administered to eight sections of DRF 1323, ELE 1303, WEL 1313, WEL 1326, WEL 1336 and WEL 2326. Students who were not first semester students were eliminated.

### Analysis of Data

In January of 1983, the records of those students who completed the New Student Questionnaire during the fall of 1982 were reviewed. The purpose of the review was to correctly classify the participating students as persisters or nonpersisters.

In order to assess the differences between the potential nonpersister and the potential persister. The Chi-Square test was used as an analytical technique. Chi-Square was

computed for each of the 65 items on the questionnaire. These items were distributed under ten selected influencing variables. It is a very general test which can be used whenever one wishes to evaluate whether or not frequencies which have been empirically obtained differ significantly from those which would be expected under a certain set of theoretical assumptions.

The great advantages of the Chi-Square test is that it involves no assumptions about the form of the original distributions from which the observation came. Siegel (1956) states:

when the data of research consists of frequencies in discrete categories, the Chi-Square test may be used to determine the significance of differences between two independent groups. The hypotheses under test is usually that two groups differ with respect to some characteristics and therefore, with respect to the relative frequency with which group members fall in several categories (p. 104).

### Hypotheses

The following hypotheses were tested on the questionnaire to determine if specific items were effective in identifying students who were nonpersisters.

1. There is no significant difference between family encouragement factors of persisting and nonpersisting students.

2. There is no significant difference between the college importance factors of persisting and nonpersisting students.

3. There is no significant difference between the finance factors of persisting and nonpersisting students.

4. There is no significant difference between the advice factors of persisting and nonpersisting students.

5. There is no significant difference between the self concept factors of persisting and nonpersisting students.

6. There is no significant difference between the educational expectation factors of persisting and nonpersisting students.

7. There is no significant difference between the anxiety factors of persisting and nonpersisting students.

8. There is no significant difference between the high school performance factors of persisting and nonpersisting students.

## CHAPTER IV

### RESULTS

The results of this study are presented in this chapter. The analysis of the data collected is presented in three sections. The first section showed the distribution of respondents by program and course of study. In the second section, an overview of all the data comparing persisting and nonpersisting students is presented. The third section deals with the summary of findings. Interpretations and explanations were provided for each section of the data presented.

The research focused on the differences between the family encouragement, importance of college, concern about finances, sources of advise, self concept, educational expectations, anxiety, high school performance, perception of the institute, and first semester GPA characteristics of the persisting and nonpersisting students. Individuals in the population selected for this research were compared on the basis of their responses to each item in the questionnaire.

#### Distribution of Respondents

The instrument was administered to students enrolled in eight sections of DRF 1323, ELE 1303, WEL 1313, WEL 1326,



WEL 1336, and WEL 2326. respectively during the third week of school in the fall of 1982. The number of usable returns of the questionnaire by indicated course and section are presented in Table III. The largest usable return of ten came from ELECTRONICS - DC Circuit Analysis section number 1964. The second largest return of nine also came from ELECTRONICS - DC Circuit Analysis section number 1966. There were returns of five each received from DRAFTING AND DESIGN - Basic Drafting section number 1742 and WELDING - Fundamentals of Welding section number 6310 respectively. The returns of the questionnaire by indicated major is shown in Table IV. This table showed that Electronics Technology produced the largest number of returns with a quantity of twelve. Eleven returns came from Welding Technology and seven returns came from other programs of study such as Liberal Arts and Horticulture Technology.

#### Comparative Data

The data for the 39 questionnaires were analyzed for all respondents. There were 20 identified nonpersisters and 19 identified persisters for this group determined by reviewing student records. The Chi-Square test of significance was applied to each item which caused the hypothesis to be rejected were thought by the author to be the most sensitive to difference between persisters and nonpersisters. For Tables V through XIII the students' responses of "strongly agree" and "agree" are combined under the items column as

TABLE III  
 RETURNS OF THE INSTRUMENT BY COURSE OF  
 STUDY FOR THE FALL OF 1982

Course of Study	Section Number	Enrollment N	Usable Returns N
DRF 1323 - Basic Drafting	1740	24	4
DRF 1323 - Basic Drafting	1742	24	5
ELE 1303 - DC Circuit Analysis	1964	24	10
ELE 1303 - DC Circuit Analysis	1966	19	9
WEL 1313 - Welding Blueprint Reading	6300	13	3
WEL 1326 - Fundamentals of Welding	6310	11	5
WEL 1336 - Intermediate Welding	6318	9	2
WEL 2326 - Pipe Welding I	6325	3	1
TOTAL		127	39

"agree." The responses "strongly disagree" and "disagree" are also combined as "disagree."

#### Family Encouragement

Information relevant to the family encouragement is displayed in Table V. Students responded by checking "strongly agree", "agree", "can't say", "disagree", and "strongly disagree" for each item.

Analysis of this data in Table V indicated that no items were found to differentiate significantly the persisting from the nonpersisting students. A slightly greater percentage (78.9 percent) of nonpersisters agreed that their

TABLE IV  
RETURNS OF THE INSTRUMENT BY PROGRAM  
OF STUDY FOR THE FALL OF 1982

Program of Study	Number of Returns
Biomedical Equipment Technology	3
Electromechanical Technology	1
Electronics Technology	12
Drafting and Design Technology	5
Welding Technology	11
Other	7
Total	39

TABLE V  
 DISTRIBUTION OF RESPONSES AND CHI-SQUARE VALUES FOR  
 FAMILY ENCOURAGEMENT FACTORS FOR PERSISTING  
 AND NONPERSISTING STUDENTS

Items	Persisting		Nonpersisting		Chi-Square
	N=19		N=20		
	f	%	f	%	
1. Family's happiness with person in school:					$X^2 = 1.24$
agree =1	15	78.9	17	85	
can't say=2	2	10.5	3	15	
disagree =3	1	5.3	0	0	
2. Family's helping person through school:					$X^2 = 2.23$
=1	10	52.6	8	40.0	
=2	0	0.0	2	10.0	
=3	9	47.4	10	50.0	
3. Family's happiness with academic department:					$X^2 = 1.03$
=1	12	63.2	12	60.0	
=2	7	36.8	7	35.0	
=3	0	0.0	1	5.0	
4. Family's encouragement to do well:					$X^2 = 0.43$
=1	16	84.2	18	90.0	
=2	1	5.3	1	5.0	
=3	2	10.5	1	5.0	
5. Family's pleasure with person's education:					$X^2 = 1.19$
=1	15	78.9	16	80.0	
=2	4	21.1	3	15.0	
=3	0	0.0	1	5.0	
6. Family's disinterest in person's grades:					$X^2 = 1.94$
=1	1	5.3	4	20.0	
=2	4	21.1	4	20.0	
=3	14	73.7	12	60.0	

TABLE V (Continued)

Items	Persisting N=19		Nonpersisting N=20		Chi-Square
	f	%	f	%	
7. Family's disappointment in person's grades:					
agree =1	8	42.1	11	55.0	$X^2 = 0.67$
can't say=2	7	36.8	6	30.0	
disagree =3	4	21.1	3	15.0	
8. Reliance on family for money:					
=1	12	63.2	11	55.0	$X^2 = 0.42$
=2	4	21.1	6	30.0	
=3	3	15.8	3	15.0	
9. Reliance on family's help for any problem:					
=1	13	68.4	16	80.0	$X^2 = 0.68$
=2	3	15.8	2	10.0	
=3	3	15.8	2	10.0	

$X^2_{0.05}$  , df = 2, is 5.99

families were happy about them going to school. The data also indicated a greater percentage (52.6 percent) of persisters agreed that their families were helping them go to school. Little difference was found between the family's happiness of the student's academic department of persisters and nonpersisters. A slightly greater percentage (90 percent) of the nonpersisters indicated that their families encouraged them to do well. There was little difference between getting an education to please their family of persisters and

nonpersisters. A greater percentage (73.7 percent) of persisters disagreed that their families were not interested in their grades. The data also indicated that a greater percentage (55 percent) of nonpersisters agreed that their families would be disappointed in their poor grades. A slightly greater percentage (63.2 percent) of persisters agreed that they can count on their families if a money problem arose. Finally, a greater percentage (80 percent) of nonpersisters agreed that their families would help them should any kind of problem arise.

#### College Importance

The data in Table VI contain information relevant to the college importance on persisting and nonpersisting students. Analysis of the data indicated two items were found to differentiate significantly the persisters from the nonpersisters. These factors were importance of college education, and pre-high school decision to go to college. These factors had Chi-Square values of 6.38 and 7.67 respectively.

Little difference was found between the importance of college education for men of the persisting and nonpersisting students. A greater percentage (100 percent) of persisters disagreed that they did not really know why they came to school. Most persisters (94.7 percent) agreed that college education was important to them. The data also indicated that a slightly greater percentage (73.7 percent) of

TABLE VI  
 DISTRIBUTION OF RESPONSES AND CHI-SQUARE VALUES FOR  
 COLLEGE IMPORTANCE FACTORS FOR PERSISTING  
 AND NONPERSISTING STUDENTS

Items	Persisting		Nonpersisting		Chi-Square
	N=19		N=20		
	f	%	f	%	
1. Importance of college education for men:					
agree =1	15	78.9	14	70.0	$\chi^2 = 0.48$
can't say=2	3	15.8	4	20.0	
disagree =3	1	5.3	2	10.0	
2. No reason being in school:					
=1	0	0.0	1	5.0	$\chi^2 = 2.1$
=2	0	0.0	1	5.0	
=3	19	100.0	18	90.0	
3. Importance of college education:					
=1	18	94.7	11	55.0	$\chi^2 = 6.38^*$
=2	1	5.3	4	20.0	
=3	0	0.0	2	20.0	
4. Importance of college education for women:					
=1	14	73.7	14	70.0	$\chi^2 = 0.3$
=2	4	21.1	4	20.0	
=3	1	5.3	2	10.0	
5. Importance of technical education-economic value:					
=1	15	78.9	12	60.0	$\chi^2 = 4.08$
=2	1	5.3	6	30.0	
=3	3	15.8	2	10.0	
6. Decision to go to college made before high school:					
=1	9	47.4	2	10.5	$\chi^2 = 7.67^*$
=2	2	10.5	7	36.8	
=3	8	42.1	11	57.9	

TABLE VI (Continued)

Item	Persisting N=19		Nonpersisting N=20		Chi-Square
	f	%	f	%	
7. Effort to graduate worthwhile:					
agree =1	18	94.7	14	70.0	$\chi^2 = 3.30$
can't say=2	1	5.3	4	20.0	
disagree =3	0	0.0	1	5.0	

$\chi^2_{0.05}$ , df = 2, is 5.99

\* Significant at the 0.05 level

persisters agreed that college education is important for women. Persisters attached greater importance to technical education because of its economic value. A greater percentage (57.9 percent) of nonpersisters disagreed that their decision to go to college was made before they were in high school. Finally, persisters in greater percentage (94.7 percent) agreed that it was well worth the effort to graduate.

### Finance

Information related to finance is displayed in Table VII. Analysis of this data indicated one item was found to differentiate significantly the persisting from the non-persisting students. This factor was good budgeting and money management in school. A Chi-Square of 7.84 was produced.



TABLE VII  
 DISTRIBUTION OF RESPONSES AND CHI-SQUARE VALUES  
 FOR FINANCE FACTORS FOR PERSISTING AND  
 NONPERSISTING STUDENTS

Items	Persisting N=19		Nonpersisting N=20		Chi-Square
	f	%	f	%	
1. Money worry for education:					
agree =1	9	47.4	5	25.0	$X^2 = 2.47$
can't say=2	3	15.8	6	30.0	
disagree =3	7	36.8	8	40.0	
2. T.J.C. financed education:					
=1	1	5.3	4	20.0	$X^2 = 1.91$
=2	1	5.3	1	5.0	
=3	17	89.3	15	75.0	
3. Other's disin- terest in student money problem:					
=1	2	10.5	3	15.0	$X^2 = 0.32$
=2	6	31.6	5	25.0	
=3	11	57.9	12	60.0	
4. Attrition due to money problems:					
=1	9	47.4	7	35.0	$X^2 = 0.66$
=2	5	26.3	6	30.0	
=3	5	26.3	7	35.0	
5. School takes budgeting and management:					
=1	15	78.9	12	60.0	$X^2 = 7.84^*$
=2	1	5.3	8	40.0	
=3	2	10.5	0	0.0	
6. Money available for education:					
=1	13	68.4	11	55.0	$X^2 = 2.28$
=2	5	26.3	9	45.0	
=3	1	5.3	0	0.0	

$X^2_{0.05}$ , df = 2, is 5.99

\*significant at the 0.05

A greater percentage (47.4 percent) of persisters agreed that they worry a lot about money for their education. With regard to educational finances, a greater percentage (89.3 percent) of persisters disagreed that T.J.C. helped them get money for their education. The data also indicated a slightly greater percentage (57.9 percent) of nonpersisters disagreed that they had money problems, but no one seemed to be interested in helping them. Persisters expressed a greater agreement that if they left school, it would be due to money problems. A greater percentage (78.9 percent) of persisters agreed that going to school took good budgeting and money management. Finally, a greater percentage (68.4 percent) of persisters agreed that money for their education was available.

#### Advice

Information relevant to advice of the persisting and nonpersisting students are presented in Table VIII. The data indicated no significant difference between persisting and nonpersisting students.

A greater percentage (42.1 percent) of persisters disagreed that teachers were their main source of advice about school. With respect to T.J.C.'s advice, a slightly greater percentage (52.6 percent) of persisters indicated that the advice given by T.J.C. had been helpful. Persisters expressed a greater agreement that technology advice received from T.J.C. had been helpful. The data also

TABLE VIII  
 DISTRIBUTION OF RESPONSES AND CHI-SQUARE VALUES  
 FOR ADVICE FACTORS FOR PERSISTING AND  
 NONPERSISTING STUDENTS

Items	Persisting N=19		Nonpersisting N=20		Chi-Square
	f	%	f	%	
1. Teachers main source of advice:					
agree =1	5	26.3	7	35.0	$X^2 = 0.52$
can't say=2	5	26.3	4	20.0	
disagree =3	8	42.1	7	35.0	
2. T.J.C. advice helpful:					
=1	10	52.6	10	50.0	$X^2 = 0.4$
=2	8	42.1	7	35.0	
=3	1	5.3	2	10.0	
3. T.J.C.'s Technology advice helpful:					
=1	9	47.4	5	25.0	$X^2 = 2.13$
=2	8	42.1	12	60.0	
=3	2	10.5	3	15.0	
4. Family deciding factor to attend school:					
=1	8	42.1	9	45.0	$X^2 = 0.25$
=2	3	15.8	4	20.0	
=3	8	42.1	7	35.0	
5. Friends and students main source of academic advice:					
=1	9	47.4	7	35.0	$X^2 = 1.91$
=2	7	36.8	6	30.0	
=3	3	15.8	7	35.0	
6. Family main source of academic advice:					
=1	4	21.1	6	30.0	$X^2 = 0.44$
=2	6	31.6	6	30.0	
=3	9	47.4	8	40.0	

$X^2_{0.05}$  df = 2, is 5.99

indicated that a slightly greater percentage (45 percent) of nonpersisters agreed that their families helped them decide to go to school. A greater percentage (47.4 percent) of persisters agreed that friend and other students were their main source of advice about school. Finally, a greater percentage (47.4) of persisters disagreed that their family is their main source of advice about school.

### Self Concept

The data in Table IX contain the reactions of the students toward self concept factors. Analysis of the data indicated no items were found to differentiate significantly the persisting from the nonpersisting students.

A slightly greater percentage (42.1 percent) of persisters disagreed that they asked a lot of questions in class. With respect to study habits, a greater percentage (55 percent) of nonpersisters agreed that their study habits were good. All persisters agreed that completing their education made them feel good. The data also indicated that most persisters and nonpersisters agreed they were strong, active, stable, successful, secure, motivated, positive, friendly, intelligent, a winner, honest, and clean. However, a greater percentage (68.4 percent) of persisters and nonpersisters (55 percent) could not say whether they were beautiful or ugly. While a greater percentage (63.2 percent) of persisters indicated that they were quiet, nonpersisters (70 percent) were evenly divided with respect

TABLE IX  
 DISTRIBUTION OF RESPONSES AND CHI-SQUARE VALUES  
 FOR SELF CONCEPT FACTORS FOR PERSISTING  
 AND NONPERSISTING STUDENTS

Items	Persisting N=19		Nonpersisting N=20		Chi-Square
	f	%	f	%	
1. Ask questions in class:					$\chi^2 = 1.25$
agree =1	3	15.8	6	30.0	
can't say=2	8	42.1	6	30.0	
disagree =3	8	42.1	8	40.0	
2. Good study habits:					$\chi^2 = 2.76$
=1	9	47.4	11	55.0	
=2	7	36.8	3	15.0	
=3	3	15.8	6	30.0	
3. Good feeling in completing education:					$\chi^2 = 5.15$
=1	18	100.0	15	75.0	
=2	0	0.0	4	20.0	
=3	0	0.0	1	5.0	
4. Weak:					$\chi^2 = 0.14$
=1	1	5.3	0	0.0	
=2	5	26.3	5	25.0	
=3	13	68.4	14	70.0	
5. Passive:					$\chi^2 = 0.6$
=1	4	21.1	4	20.0	
=2	6	31.6	4	20.0	
=3	9	47.4	11	55.0	
6. Beautiful:					$\chi^2 = 0.5$
=1	5	26.3	7	35.0	
=2	13	68.4	11	55.0	
=3	1	5.3	1	5.0	
7. Unstable:					$\chi^2 = 2.14$
=1	0	0.0	2	10.0	
=2	3	15.8	3	15.0	
=3	16	84.2	14	70.0	
8. Successful:					$\chi^2 = 3.32$
=1	13	68.4	16	80.0	
=2	3	15.8		15.0	
=3	3	15.8		0.0	

TABLE IX (continued)

Item	Persisting N=19		Nonpersisting N=20		Chi-Square
	f	%	f	%	
9. Secure:					
agree =1	11	57.9	12	60.0	$\chi^2 = 0.68$
can't say=2	5	26.3	3	15.0	
disagree =3	3	15.8	4	20.0	
10. Unmotivated:					
=1	0	0.0	2	10.0	$\chi^2 = 3.78$
=2	1	5.3	3	15.0	
=3	18	94.7	13	65.0	
11. Positive:					
=1	15	78.9	13	65.0	$\chi^2 = 0.27$
=2	2	10.5	3	15.0	
=3	2	10.5	2	10.0	
12. Unfriendly:					
=1	1	5.3	1	5.0	$\chi^2 = 0.38$
=2	2	10.5	1	5.0	
=3	16	84.2	17	85.0	
13. Intelligent:					
=1	13	68.4	13	65.0	$\chi^2 = 0$
=2	6	31.6	6	30.0	
=3	0	0.0	0	0.0	
14. A winner:					
=1	14	75.7	14	70.0	$\chi^2 = 0$
=2	5	26.3	5	25.0	
=3	0	0.0	0	0.0	
15. Honest:					
=1	18	94.7	18	90.0	$\chi^2 = 0$
=2	1	5.3	1	5.0	
=3	0	0.0	0	0.0	
16. Talkative:					
=1	5	26.3	7	35.0	$\chi^2 = 1.8$
=2	2	10.5	5	25.0	
=3	12	63.2	7	35.0	
17. Dirty:					
=1	1	5.3	0	0.0	$\chi^2 = 2.0$
=2	0	0.0	1	5.0	
=3	18	94.7	18	90.0	

$\chi^2_{0.05, df = 2}$  is 5.99

to the talkative and quiet factors. Finally, most persisters agreed that they were feeling good in completing their education, motivated, honest, and clean. Items 4 through 17 of self-concept factors came from the semantic differential portion of the questionnaire.

#### Educational Expectation

Information relevant to the educational expectation is displayed in Table X. The data indicated there was no statistically significant difference in the responses of persisting and nonpersisting students.

All persisters agreed that they planned to make good grades. A greater percentage (89.5 percent) of persisters indicated that they planned to pursue a degree program someday. With regard to vocational expectations, a slightly greater percentage (63.2 percent) of persisters agreed that they wanted to be a technician. Both persisters (47.4 percent) and nonpersisters (60 percent) were evenly divided as to their plans to get a B.S. degree. The data also indicated that a greater percentage of persisters (52.6 percent) decided to go to college while they were in high school. Most persisters agreed that they were determined to finish their education. Finally, a greater percentage of persisters disagreed that college education was not important anymore.

TABLE X  
 DISTRIBUTION OF RESPONSES AND CHI-SQUARE VALUES  
 FOR EDUCATIONAL EXPECTATION FACTORS FOR  
 PERSISTING AND NONPERSISTING STUDENTS

Items	Persisting N=19		Nonpersisting N=20		Chi-Square
	f	%	f	%	
1. Expect good grades:					
agree =1	19	100.0	19	95.0	$X^2 = 0.98$
can't say=2	0	0.0	1	5.0	
disagree =3	0	0.0	0	0.0	
2. Plan degree program some-day:					
=1	17	89.5	13	65.0	$X^2 = 4.86$
=2	1	5.3	2	10.0	
=3	0	0.0	4	20.0	
3. Expect to be technician:					
=1	12	63.2	12	60.0	$X^2 = 0.31$
=2	5	26.3	5	25.0	
=3	1	5.3	2	10.0	
4. Expect B.S. Degree:					
=1	5	26.3	7	35.0	$X^2 = 0.66$
=2	9	47.4	7	35.0	
=3	4	21.1	5	25.0	
5. College expectation in high school:					
=1	10	52.6	7	35.0	$X^2 = 4.52$
=2	0	0.0	4	20.0	
=3	9	47.4	9	45.0	
6. Expect to finish college:					
=1	16	84.2	13	65.0	$X^2 = 2.98$
=2	2	10.5	7	35.0	
=3	0	0.0	0	0.0	



TABLE X (continued)

Item	Persisting N=19		Nonpersisting N=20		Chi-Square
	f	%	f	%	
7. Unimportance of college educa- tion:					
agree =1	1	5.3	1	5.0	$X^2 = 4.51$
can't say=2	2	10.5	8	40.0	
disagree =3	16	84.2	11	55.0	

$X^2_{0.05}$ , df = 2, is 5.99

### Anxiety

The data in Table XI contain the reactions of the students toward anxiety factors. Analysis of the data indicated no item was found to differentiate significantly the persisting from the nonpersisting students.

A greater percentage (52.6 percent) of persisters worried about their poor study habits. Most persisters worried about their grades. The data also indicated that a greater percentage (73.7 percent) of persisters worried about the future. Finally, a slightly larger percentage (50 percent) of nonpersisters agreed that they did not worry about finding a job after graduation. Overall, most persisters indicated that they worried about poor study habits, grades, and the future.

TABLE XI  
DISTRIBUTION OF RESPONSES AND CHI-SQUARE VALUES  
FOR ANXIETY FACTORS FOR PERSISTERS AND  
NONPERSISTING STUDENTS

Items	Persisting N=19		Nonpersisting N=20		Chi-Square
	f	%	f	%	
1. Worry about poor study habits:					$\chi^2 = 1.04$
agree =1	10	52.6	9	45.0	
can't say=2	1	5.3	3	15.0	
disagree =3	8	42.1	8	40.0	
2. Worry about grades:					$\chi^2 = 4.48$
=1	14	73.7	8	40.0	
=2	2	10.5	5	25.0	
=3	3	15.8	7	35.0	
3. Worry about future:					$\chi^2 = 3.57$
=1	14	73.7	9	45.0	
=2	3	15.8	5	25.0	
=3	2	10.5	6	30.0	
4. Don't worry about job after graduation:					$\chi^2 = 0.97$
=1	9	47.4	10	50.0	
=2	2	10.5	4	20.0	
=3	8	42.1	6	30.0	

$\chi^2_{0.05}$ , df = 2, is 5.99

### High School Performance

Information relevant to the high school performance on persisting and nonpersisting students is located in Table XII. The data indicated a significant difference between persisters

TABLE XII  
 DISTRIBUTION OF RESPONSES AND CHI-SQUARE VALUES  
 FOR HIGH SCHOOL PERFORMANCE FOR PERSISTING  
 AND NONPERSISTING STUDENTS

Items	Persisting N=19		Nonpersisting N=20		Chi-Square
	f	%	f	%	
1. Good high school grades:					
agree =1	11	57.9	11	55.0	$X^2 = 5.29$
can't say=2	5	26.3	3	15.0	
disagree =3	0	0.0	5	25.0	
2. Grades show ability:					
=1	12	63.2	6	30.0	$X^2 = 9.10^*$
=2	6	31.6	7	35.0	
=3	1	5.3	6	30.0	

$X^2_{0.05}$ , df = 2, is 5.99

\*significant at the 0.05 level

and nonpersisters. This factor specified that student grades showed their ability. A Chi-Square of 9.1 was produced.

The students were asked if their high school grades were good. A slightly larger percentage (57.9 percent) of persisters agreed that their grades in high school were good. Finally a greater majority (63.2 percent) of persisters indicated that their grades showed their ability.

#### Institute Perception

The data in Table XIII contain information relevant to the institute perception by both groups. Analysis of the

TABLE XIII  
 DISTRIBUTION OF RESPONSES AND CHI-SQUARE VALUES  
 FOR INSTITUTE PERCEPTION FACTORS FOR  
 PERSISTING AND NONPERSISTING  
 STUDENTS

Items	Persisting N=19		Nonpersisting N=20		Chi=Square
	f	%	f	%	
1. T.J.C. larger than hometown:					
agree =1	3	15.8	4	20.0	$X^2 = 0.18$
can't say=2	0	0.0	0	0.0	
disagree =3	14	73.7	13	65.0	
2. Easy to know students:					
=1	8	42.1	7	35.0	$X^2 = 4.29$
=2	5	26.3	11	55.0	
=3	6	31.6	2	10.0	
3. Big campus, uncom- fortable feeling:					
=1	2	10.5	1	5.0	$X^2 = 0.97$
=2	2	10.5	4	20.0	
=3	15	78.9	15	75.0	
4. Interest in other than technical subjects:					
=1	16	84.2	11	55.0	$X^2 = 4.49$
=2	3	15.8	7	35.0	
=3	0	0.0	2	10.0	
5. Big campus - every- thing a hassle:					
=1	0	0.0	1	5.0	$X^2 = 1.77$
=2	2	10.5	4	20.0	
=3	17	89.5	15	75.0	
6. T.J.C. close knit, feel like part of it:					
=1	7	36.8	5	25.0	$X^2 = 1.31$
=2	10	52.6	14	70.0	
=3	2	10.5	1	5.0	

TABLE XIII (Continued)

Item	Persisting N=19		Nonpersisting N=20		Chi-Square
	f	%	f	%	
7. Big campus, everyone helpful:					
agree =1	10	52.6	10	50.0	$\chi^2 = 0.57$
can't say=2	7	36.8	9	45.0	
disagree =3	2	10.5	1	5.0	

$\chi^2_{0.05, df=2}$  is 5.99

data indicated no item was found to differentiate significantly the persisting from the nonpersisting student.

A greater percentage (73.7 percent) of persisters disagreed that T.J.C. seemed larger than their hometown. Most nonpersisters (55 percent) could not say if it was easy to get to know other students on campus. The data also indicated that a slightly larger percentage (78.9 percent) of persisters disagreed that the campus was too big, and they did not feel comfortable there. Most persisters (84.2 percent) agreed that they were interested in other subjects besides technical subject. A greater percentage (89.5 percent) of persisters disagreed that the campus was big, and everything seemed to be a hassle. Most nonpersisters (70 percent) could not say that T.J.C. was close knit, and that it was easy to feel like a part of the school. Finally, a slightly greater percentage (52.6 percent) of persisters agreed that the campus was big, but everyone had been helpful.

### First Semester GPA

Information relevant to the first semester GPA on persisting and nonpersisting students is displayed in Table XIV. The Chi-Square indicated no significant difference between persisters and nonpersisters.

TABLE XIV  
DISTRIBUTION OF RESPONSES AND CHI-SQUARE VALUES FOR  
FIRST SEMESTER GPA FOR PERSISTING AND  
NONPERSISTING STUDENTS

Items	Persisting N=19		Nonpersisting N=20		Chi-Square
	f	%	f	%	
GPA					
0.00*	3	15.8	10	50.0	$\chi^2 = 5.15$
0.01 - 1.99	2	10.5	1	5.0	
2.00 - 4.00	14	73.7	9	45.0	

$\chi^2_{0.05}$ , df = 2, is 5.99

\*This category includes all students who withdrew from T.J.C. prior to receiving any grades

A greater percentage of persisters had grade point average between 2.00 and 4.00. The nonpersisters' grade point average were evenly distributed between 0.00 GPA and 2.00 - 4.00 GPA. This indicated that 50 percent of the nonpersisters either withdrew and/or failed their courses.

### Summary of the Findings

The disposition of the null hypotheses is included in Table XV. The finding of the study indicated no significant difference between the family encouragement factors of persisting and nonpersisting students. A test of the variables comparing the college importance indicated a significant difference in college importance factors of persisters and nonpersisters. There was a consistent pattern indicating most persisters regarded the importance of college education for men, student, and women alike. A majority of persisters agreed that the effort to graduate from college was worthwhile.

Testing the variables relating financial concern established significance. A great percentage of persisters agreed that money was available for education. Education took good budgeting and money marketing, yet students seemed to worry about money for their education. A test of the variables comparing sources of advice indicated no significant difference in advice source factors of persisters and nonpersisters.

The variables relating self concept established no significance. However, all persisters indicated that completing their education made them feel good. A greater percentage of persisters indicated they were stable, motivated, friendly, honest, and clean. Testing the variable relating educational expectation established no significance. All persisters expected good grades. Most persisters

TABLE XV  
SUMMARY TABLE OF THE ACCEPTANCE OR REJECTION OF  
NULL HYPOTHESES\*

Hypothesis	Disposition
HO <sub>1</sub> : There is no significant difference between the family encouragement factors of persisting and nonpersisting students.	FAILED TO REJECT
HO <sub>2</sub> : There is no significant difference between the college importance factors of persisting and nonpersisting students.	REJECTED
HO <sub>3</sub> : There is no significant difference between the finance concern factors of persisting and nonpersisting students.	REJECTED
HO <sub>4</sub> : There is no significant difference between the advice source factors of persisting and nonpersisting students.	FAILED TO REJECT
HO <sub>5</sub> : There is no significant difference between the self concept factors of persisting and nonpersisting students.	FAILED TO REJECT
HO <sub>6</sub> : There is no significant difference between the educational expectation factors of persisting and nonpersisting students.	REJECTED
HO <sub>7</sub> : There is no significant differences between the anxiety factors of persisting and nonpersisting students.	FAILED TO REJECT
HO <sub>8</sub> : There is no significant difference between the high school performance factors of persisting and nonpersisting students.	REJECTED
HO <sub>9</sub> : There is no significant difference between the institute perception factors of persisting and nonpersisting students.	FAILED TO REJECT
HO <sub>10</sub> : There is no significant difference between the first semester college GPA of persisting and nonpersisting students.	FAILED TO REJECT

\*The 0.05 level of significance was selected as the level which must be attained before the investigator would reject a null hypothesis.



indicated plans toward a degree program someday, expectations to finish college, and disagreement that college education was unimportant.

A test of the variable comparing anxiety indicated no significant difference in anxiety factors of persisters and nonpersisters. More persisters than nonpersisters agreed that they worried about poor study habits, grades, and the future. Testing the variables relating high school performance established significance. A greater percentage of persisters indicated that their grades showed their ability.

Testing the variables relating institute perception established no significance. However, a greater percentage of persisters showed interest in disciplines other than technical subjects and they disagreed that T.J.C. was a big campus with everything being a hassle. Variables comparing the first semester college GPA indicated no significant difference. However, 73.7 percent of persisters made 2.00 - 4.00 GPA. Nonpersisters were evenly divided between 0.00 GPA and 2.00 - 4.00 GPA, indicating 50 percent either withdrew and/or failed the courses.

## CHAPTER V

### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of Chapter V is threefold: (1) to present a general summary of the background and procedures of the present investigation; (2) to present the findings and conclusions of the study; (3) and to present the recommendations based on the conclusions of the study and to suggest avenues of further research related to this topic.

#### Summary of the Background and Procedures

This study was primarily concerned with the high attrition rate found in two-year engineering technology schools. The school dropout problem has been a national, as well as, an international concern at all levels of education. However, this study was limited to Tulsa Junior College (T.J.C.) in DRF 1323 - BASIC DRAFTING, ELE 1303 - DC CIRCUIT ANALYSIS, WEL 1313 - WELDING/BLUEPRINT READING, WEL 1326 - FUNDAMENTALS OF WELDING, and WEL 2326 - PIPE WELDING I courses. It was designed to study selected variables and their relationships to persisters and nonpersisters. The data were obtained from student responses to a questionnaire and from admission information related to subsequent persistence or nonpersistence.

Very little specific up-to-date information was available about nonpersisting students at this junior college. Data also were not available regarding a comparison of persisting and nonpersisting students. Thus, it appeared that other studies concerned with the dropout problem were needed. The present study examined responses of a sample of persisting and nonpersisting students with regards to selected variables.

#### The New Student Questionnaire

Questionnaire was adopted and administered to students enrolled in eight sections of Drafting and Design, Electronics, Welding, freshman oriented classes in Science and Engineering Technology Division, during the third week of the fall semester of 1982. The students were primarily Biomedical Equipment, Drafting and Design, Electromechanical, Electronics and Welding Technology majors. The inferential statistic Chi-Square was used to evaluate observed and expected frequencies of the responses for each individual item on the questionnaire.

The procedure in the study produced 19 persisting and 20 nonpersisting students. Information from the respondents was compiled into statistical data which, when analyzed, allowed for comparisons between persisters and nonpersisters on selected factors. Frequency counts, percentages and Chi-Squares were computed for the various characteristics.

## Findings

As stated in Chapter I, the purpose of this study was to evaluate the variety of factors associated with the attrition of students from T.J.C. Specifically, the present study examined ten separate clusters of factors which were family encouragement, college importance, finances, advises, self-concept, educational expectations, anxiety, high school performance, institute perception, and college GPA characteristics. The focus of this study was to compare the differences between persisting and nonpersisting students. The disposition of the null hypothesis is included in Table XV.

In analyzing the data, 65 items were investigated for significant differences. Of these, 4 items were found to be significant at 0.05 level of significance and 61 items were found to be not significant.

Regarding the null hypothesis, there was no significant difference between college importance factors of persisting and nonpersisting students. There were seven items within this cluster. Two items were rejected and five items failed to reject. The two significant college importance factors were: (1) importance of college education to the student; and (2) decision to go to college made before high school.

The five college importance factors with no significance were: (1) importance of college education for men, (2) no reason being in school, (3) importance of college education

for women, (4) importance of technical education because of its economic value, and (5) effort to graduate-worthy.

Regarding the null hypothesis, there was no significant difference between finance factors of persisting and nonpersisting students. There were six items within this cluster. One item was rejected and five items failed to reject. The one significant finance factor was: (1) school takes good budgeting and money management.

The five finance factors with no significance were: (1) money worry for education (2) T.J.C. financed education, (3) others disinterest in student money problems, (4) attrition due to money problems, and (5) money available for education.

Regarding the null hypothesis, there was no significant difference between high school performance factors of persisting and nonpersisting students. There were two items within this cluster. One item was rejected and the other item failed to reject. The one significant high school performance factor was grades show ability. The other high school performance factor was good high school grades.

The remaining seven factors for persisters and nonpersisters all failed to reject. No cluster item of these respective factors were found to be significant.

### Conclusions

The results of the present study appear to warrant the following conclusions based on the analysis of data relative

to persisting and nonpersisting students in engineering technology from the 1982 fall semester at T.J.C.

1. The evidence suggested that students who are most likely to agree that college is important to them are more likely to remain in school.

2. Making a decision to go to college before high school enhances students persistence in college.

3. Students who cannot say if school takes good budgeting and money management are likely to withdraw from college.

4. Students who are more likely to agree that grades show ability to perform well in school will likely persist in college.

### Recommendations

#### Recommendations for Practice

The following recommendations have been developed with the expressed purpose of suggesting programmatic guidelines for the junior college in order to help curtail the college dropout problem:

1. Introductory courses on student orientation, motivation, economics and information are important. The students should be oriented to the various components of the junior college, their importance, roles and function in student development.

2. Improved career guidance for students on the part of counselors appears to be warranted. A greater percentage

of nonpersisters was found to need concrete educational goals, thus improved innovative careers and vocational counseling should become a priority of the junior college.

3. Students should be taught that grades do show some measure of ability. In order to help students (especially those who are weak academically) develop their study skills and personal efficiency in relation to scheduling their school work, improved methods should be introduced to them by counselors and academic advisers. Students should be encouraged to spend more time studying their school work.

#### Recommendations for Further Research

The following recommendations have been developed with the purpose of suggesting further research to make evaluations more effective:

1. A study that might yield information about the characteristics differentiating persisters and nonpersisters would involve determining why the particular item in the questionnaire found to be significant were answered the way they were by the two groups. This kind of study by a properly trained researcher could give guidance in developing personal characteristic differences between persisters and nonpersisters.

2. Repeat the same study reported in this paper for several years to test the assumption that the classes used in this study are typical of future classes.

3. The same approach to differentiate the differences between potential nonpersister and potential persister should be studied for similar populations at other institutions. This research could determine a wider applicability of the technique.

4. The same approach to differentiate the differences between potential nonpersister and potential persister should be studied for the other populations at the T.J.C. campus. This research could determine a wider applicability of the technique.



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APPENDIX A

THE INSTRUMENT

NEW STUDENT  
QUESTIONNAIRE

Date \_\_\_\_\_

Name (Print) \_\_\_\_\_

Social Security Number \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_

Date of Birth \_\_\_\_\_

Subject being studied at T.J.C. (Major) \_\_\_\_\_

Sex:  Male  Female

The school official performing this research has my permission to examine my school records with regard to my academic progress.

\_\_\_\_\_  
Signature

## INSTRUCTIONS

This questionnaire is treated as confidential.

Your response will be used for computing statistical trends of new students. Your individual responses will be kept secret.

Please read the following instructions, then respond to the questionnaire honestly and candidly. Thank you.

- (1) Read each statement carefully
- (2) Check the circle closest to your first reaction to the statement  
(Check only one)
- (3) Keep in mind there are no "right" or "wrong" answers.
- (4) If you do not understand a question or statement, check the circle by the question number.

Now turn to the next page for two samples.

SAMPLES

Don't Understand

0 1. My high school grades were good . . . . . 0 0 0 0 0

Strongly Agree  
Agree  
Can't say  
Disagree  
Strongly disagree

If you should not understand the statement, check this circle

If you strongly agree that your grades were good-infact excellent, check this circle

If you agree, disagree, or really can't say-- mark the best one of the middle circles

If you strongly disagree that your grades were good-infact, they were very low, check this circle

Now try the nextone--if you have a question, ask!

0 2. T.J.C. seems bigger than my hometown . . . 0 0 0 0 0

ALL SET -- Continue



Don't Understand

SAMPLES

Strongly Agree  
Agree  
Can't say  
Disagree  
Strongly disagree

0	3.	My family is happy about my going on to school . . .	0	0	0	0	0	0
	4.	A college education is important for men . . . . .	0	0	0	0	0	0
0	5.	I worry a lot about money for my education . . . . .	0	0	0	0	0	0
	6.	Teachers are my main source of advice about school . . . . .	0	0	0	0	0	0
0	7.	It is easy to get to know other students on campus . . . . .	0	0	0	0	0	0
0	8.	I worry about my poor study habits . . . . .	0	0	0	0	0	0
0	9.	I plan to make good grades . . . . .	0	0	0	0	0	0
0	10.	I don't really know why I came to school . . . . .	0	0	0	0	0	0
0	11.	I plan to pursue a degree someday . . . . .	0	0	0	0	0	0
0	12.	I ask a lot of questions in class . . . . .	0	0	0	0	0	0
0	13.	My family is helping me go to school . . . . .	0	0	0	0	0	0
0	14.	A college education is important to me . . . . .	0	0	0	0	0	0
0	15.	I want to be a technician . . . . .	0	0	0	0	0	0
0	16.	T.J.C. helped me get money for my education . . . . .	0	0	0	0	0	0
0	17.	The advice given me by the Tulsa Junior College has been helpful . . . . .	0	0	0	0	0	0
0	18.	I worry about grades . . . . .	0	0	0	0	0	0
0	19.	I plan to get a B.S. degree . . . . .	0	0	0	0	0	0
0	20.	I decided to go on to college while in high school . . . . .	0	0	0	0	0	0
0	21.	My family is happy about the major subject I am taking . . . . .	0	0	0	0	0	0
0	22.	A college education is important for women . . . . .	0	0	0	0	0	0
0	23.	My family encourages me to do well . . . . .	0	0	0	0	0	0
0	24.	A college education is important to me because of its economic value . . . . .	0	0	0	0	0	0
0	25.	Getting an education will please my family . . . . .	0	0	0	0	0	0
0	26.	I have money problems, but no one seems interested in helping . . . . .	0	0	0	0	0	0
0	27.	Advice about school I have gotten from T.J.C. has been helpful . . . . .	0	0	0	0	0	0
0	28.	The campus is too big, I don't feel comfortable here . . . . .	0	0	0	0	0	0

Don't Understand		Strongly Agree	Agree	Can't say	Disagree	Strongly disagree
0 29.	My study habits are good . . . . .	0	0	0	0	0
0 30.	My family isn't interested in my grades . . . . .	0	0	0	0	0
0 31.	I worry about my future . . . . .	0	0	0	0	0
0 32.	My decision to go on to college was made before I was in high school . . . . .	0	0	0	0	0
0 33.	I am <u>determined</u> to finish my education . . . . .	0	0	0	0	0
0 34.	My family helped me decide to go on to school . . . . .	0	0	0	0	0
0 35.	It is well worth the effort to graduate . . . . .	0	0	0	0	0
0 36.	There are other subjects besides Technology that I am interested in . . . . .	0	0	0	0	0
0 37.	If I leave school, it will be due to money problems . . . . .	0	0	0	0	0
0 38.	Going to school takes good budgeting and money management . . . . .	0	0	0	0	0
0 39.	Friends and other students are my main source of advice about school . . . . .	0	0	0	0	0
0 40.	I will disappoint my family if I make poor grades . . . . .	0	0	0	0	0
0 41.	The campus is big, everthing seems to be a hassel . . . . .	0	0	0	0	0
0 42.	I don't worry about finding a job after graduation . . . . .	0	0	0	0	0
0 43.	My grades show my ability . . . . .	0	0	0	0	0
0 44.	A college education is not really important anymore . . . . .	0	0	0	0	0
0 45.	Completing my education will make me feel good . . . . .	0	0	0	0	0
0 46.	I can count on my family if a money problem comes up . . . . .	0	0	0	0	0
0 47.	Tulsa Junior College is close-knit, it is easy to feel like a part of the school . . . . .	0	0	0	0	0
0 48.	My family is my main source of advice about school . . . . .	0	0	0	0	0
0 49.	Money for my education is available . . . . .	0	0	0	0	0
0 50.	The campus is big, but everyone has been helpful . . . . .	0	0	0	0	0
0 51.	My family would help me if any kind of problem came up . . . . .	0	0	0	0	0

The following asks you to rate yourself on a scale between two extremes. Check the circle that you feel is nearest the position you are on each scale.

I am . . . . .

52.           Weak 0 0 0 0 0 Strong  
53.           Passive 0 0 0 0 0 Active  
54.           Beautiful 0 0 0 0 0 Ugly  
55.           Unstable 0 0 0 0 0 Stable  
56.           Successful 0 0 0 0 0 Failure  
57.           Secure 0 0 0 0 0 Insecure  
58.           Unmotivated 0 0 0 0 0 Motivated  
59.           Positive 0 0 0 0 0 Negative  
60.           Unfriendly 0 0 0 0 0 Friendly  
61.           Intelligent 0 0 0 0 0 Dumb  
62.           A winner 0 0 0 0 0 A loser  
63.           Honest 0 0 0 0 0 Dishonest  
64.           Talkative 0 0 0 0 0 Quiet  
65.           Dirty 0 0 0 0 0 Clean

Thank You For Your Cooperation

APPENDIX B

LETTER OF PERMISSION



*Oklahoma State University*

ELECTRICAL TECHNOLOGY DEPARTMENT

STILLWATER, OKLAHOMA, 74078  
CRUTCHFIELD HALL 202  
(405) 624-5716, 5717, 5720

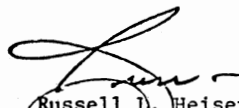
April 1, 1983

Mr. Foster Chin  
c/o Tulsa Junior College  
3727 East Apache  
Tulsa, OK 74115

Dear Foster:

You have my permission to use any aspect of my doctoral dissertation in your research. Further, if I may be of help to you, do not hesitate to ask.

Sincerely,

  
Russell D. Heiserman  
Associate Professor

RLH/cc

APPENDIX C

CODING SCHEME OF STUDENT DATA

CODING SCHEME FOR STUDENT RESPONSES,  
DEMOGRAPHIC DATA, AND  
CLASSIFICATION

---

- I. Columns 1 to 65 used for student responses to individual questionnaire items using the following code:
- 1 = Strongly Agree
  - 2 = Agree
  - 3 = Can't Say
  - 4 = Disagree
  - 5 = Strongly Disagree
  - 6 = Don't Understand
  - 7 = No Response
- II. Column 67 used for first semester grade point average using the following code:
- 1 = 0.00
  - 2 = 0.01-1.99
  - 3 = 2.00-4.00
- III. Columns 69 to 76 used for demographic data, identification and classification using the following code:
- Column 69: Sex, Male = 1, Female = 0  
Columns 70 - 71: Year of Birth  
Columns 72 - 74: Major Code as Follows:
- 01 = Biomedical Equipment Technology
  - 02 = Drafting and Design Technology
  - 03 = Electromechanical Technology
  - 04 = Electronics Technology
  - 05 = Welding Technology
  - 06 = Other
- Column 76: Classification from student records:
- 1 = persister
  - 0 = nonpersister

APPENDIX D

RAW DATA FOR 1982 CLASS



# 76/76 LIST

	12345678910111213141516171819202122232425262728293031323334353637383940414243444546474849505152535455565758596061626364656667	70	7576
1	212224322	4 1 3 5 2 2 5 3 2 3 4 3 2 2 1 2 3 3 4 4 1 4 4 3 4 2 2 3 1 2 4 5 3 4 5 1 3 3 4 3 3 2 4 4 3 2 2 3 4 2 5 2 2 5 5	
2	151145251	5 1 1 5 1 2 1 1 2 1 1 1 1 1 3 2 5 1 3 1 1 3 3 1 1 1 1 2 1 2 1 4 1 1 5 1 3 3 3 2 1 2 5 5 1 5 1 1 5 1 1 1 1 5 5	
3	4 2444342	4 2 3 4 2 2 3 4 2 4 3 4 2 2 2 2 4 3 4 2 3 4 4 2 4 2 2 4 2 2 3 4 2 4 2 2 4 3 4 2 2 2 5 4 3 4 2 2 4 2 5 2 2 2 2 5	
4	252343222	5 4 3 2 2 2 5 3 3 5 2 2 3 1 4 2 5 3 4 4 5 1 4 2 4 3 3 4 2 4 1 4 5 5 3 2 1 3 4 2 2 1 5 4 3 4 3 4 4 2 4 2 1 1 5 5	
5	5 1255121	5 5 2 5 4 5 5 1 4 5 5 1 2 2 4 4 5 4 3 4 5 5 5 3 3 3 5 3 3 3 3 3 3 3 3 3 5 3 3 2 3 1 3 3 3 3 5 1 1 3 3 5 3 3 1 3 5	
6	251234432	4 2 4 2 2 2 4 4 3 3 4 3 2 1 2 1 4 3 4 2 1 2 4 1 2 1 1 4 2 4 1 3 3 4 5 2 2 2 3 4 2 3 2 5 2 2 2 4 3 2 4 1 4 1 1 1 2 4	
7	153454341	5 3 4 5 4 2 5 3 4 3 2 3 4 3 1 3 4 3 4 3 3 4 2 3 3 3 2 4 2 4 3 5 2 4 3 3 3 3 4 2 3 2 5 2 2 4 3 2 4 1 4 1 1 1 2 4	
8	45123 332	4 2 4 2 3 3 4 4 4 3 4 2 2 1 3 1 3 3 4 2 4 3 4 3 2 2 2 4 3 3 3 3 3 3 3 4 1 2 3 3 3 3 2 3 4 3 3 2 1 4 2 5 3 1 2 3 5	
9	211332341	5 2 4 4 3 2 5 2 3 4 4 3 3 2 2 2 4 2 4 2 4 3 3 3 3 3 3 3 2 2 4 2 4 3 3 2 2 3 4 3 2 2 4 2 4 2 2 4 2 4 2 2 4 2 4 2 2 3 5	
10	253343322	4 4 4 2 3 2 5 2 2 5 3 3 3 2 2 3 3 3 4 3 2 3 3 2 2 2 3 3 3 3 2 3 3 3 3 2 3 3 3 3 2 3 3 3 3 4 2 3 3 4 3 3 3 4 5	
11	41122322	5 2 4 3 2 5 3 1 3 4 2 2 1 3 1 2 3 4 4 5 2 4 2 2 1 3 3 3 2 1 4 5 1 5 2 2 3 2 3 3 1 3 3 3 4 2 3 3 3 5 3 3 2 3 3	
12	341142322	4 2 3 2 1 2 3 2 1 2 3 2 2 1 2 2 2 4 2 5 3 5 1 3 2 2 1 2 2 2 3 3 1 5 5 3 5 1 3 4 2 3 3 2 2 2 4 4 3 4 2 2 4 4 4 4	
13	121234241	5 5 2 5 4 5 5 3 4 5 2 1 2 1 3 2 4 3 4 2 4 1 3 3 4 4 3 3 5 4 2 2 3 3 4 2 2 3 3 2 3 3 2 5 5 4 1 5 1 1 5 1 1 1 5	
14	142213411	5 2 3 1 1 1 5 2 1 3 5 1 1 1 1 1 1 3 5 5 4 5 2 5 1 1 1 1 1 1 3 1 5 1 4 5 1 1 1 2 1 1 1 2 1 1 5 5 3 3 1 3 5 1 4 2	
15	211111231	4 1 2 1 2 3 2 1 3 1 1 3 1 2 3 2 1 2 3 2 2 2 4 2 1 2 2 1 2 2 1 2 1 2 4 2 4 1 2 1 2 1 4 1 5 1 1 5 1 1 5 1 1 5 5	
16	351132323	2 1 3 3 4 3 2 2 4 2 3 4 2 5 1 3 1 3 2 4 2 3 3 2 3 2 2 3 2 2 4 2 2 3 2 2 4 2 2 3 2 2 2 4 4 2 2 3 2 2 4 4	
17	1 1151241	5 2 2 4 1 1 4 2 4 2 3 2 2 2 1 2 5 2 2 4 2 3 4 4 2 4 2 2 3 2 4 2 4 2 2 3 4 2 2 2 3 4 2 2 2 5 4 2 5 1 1 5 1 4 1 1 2 5	
18	4411 221	5 4 4 1 4 2 4 2 2 1 1 1 4 4 4 2 4 4 4 4 1 2 1 2 2 2 2 4 2 4 1 5 1 2 2 2 2 2 3 3 3 3 2 2 2 2 2 2 2 2 2 2 2 2 2	
19	343333341	3 2 2 5 3 1 5 3 3 1 2 1 3 2 1 2 3 3 4 2 4 3 3 1 5 1 5 1 1 5 3 5 5 1 3 1 2 3 5 3 2 5 5 2 2 5 2 4 2 1 1 3 5 5	
20	451222341	5 3 4 1 1 3 5 2 2 3 2 1 2 1 3 1 4 3 4 2 5 2 5 2 4 3 5 3 5 5 1 5 5 2 5 1 3 4 3 3 2 4 1 3 4 2 5 4 3 5 3 3 1 5 5	
21	251142422	4 2 4 2 2 4 4 2 2 4 4 2 1 2 2 2 4 2 4 2 4 2 4 2 4 2 2 4 2 4 2 4 2	
22	2243221	5 2 3 2 1 3 5 2 2 1 1 1 2 1 2 2 2 4 2 5 1 4 3 2 1 1 1 2 3 2 3 3 4 2 2 4 1 2 2 2 1 2 1 4 5 3 5 1 1 5 2 5 2 2 1 4 5	
23	351212241	5 1 3 4 1 1 5 1 4 3 5 1 2 1 2 1 2 1 5 2 5 2 5 1 2 1 1 1 1 3 2 2 5 3 3 4 2 2 4 5 3 3 3 3 3 4 4 2 5 3 4 3 3 1 4 1	
24	2324321	5 2 4 2 1 1 4 3 2 3 4 2 3 1 4 3 4 3 4 3 4 2 4 1 3 1 3 2 1 2 2 4 2 3 3 2 3 3 2 2 3 2 3 3 3 4 3 3 4 2 3 3 3 1 4 5	
25	112234241	5 2 2 4 2 1 4 4 4 4 2 3 2 2 2 2 2 3 4 4 2 4 2 2 2 4 2 1 2 2 2 2 4 2 1 3 3 3 2 1 4 4 3 4 3 4 5 5 2 1 2 3 1 4	
26	151315211	5 1 5 1 2 1 1 3 1 3 1 1 3 1 3 1 3 1 5 3 5 5 1 5 3 1 1 1 5 1 1 4 5 5 2 3 2 1 3 4 1 2 1 5 4 2 2 1 4 1 5 2 1 2 3 5	
27	51233332	4 2 3 2 2 2 4 2 3 2 3 4 2 2 2 2 2 4 3 3 3 4 2 2 2 2 2 2 2 2 2 2 3 4 1 4 1 2 3 3 2 2 4 5 2 3 2 3 4 2 5 2 2 1 2 5	
28	351223441	5 3 5 2 3 2 5 3 2 3 4 2 3 2 4 2 5 4 4 3 4 2 3 1 5 3 2 2 3 4 3 2 2 4 2 5 1 2 2 3 4 2 3 2 4 3 3 4 2 4 5 2 4 2 3 1 4 4	
29	21 111342	4 2 3 4 2 2 4 3 4 4 4 3 2 2 2 2 3 4 4 3 4 2 3 3 4 2 3 3 4 2 2 2 4 3 3 4 4 4 2 2 2 3 3 2 2 2 2 3 4 3 4 4 2 1 4 5	
30	255223241	5 1 3 2 1 2 3 3 3 1 1 3 3 1 1 1 4 3 2 2 3 2 1 1 2 2 5 3 4 3 4 2 2 5 1 3 3 4 3 3 5 5 1 5 1 1 5 1 1 5 5 5	
31	241124442	4 1 4 4 1 1 4 2 1 2 1 2 2 2 4 2 4 2 4 2 4 2 2 2 4 2 2 2 2 4 2 2 2 4 4 2 2 4 4 4 4 4 3 3 2 2 4 2 4 1 2 1 1 5	
32	252345422	4 1 4 5 1 3 5 2 2 3 1 3 1 5 1 3 3 2 4 4 3 2 1 1 4 2 1 1 4 2 2 3 4 3 3 4 2 2 2 3 2 2 2 4 3 3 4 1 1 4 2 5 2 1 1 5 5	
33	342244322	5 2 3 5 2 3 4 2 3 3 4 2 2 2 2 2 3 2 5 2 4 5 2 1 4 2 3 2 2 3 4 3 3 4 2 2 2 3 2 2 2 4 3 3 4 1 1 4 2 5 2 1 1 5 5	
34	251111121	5 1 2 2 1 1 5 1 1 3 1 1 1 1 1 1 3 1 5 3 5 3 5 1 1 1 1 3 1 2 1 1 5 2 3 5 1 2 1 1 1 1 5 5 3 5 1 1 5 1 5 1 2 1 5	
35	35313 322	4 1 3 3 1 1 1 5 3 2 3 5 3 2 4 2 3 2 3 4 3 2 2 5 2 5 2 5 2 3 2 1 3 4 4 4 2 4 1 4 3 4 2 3 4 3 3 3 3 4 4 4 3 2 2 4	
36	241154412	4 1 4 5 1 3 5 3 1 1 1 3 2 2 1 1 4 3 4 4 3 3 1 5 1 3 1 2 2 2 3 3 4 1 2 4 1 2 3 3 1 2 3 2 3 4 2 2 5 4 2 4 3 2 2 5	
37	153444441	5 4 4 1 4 1 2 1 3 3 4 3 2 3 3 3 3 3 3 2	
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39	321141221	5 1 3 2 1 3 5 2 2 5 4 2 2 2 2 2 4 2 4 3 4 4 4 2 2 2 2 2 2 2 2 4 4 4 4 2 2 2 2 2 4 3 2 2 3 3 3 5 1 1 5 1 5 2 2 1 5 5	

2  
VITA

Alexander Foster Chin

Candidate for the Degree of

Doctor of Education

Thesis: THE RELATIONSHIP OF SELECTED VARIABLES TO  
PERSISTING AND NONPERSISTING STUDENTS IN SELECTED  
ENGINEERING TECHNOLOGY PROGRAMS AT TULSA JUNIOR  
COLLEGE

Major Field: Occupational and Adult Education

Biographical:

Personal Data: Born at Moneague, St. Ann, Jamaica,  
December 12, 1937, the son of Humphrey and Betty  
Chin.

Education: Graduated from Cornwall High School,  
Montego Bay, Jamaica, West Indies, in 1954;  
received the Bachelor of Science degree from  
Oklahoma State University with a major in Elec-  
trical Engineering in January, 1969; received  
the Master of Science degree from Oklahoma State  
University with a major in Technical Education in  
July, 1974; completed requirements for the Doctor  
of Education degree in Occupational and Adult Edu-  
cation at Oklahoma State University in May, 1983.

Professional Organizations: Oklahoma Technical Society,  
American Technical Education Association, Phi  
Delta Kappa.

Professional Experiences: Employed as Electronics  
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