FREQUENCY OF USE AND IMPORTANCE OF TWENTY-FIVE ADMINISTRATIVE THINKING STRATEGIES

A DISSERTATION

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CHAPTER I

INTRODUCTION

The principal typically has been a leader in the instructional process with roles as stimulator, supporter, and evaluator (Bricker, 1978). Based on exhaustive studies of innovative projects funded in the nation's schools under the Elementary and Secondary Education Act (ESEA), Title IVC, Paul Berman (1977) of the Rand Corporation has stated that the principal is crucial in the change process. Accordingly, Ford (1980) states that "the behavior of an administrator will change from one situation to another. The administrator who develops and acquires this knowledge of planning, decision making, and communication along with the exercise of ethical behavior will excel in many situations regardless of the style." Jennings (1972) concurs when he states, "authorities believe that groups are characterized by specific problems, and people who possess specific skills necessary to solve the problems rise to positions of leadership." According to the Assessment Center of the National Association of Secondary School Principals (NASSP, 1982) twelve skill dimensions that relate to the most important characteristics of successful

principals are: (1) problem analysis, (2) judgment, (3) organizational ability, (4) decisiveness, (5) leadership, (6) sensitivity, (7) stress tolerance, (8) oral communication, (9) written communication, (10) range of interests, (11) personal motivation, and (12) educational values.

The awareness of the revealing and profound statements suggest that the public school principal possesses multiple cognitive skills; these skills enable him to survive in the volatile arena of public education. The realities of public education demand that the effective principal demonstrate skills in public and community relations, personnel, student and teacher morale, budgeting and finance, discipline, scheduling, staff development, school law, problem solving, and instructional leadership.

To facilitate the principal's accomplishing the goals alluded to, he must be able to conceptualize, analyze, evaluate, remember, plan, organize, and,among other cognitive characteristics, demonstrate wisdom. To state the issue more precisely, the developing and eventual mastery of the types of critical thinking skills delineated will lead to a more productive and effective public school administrator.

Statement of the Problem

The extent to which principals utilize thinking strategies delineated in this study has not previously been known. The problem can be defined as inadequacy of information concerning the use of specific thinking strategies in school administration. E.R.I.C. searches and other library searches disclosed no previous systematic study of frequency and priority of thinking strategies in school administration. In this study school principals and graduate students of educational administration have evaluated the importance and frequency of use of 25 thinking strategies. How does each member of both groups of respondents rate the priority of each of the thinking strategies? How does each respondent rate the frequency of use of each of the 25 thinking strategies? How do the rankings of frequency of use compare with rankings of priority for each of the 25 thinking strategies?

Statement of the Purpose

The purpose of this study is to analyze responses of Dallas Independent School District administrators and of Texas Woman's University graduate students enrolled in educational administration courses to compare perceptions of the importance of and the frequency of use of identified thinking strategies utilized by school administrators.

Hypotheses of the Study

The following four hypotheses were tested:

1. When school administrators evaluate a list of 25 selected thinking strategies, the frequency ratings for use of the thinking strategies differ significantly from the administrator's priority rating of the importance of these same thinking strategies.

2. When graduate students enrolled in educational administration courses evaluate a list of 25 selected thinking strategies relative to the types of thinking strategies utilized by school administrators, the frequency ratings for use of the thinking strategies differ significantly from the student's priority ratings of the importance of these same thinking strategies.

3. When school principals evaluate a list of thinking strategies, the principals' priority ratings of the importance of the thinking strategies will differ significantly from the priority ratings of the importance of these same thinking strategies by graduate students enrolled in educational administration courses.

4. When graduate students enrolled in educational administration courses evaluate a list of 25 thinking strategies, the rating of the students' perceptions of the frequency for use of the thinking strategies by

administrators will differ significantly from the school administrators' rating of the actual frequency of use of these same thinking strategies by administrators.

Definition of Terms

For the purpose of this study, the following definitions have been operationalized:

Thinking strategy is the process of logical analyses and/or actions for the purpose of attaining desirable results.

Conceptualization is the development of clear images of ideas, plans, attributes, systems or organization, or forecasts of potential products.

Perception is discernment, detection, awareness, identification, or realization through the basic senses. It is the alert consciousness of reality and of connections.

Analysis is the outlining, charting, or diagnosing of complex phenomena, dividing them into their basic elements and probing the inter-relationships of the elements.

Synthesis is the planned combination of elements and parts so as to produce a coherent, integrated product.

Interpersonal interaction is the dynamic relationship of two or more people, including the influence of each person on each of the others.

Planning is the systematic development of an organization or arrangement for production or achievement. It is the design and definition of relationships. It is effective preparation for thinking and learning.

Leadership is the process of organizing a group of people to work together effectively to produce desired results and achievement.

Reading is apprehending and understanding the meaning of written or published or printed information. It is the gaining of knowledge and comprehension from written or printed words.

Observation is gaining knowledge and information from watching people, action, and phenomena.

Listening is the active reception of ideas and information from the oral language of others.

Classification is the organization of information into discrete sets, groups, or classes according to definite criteria.

Logical relationships are connections and implications between or among ideas, processes, personnel, or phenomena derived on the basis of systematic, deliberative reasoning, following fundamental rules of logic.

Decision making is the settling or determination of what is to be done, the resolution of a conflict, agreement

on action, or determination to make a stand. Decision making brings a conclusion or settlement of a matter.

Advocacy is the support or sustaining of a person or process. Literally advocacy means "called toward", taking the side of a person or a cause.

Imagination is the projection of new and creative ideas for action, the innovative design of an original plan for action.

Organization is the systematic planning for the utilization of personnel, resources, and processes for the fulfillment of objectives.

Wisdom is the intelligent application of learning, the ability to discern essential relationships, the capacity to judge correctly concerning action and choices among alternatives.

Idea finding is the search for and discovery of ideas which might be relevant to research or to solving a problem. An idea is a concept, a proposed invention, or a projected thought that might be related to a solution, a decision, or a means towards achievement.

Problem solving is the process of resolving difficulty or reconciling conflict through thinking of ways to overcome, avert, or correct the difficulty or conflict.

Evaluation is the process of making perceptions of comparisons or formulations or decisions, choices or judgments. It involves objective, concise, realistic, clear analysis of the subject and all its implications and ramifications.

Raising questions is introducing ideas or problems or questions as a basis for investigation, research, or inquiry, reflecting inferences that lead to analysis as a basis for decision making or problem solving.

Initiating, defining, and reorganizing structure is taking the initiative to conceptualize what an organization or program can become and building or revising a structure and clarifying its meaning and purpose to make it effective.

Meditation is close, concentrated, continuous, reflective focus on a question. Meditation requires profound attention to the subject or area being studied.

Persuasion is the process of convincing others to make a commitment to a program or a course of action.

Memory is the storage and retention of selected facts, ideas, processes, and perceptions, and their retrieval and recall from mental storage when needed for the administrator's thinking (McFarland, Reference Note 1, 1983).

Limitations of the Study

The majority of student subjects will be female and non-minority.

Significance of the Study

The investigator hopes and believes the results of this investigation will generate follow up studies that will ultimately lead to more effective and productive staff development in the field of continuing professional education. Also, the curriculum design, at the university level, in Educational Administration might be enhanced by placing emphasis on these thinking strategies. Finally, the investigator's ultimate hope is to encourage and to facilitate the process of producing more effective use of productive thinking strategies among public school administrators.

The basic significance of the study is to analyze the priorities and frequency of use for 25 thinking strategies in school administration. Further study and evaluation of thinking strategies used by school principals might lead to enhancement of the effectiveness of school leadership.

CHAPTER II

REVIEW OF THE LITERATURE

A computer literature search of ERIC and Dissertation Abstracts data bases, utilizing the descriptors, "thinking" and "administrators", covering the past ten years, was conducted by the researcher. The literature search revealed over 300 relevant citations; however, closer scrutiny suggests a minimum number of studies reviewing or investigating school administrators' "thinking strategies". As a result, the investigator has borrowed relevant and critical literature from related and general fields of study.

To enhance clarity and continuity, the literature review focused on twenty-five "thinking strategies" identified by McFarland (Note 2). These 25 thinking strategies are delineated in the research survey instrument (see Appendix A). Also the review will be divided into three categories: (1) Planning, (2) Interpersonal Interaction, and (3) Problem Solving.

Planning

Faily (1980) states "the dynamic environment confronting organizations, the need to identify emerging roles for the organization of various social forces makes the planning function critical, a matter of high priority."

In view of Faily's comments, the "thinking strategies" (1) organization, (2) conceptualization, (3) leadership, (4) initiating, defining, and reorganizing structure, (5) reading, (6) persuasion, and (7) classification will be presented as interrelated segments of the broader "thinking" factor, (8) planning.

Faily (1980) continues,

> Recent events in American society have served to focus increased attention on the importance of planning to the educational system. As a result of many pressures on the educational system, the planning function is rapidly assuming top priority with school administrators. Policies determined on the spur of the moment are usually ineffective; furthermore they are often contradictory. Adequate planning is necessary for effective administrative behavior. The era of planning into which we are now entering will demand far greater capacities to conceive, conceptualize, negotiate, and compromise on the part of the administrator.
>
> The development of an educational model to carry on the planning function rests on the validity of the following criteria:
>
> 1. The planning role must be separated from the operational role; those charged with planning cannot devote the time and energy needed to the operational duty of the organization.
>
> 2. Planning encompasses the total organization and its needs.
>
> 3. The diversity of skills needed to mount a planning function is a team effort and not a one-person show.
>
> 4. Resources needed for planning are crucial to its success and are continuing parts of any budget (Faily, 1980, p. 29).

A study conducted by the project team at Platte Technical Community College (1980) suggests that planning is a thinking strategy when it delineates that planning is a skill. The Platte study outlines the following characteristics, pitfalls, and benefits of planning.

A. Characteristics of good planning

1. Hard document--in written form, not only in planner's memory where daily problems can supersede plans.
2. Regular intervals--done on a regular basis rather than as sporadic responses to emergency situations.
3. Future improvement--emphasis is on looking ahead, not on trying to compensate for past mistakes in planning.
4. Rational--based on facts rather than emotions.
5. Systematic--well organized as to the who, what, where, when, why, and how involved.

B. Pitfalls to be avoided when planning

1. Failure to anticipate change.
2. Unwillingness to take calculated risks.
3. Failure to establish priorities.
4. Failure to make plans known to those involved.
5. Failure to establish measurements at the time the plan is prepared.

C. Benefits of planning

1. Better coordination among departments.
2. More effective control of operations; planned objectives are the basis for measurement of effectiveness.

3. Easier delegation; plan identifies who can do what and standards for successful task accomplishment.

4. More economical use of resources; avoid waste.

Planning is intelligent cooperation with the inevitable, and as such, it is future oriented (Failey, 1980, p. 31). That is to say, desirable planning is futuristic and reactive planning. Planning after the fact is disastrous. According to Sergiovanni and Carver (1973) the problem accompanying reactive planning is that

> "school executives who practice such planning forfeit their right to decide the nature of the problems to which they will be responding. Once this right is forfeited, one begins to lose control over the nature and direction of the organization. The school as an organization, under such circumstances, largely determines the nature of goals school executives and others would pursue, the kinds of activities and behaviors expressed, and ultimately the solutions to these problems.

Sergiovanni and Carver continue by delineating disastrous results of reactive planning:

1. Stability is prized. Reactive behavior is inertia-based. Periods of inaction are welcome, for they resemble equilibrium and satisfy the need to eliminate uncertainty. Stress is kept to a minimum. Innovation and change are not encouraged, because they upset the state of equilibrium, result in stress, and require efforts to bring about a new level of equilibrium. The location, intent, or effect of this new level is often not as important as reaching some level somewhere.

2. Defensive management is encouraged. Reactive strategies often result in school executives'

evaluating decision alternatives in terms of their own safety, security, and status. One who continually responds to stress which is beyond his control soon becomes obsessed with his own survival. The school executive is pitted against hostile organization and unsympathetic environment in a win-lose contest.

3. Paternalism is encouraged. Defensive management leads to the establishment of alliances. Decisions are often made on the bases of favoritism and protective trade-offs. Kingdoms are encouraged and special interest groups emerge as protective lobbies. Since little attention is given to future planning, uncertainty is actually increased. Information is scarce and prized. In effect the communication network becomes a control mechanism and reward-granting device, with school executives buying loyalty from subordinates by permitting them some access to the network. People feel safer when they have some notion of what is going on and will pay for this safety with loyalty.

4. Long-range planning is forfeited. Reaction strategies are oriented toward short-term survival and maintenance of status quo. Little attention is given to long-term goals and directions. Thus while the elimination of uncertainty is important for today, tomorrow's problems are ignored because no deliberate attention is given to the future.

5. Educational goals assume the lowest status. The most serious result of reactive planning and decision making is implicit in each of the dangers discussed above. In each case educational goals and the welfare of students are displayed by organizational and administrative needs, goals, and demands. School executives and teachers become defense bound and react to stimuli primarily in terms of promoting their own safety, security, and status. Self-actualization of students and commitment to other educational goals are indeed luxuries under such conditions (Sergiovanni & Carver, 1973).

Blumberg and Greenfield (1980) recognize the role of the principal in initiating, defining, and reorganizing as a function of planning when they state "the principal might be expected to initiate new structure in interaction with others in the school system, or at the least, to act as facilitators of changes initiated by them. The literature on school organizations indicates that principals can be a decisive element in determining whether organizational change efforts succeed or fail" (p. 21).

Small (1974) concurs with Blumberg and Greenfield when he delineates ten role options as change agents for the principal; the first one listed is "initiator" (the principal makes changes according to his perceptions of the need . . .) (p. 72).

Lewin (1948) concurs with Blumberg, Greenfield and Small relative to the importance of initiating as a change agent, however, he goes a step further when he suggests "permanence of the new level, or permanence for a desired period, should be included in the objective" (p. 34) of successful change or initiating.

Reflecting on leadership as a thinking strategy, one can safely deduce it as an essential segment of effective planning and implementing. It "has stimulated more than its share of controversy" (Gibb, 1970, p. 94). Gibb

(1970) continues by intimating that the review of the literature, relative to leadership characteristics, falls short of developing a consensus. There are as many leadership traits as there are leadership studies; there are a few traits that appear frequently.

Barnard (1948) listed, in order of importance, five fundamental traits of leaders: vitality and endurance, decisiveness, persuasiveness, responsibility, and intellectual capacity. Davis (1972) cited intelligence, social maturity, inner motivation and achievement drives, and human relations attitudes. Stogdill (1948) listed traits of persons holding positions of leadership: (1) intelligence, (2) scholarship, (3) dependability, (4) activity, (5) socio-economic status (p. 63). The Project Team at Platte Community College also delineated traits of leaders: (1) intelligence, (2) initiative, (3) energy or drive, (4) emotional maturity, (5) persuasive ability, (6) communication skills, (7) perception, (8) self assurance, (9) creativity, (10) social participation (p. 7). It might be significant to note, allowing for synonyms, that seven of the ten leadership traits listed by the Project Team are among the twenty-five thinking strategies listed in the survey instrument of this study. Finally, Gibb (1970) believes the literature supports the fact that "intelligence,

initiative, and responsibility" are consistent traits of leadership (p. 94).

The Project Team (1980) cited "persuasive ability" as a trait of leadership (p. 2). Dickie (1979) not only cited persuasion as an important thinking strategy in the principal's leadership traits, but he also developed a persuasion model. Dickie (1979) states

> In today's conflict-ridden society, the study of persuasion is necessary not only for persons in the advertising industry, but also for those involved in supervising human resources. Thus, the need is paramount for the school principal, if he is to efficiently and effectively discharge his basic roles of catalyst and leader in improving education, to become cognizant of the social, economic, and political forces operating in his school and district, and to use them to advantage (p.18).

Spodek (1974) has clearly focused on three major forces which impinge on principals and limit their assertion of leadership, the power of the community, the educational bureaucracy, and the resistance of teachers to change. One may contend that such limitations occur primarily because principals abdicate their responsibilities by their inability to develop positive policies of persuasion in dealing with school and community systems.

Dickie (1979) continues, "the task of the principal is to seek the improvement of human relations in contacts with all the school's various publics, students, staff, parents, tax payers, and the innumerable cross relationships between these groups" (p. 21).

Olds (1974) indicates that a school of 2,000 students has a potential audience of 35,000 to 45,000 persons.

* 160 staff
* 3,000 parents
* 25,000 citizens in the attendance area
* 250 community agencies, groups, churches
* 100 university and other post-high-school institutions
* 2,000 students
* 5,000 alumni
* 4,000 students in feeder schools.

Dickie (1979) believes the principals who include residents, other learning agencies, community groups, and employers in the purview of their persuasion program will benefit by becoming more aware of power in the community and more competent to succeed in power structure analysis.

Gelms (1974) suggests that there are seven steps to effective persuasion:

1. Identify the school's public
2. Study the school and community
3. Establish leadership
4. Balance the messages (priorities and programs, progress and problems, people and policies, performance and plans).
5. Vary the methods of communication
6. Obtain feedback
7. Evaluate and re-direct the program (p. 63).

Ruffin (1972) believes the principal must find time to make contact, must rank order the needs of different

audiences, and must undertake a large proportion of the contacts personally in order to maintain a continuing flow of interaction between the school and its public.

McGuire (1974) suggests that for persuasive techniques to be successful, there is a series of successive steps through which a person must be taken:

> The communication first is presented; the person pays attention to it, and he comprehends its contents. For persuasion to be effected the individual must yield to, or agree with, the point being urged; and, unless only the most immediate impact is of interest, he must retain this new position until opportunity arises to act on it. Finally, if the fruits of the persuasive process are to be reaped, he must carry out the behavior implied by his new attitudinal position (p. 123).

Dickie outlines his persuasion model.

<u>The Principal's Persuasion Model</u>

<u>Audiences</u>:

Pupils
Teachers
Administrators
Parents
Residents
Learning Agencies
Community Groups
Employers

Channels:

Mass Media
On-Site Contact
Written Contact
Personal Contact
P.R. Program

Source:

Intentions
Power
Attractiveness
Credibility

Persuasion Factors Message:

Style
Arguments
Appeals
Content
Setting

Destination:

Resistance
Impact
Attitude

Further elaboration on Dickie's model points to:

(1) Dimensions of the audience

(2) Dimension of channels
*Formal programs which provide systematic, ongoing communications with the school's audiences are referred to as comprising the public relations program.

*Informal relations which occur as a result of personal, written, on-site, or mass media contacts.

(3) Dimension of Persuasion Factors
Not all communication is directly persuasive; some of it has effects such as informing, entertaining, or summarizing. Persuasion,

in which communication and belief intersect, is a pervasive and potent manifestation of human "manipulation".

(4) Dimensions of Source Factors
Source factors include all the characteristics of the perceived sender of the message; four aspects in particular are considered vital. Hovland, Janis, and Kelley (1953) provide evidence to suggest that a credible source is more persuasive, that persons are more likely to be believed if they appear to know the truth; i.e., credibility is a function of their perceived expertise. The attractiveness of the source to the audience apparently increases the persuasive impact, as does the source's familiarity with and similarity to the receiver.

(5) Dimensions of the Message Factors
The message factors are those referring to what the source says and does, including setting, content, appeals, arguments, and style. Setting merely indicates that the environment in which the message is communicated will affect its efficiency; a relaxed personal contact made in the quiet surroundings of the principal's office is likely to be more successful than a hurried message delivered at the main intersection of the city.

The content of the message must be structured to the psychological needs of the listeners, and by adapting McGuire's previously suggested sequence and ensuring that each step is included in the correct order, one can maximize the possibility of attitude-changing.

The five main steps are:

* The attention step whereby the listener's attention is captured
* The need step which demonstrates the problem requiring resolution

* The satisfaction step which suggests a solution
* The committal step which visualizes successful solutions and establishes the listener's acceptance
* The action step wherein the speaker requests a statement of approval or positive response to verify the success of the persuasive appeal.

(6) Dimensions of Destination
The final category, "destination," represents the specific, observable behavior the persuasive communication is designed to effect. The fact that there is a tendency for a change of attitude by persuasion to dissipate over time makes it incumbent on principals to establish persuasion practices which are more than one-shot affairs. As Festinger (1964) suggests, the disparity between attitude and behavior could be due to the brevity of a single exposure to a persuasive act (Dickie, p. 21).

This investigator did not find research that isolated organization, conceptualization, classification, and reading as thinking strategies directly related to school administration; however, one can deduce from the literature discussed that these same thinking strategies are essential to planning, leadership, initiating, and persuasion as well as other administrative thinking skills (McFarland, Note 2).

Interpersonal Interaction and Listening

Gement (1977) states, "Communication is an integral part of life. We use communication skills daily, and yet often take them for granted." He continues, "For the educational

managers, there have been several important studies in management styles which link the findings of behavioral scientists with management styles. The studies stress the need for the manager to develop interpersonal skills, especially listening and feedback skills" (p. 62).

Douglas McGregor (1960) developed a management rationale for a dichotomy based upon certain assumptions about people. He called the two positions of this dichotomy Theory X and Theory Y. Theory Y assumes a very humanistic approach which encourages open communication; an open problem solving atmosphere; and an interdisciplinary, organic structure with considerable involvement of staff.

In short, there is a movement in management, both in industry and in education, which encourages staff involvement, group process, consensus decision-making, open communication (vertical and horizontal), and a series of new skills for the administrator.

Aspy and Roebuck (1977) conducted a study of eleven principals and 250 teachers. The findings of this study support the assertion of Gement (1977) when he refers to a need in education for open communication. Aspy and Roebuck report:

1. In faculty meetings, these principals spent almost 7 times as much time criticizing teachers and justifying authority as they spent in praising them, accepting their ideas or accepting their feelings.

2. On the average, these principals spent 27 times as much meeting time talking as they spent in asking teachers to contribute to the meeting.

3. The ratio of total principal talk to total teacher talk was 3 to 1.

4. Principals ran very businesslike faculty meetings; only 5% of the time was spent in silence or confusion.

5. Principals spent 16,743 times as long in recalling facts as they did in demonstrating thinking, on the average.

6. They asked 24 times as many fact questions as questions eliciting a thinking response (p. 87).

To ascertain which of the principal's behaviors are the most important predictors of teacher behavior, Aspy and Roebuck state,

> In general, it would appear that the principal's level of Respect for his teachers is the most powerful predictor, followed closely by his/her Use of Praise and Acceptance of Ideas, in that order. The number of Fact Questions asked by the Principal is also a good predictor of teacher behavior. (p. 183)

Aspy and Roebuck continue,

> As the principal uses high levels of interpersonal skills with his/her teachers, he makes them feel accepted and secure and they then function at higher levels with their students. (p. 183)

As a result of previous research, Aspy and Roebuck (1977) were interested in knowing if teachers whose principals had prior interpersonal skills training had a positive effect on those same teachers. They concluded there was a positive correlation.

Schulthers (1979) uses Maslow's Hierachy of Needs to illustrate needs of teachers. This model could be utilized to facilitate interpersonal interaction thinking strategies:

Model

Primary Needs:

Security - the need to feel safe
Physical - the need to stay alive, breathe, eat, drink, sleep

Secondary Needs:

Self-Actualization - the need to do work we like
Esteem - the need to feel worthy and respected
Social - the need for love, to be a group member

Jensen (1980) states,

> I reviewed 7 books and 101 journal articles. The more I read, the more I could see the varied nature of the literature. Particular areas of group dynamics which were well researched and lent themselves to theory were related to treatment groups in counseling and psychotherapy, interesting but not administratively oriented. In order to find enough articles on group dynamics, other than treatment studies, related to the same subject to use one of Pillemer and Light's methods, I would have had to

> stick to an area of the research like jury studies or simulation games. I preferred to examine studies that had a more pronounced relationship to everyday administration. (p. 73)

Jensen continues, reviewing group interaction and states,

> Group interaction refers to the nature of communication among group members. The communication may be verbal or non-verbal, stated or implied. Group dysfunctions related to group interaction include members who monopolize group time, or those who are uncommitted, that is, present in body only. Members who are absent from meetings or challenge the group leader constantly also manifest problematic group interaction. Variables which can affect group interaction include group size, style of leadership, group cohesiveness, and sex of group members.
>
> Over the years, the literature on leadership has been extensive; however, research on leadership and small groups has been both 'diffuse and confusing' (Greene & Schreisheim, 1980). Recent research on the effect of leadership style on group interaction includes Green and Schriesheim's study of worker groups in manufacturing settings. Using Stogdill's model of instrumental versus supportive leadership, their research supports the use of instrumental type leaders with large, newly formed groups. This study merits special notice, since its subjects were workers in a field setting. Another study out of the management science discipline examines the effects of permissive, democratic, and authoritarian leadership styles with nominal and interacting groups (Green, 1975). Nominal groups, wherein group members do not interact except with the leader and then only to offer written suggestions for solving a particular problem, have been found effective in some business settings (Green, p. 63). No significant difference was found in leadership style except in one subset of the task studies in which subjects who were in permissive, interacting groups generated more unique responses. If unique and creative attributes can be aligned, then Glover

> and Chambers' study on leadership style and creative production supports Green's finding (Glover, 1978). Glover and Chambers' study of the effect of authoritarian, democratic and permissive group structures on creative behaviors found the permissive structure to be significantly superior to the authoritarian in fluency, flexibility and originality of creative behaviors. While there may be some implication for administrators to devise unstructured, interacting groups with permissive leadership when the task requires a creative response, keep in mind Green's study was done on students in an electronic data processing course, discussing class difficulties, and Glover and Chambers examined one hundred and eight psychology students asked to comment on the unusual uses for a cardboard box. (p. 75)

Jensen offers a final comment relative to group interaction. "One last element of group interaction that should require some thought, though it is frequently taken for granted, is group size. How does group size affect group interaction? Is there an optimal size group? Questions of size cannot be decided singly. That is, size is usually a function of another variable such as the purpose of the group, or the type of group process involved. The literature indicates, for example, that five is an optimal size for group discussion and odd number groups tend to have less antagonism and disagreement, as such groups can always resort to majority rule.

Guilford (1977) commented relative to interpersonal skills.

> Some of the knowledge about intelligence can also be very useful in understanding people and in

> dealing with them. This last statement refers to a large set of abilities under the general heading of 'social intelligence.' Those abilities were brought to light only within recent years and are still almost entirely missed by IQ tests. (p. 161)

Listening is a critical aspect of interpersonal thinking strategies. Smith (1981) indicates the effective principals Blumberg and Greenfield studied were able to listen effectively. These effective leaders were very sensitive to what was going on around them. They were not only good at communicating ideas, they were good at absorbing ideas also.

Goldhammer (1971) and his colleagues found that principals of outstanding schools listened well to parents, teachers, and pupils. Gorton and McIntyre as well found that effective principals listen to students, community, and staff.

All this interrelated research points toward the same thing. One quality that makes leaders different from followers and good leaders different from poor leaders is the way they relate to people. Specifically most true leaders enjoy social participation and do a lot of it, have an ability to communicate and well-developed communication skills, and are good listeners.

Smith (1981) continues to cite authorities in the field of listening strategies. Schmuck, Runkel, Arends, and Arends (1977) identify a number of elements of effective

communication. These include openness, communication when emotions are high, offering personal responses, and trust. The last of these, trust, is particularly important, since there is always an element of risk in communicating openly. The authors therefore list a number of freeing responses that can increase trust:

* listening attentively rather than silently
* paraphrasing, checking impressions of the other's meaning
* seeking information to understand the other better
* offering relevant information
* describing observable behaviors that influence you
* directly reporting your own feelings
* offering opinions, stating your value position

On the other hand, there are also binding responses that can reduce trust:

* changing the subject without explanation
* focusing on and criticizing things that are unchangeable
* trying to advise and persuade
* vigorously agreeing or strongly objecting
* approving someone for conforming to your own standards
* commanding or demanding to be commanded

Problem Solving

In the final category of "thinking strategies" (1) decision making, (2) idea finding, (3) logical relationships, (4) observation, (5) analysis, (6) evaluation, (7) imagination, (8) memory, (9) meditation, (10) raising questions,

(11) perceptions, (12) advocacy, (13) synthesis, (14) wisdom, will be reviewed. All 14 strategies are related to the solution of problems.

Gagne (1972) developed a hierarchy of cognitive learning. He defined the problem solver as "the person internally thinks through the combination of two or more previously acquired principles to produce a new capability that depends on a higher order principle." Guilford (1977), referring to problem solving, states, "intelligence is readiness to solve problems".

Dewey (1933) identified five steps in problem solving: (1) a difficulty is felt, (2) the difficulty is located and defined, (3) possible solutions are suggested; (4) consequences of those solutions are considered, and (5) a solution is accepted (p. 35).

After considering the ways in which some historical creative people have done their work, Wallas (1954) came out with the following list: (1) preparation (information is gathered), (2) incubation (information is allowed to simmer or ripen), (3) illumination (solutions emerge), and (4) verification (solutions are tested and elaborated). Wallas studied mostly writers and scientists (Wallas).

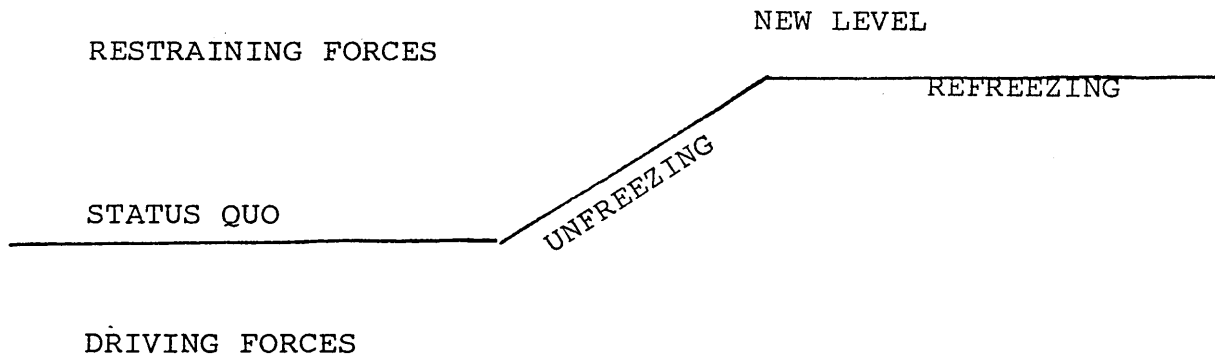
Rossman studied only inventors and came out with a list very similar to Dewey's: (1) a need or

difficulty is observed, (2) the problem is formulated, (3) available information is surveyed, (4) solutions are critically examined, (5) new ideas are formulated, and (6) new ideas are tested and accepted.

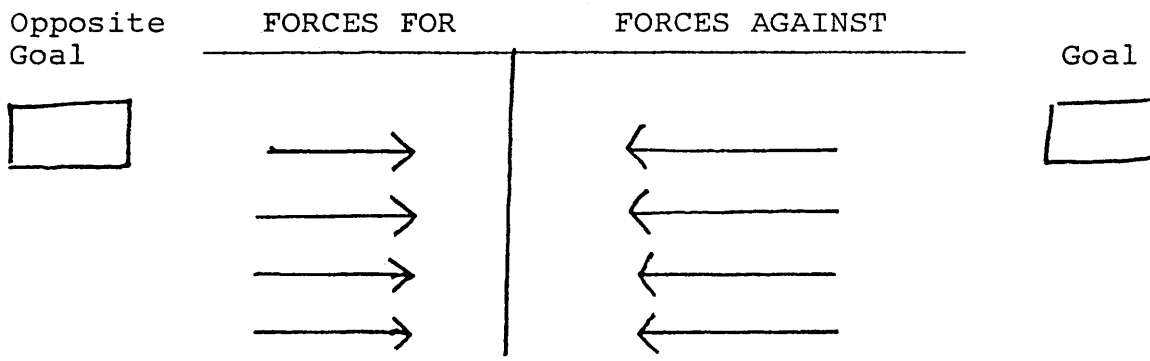
The literature review has revealed some decision-making models. Hale (1978) discusses Force Field Analysis and states, "force field analysis is an especially useful technique in the early stages of problem solving" (p. 11). According to Hale (1978) "force field's view of any situation as a conglomeration of poised forces makes itself especially useful in the analysis of problems. Before making any decision on a course of action, decision-makers must be able to enumerate the various forces, both driving and restraining. Sanders notes that this rigorous analysis reveals that problems are composed of 'complex fields of forces and myriad influences rather than single or isolated factors'. It helps the administrator to recognize that a single hasty action as the result of a premature decision may have no effect on the complex of forces. It may even have an undesirable effect." Force field analysis merely instructs the administrator to list positive and negative forces affecting a problem or decision. According to Hale (1978) Gaskell and Sanders offer two similar force field models.

Sanders defines unfreezing as strengthening a driving force in order to move the program in the desired direction (p. 19).

Sander's Model



Gaskell's Model



Hale (1978), pointing to a weakness of force-field analysis, states, " Where do solutions to problems come from? It prescribes no theory or practice for gathering input on possible solutions to a problem. What administrators need, besides an easy method for analyzing problems, is a technique for generating alternative solutions to them" (p. 72).

Hale (1978) elaborates on the Nominal Group Technique.

> Recent trends in educational management stress the importance of involving management personnel in the decision-making process. The management team, which operates on the theory that persons who are affected by decisions should help make them, is only one innovation making use of this theory. The nominal group technique is another.
>
> The nominal group is the antithesis of the traditional interacting group or ideas session, sometimes known as "brainstorming," which is often cited as a model of democratic procedure. Brainstorming is characterized by an open exchange among group members in which everyone is encouraged to participate freely. Van de Ven and Delbecq contend that interacting groups often get stuck on a single topic and merely elaborate on it. Interacting groups reach for decisions before problems are fully aired and are more geared to problem disposal than problem understanding. They also have a regrettable tendency to reinforce certain human weaknesses: people are more comfortable responding to ideas already proposed than they are coming up with new ideas. Verbally proficient members dominate the interacting group. Divergent opinions are often ignored. (p. 11)

To combat these weaknesses, Van de Ven and Delbecq have created a group in which individuals work in the presence of each other but do not interact. Instead each

individual is writing ideas on a pad of paper in front of him. At the end of 10 to 20 minutes, a very structured sharing of ideas takes place. Each individual in round-robin fashion provides one idea from his private list which is written on a flip-chart by a recorder in full view of other members. There is still no discussion, only the recording of privately generated ideas. This round-robin listing continues until each member indicates that he has no further ideas to share. The output of this nominal process is the total set created by this structured process. Only after all aspects of the problem are explored does the process of ranking the ideas in order of their importance begin.

How effective is the nominal group? Van de Ven and Delbecq cite studies showing that in terms of the mean number of ideas, the mean total number of ideas produced, and the quality of ideas produced, the nominal groups were found to be significantly superior to brainstorming in generating information relevant to a problem (p. 15).

There are many reasons for this superiority. Because it avoids dominance by one individual, the procedure encourages the expression of divergent and incompatible ideas. It stimulates creative tension by means of the presence of others, the silence, and the evidence of activity. It

induces a sense of responsibility in all the members and encourages the expression of minority ideas. Such an organization of activity causes the group to perceive the task with an attitude of problem-mindedness as opposed to solution-mindedness (Van de Ven & Delbecq).

The nominal group can be used not only to identify problems but to provide solutions as well. In the first round, members are asked to concentrate only on identifying the problems at hand. Once the major problems are cited, members are asked to concentrate on solutions. Van de Ven and Delbecq suggest that the two different aspects might be approached either in different sessions or by different groups.

Hale (1978) presents a third decision model which seeks to gain consensus relative to problems. This model is referred to as The Delphi Model. Hale (1978) comments,

> Although decisions deal with current situations, all decisions face in two directions. They remedy past problems and attempt to anticipate future ones. Thornton and colleagues predict 'it is inevitable that more of the future of education' will be taken into account by educational managers. Increasingly, decision-making in the public schools must look toward the future (p. 22).

Hale (1978) quotes Cyphert and Gant, who discussed the consensus phenomenon.

> Cyphert and Gant's study even provides some evidence that the Delphi can be used to manipulate participant

> response. They inserted a bogus item in their questionnaire results and reported that it had achieved a high degree of consensus. Subsequent responses showed that participants tended to rate it higher when informed that its consensus was high. Weatherman and Swenson, along with many others, warn that this convergence phenomenon needs to be studied more closely. Paradoxically perhaps, the Delphi cannot give reasons why people prefer one idea over another. It only explains, in the minority report, why consensus does not occur. (p. 33)

A study by Cross (1982) concludes that principals' decision making is essentially reactive. This study supports the types of models and thinking strategies previously alluded to. As has been previously alluded to, the art of raising effective, productive questions by administrators is crucial. Gall (1970) offers a modified paradigm of Bloom's Taxonomy for asking questions:

Summary of Question Types

Question Type	Student Activity	Examples
Knowledge	Recalling facts or observations. Recalling definitions.	Who? What? Where? When? Why? (if cause is given) Define (the word gubernatorial).
Comprehension	Giving descriptions.	Describe (what happened in our experiment)?

Question Type	Student Activity	Examples
	Stating main ideas.	What is the main idea (of this paragraph)?
	Comparing.	How are (these two countries) alike? How are they different?
Application	Applying techniques and rules to solve problems that have a single correct answer.	If (Bill has 49¢), how many (8¢ baloon) can he buy? What is (the latitude of Moscow? Classify (these poems as ballads, sonnets, or odes).
Analysis	Identifying motives or causes. Making references Finding evidence to support generalizations	Why (did the Bat Poet write poems)? Now that we've studied this, what can be concluded about (life in Germany)? What does this tell us about (the author's attitude toward war)?
Snythesis	Solving problems	Can you think up (a title for this drawing)?
	Making predictions	What will happen (now that we've landed on the moon)?
	Producing original communications.	What do you predict would happen (if this lake were to run dry)?

Question Type	Student Activity	Examples
Evaluation	Giving opinions about issues	Do you agree (with Kathy)?
	Judging validity of ideas	Do you believe (that this is the best way to proceed)?
	Judging the merit of problem solution	Would it be better (to do it this way)?

Idea finding is a thinking strategy closely related to questioning. In a research study conducted by Bales (1958) the results revealed that persons who appear most active receive high ratings for the ideas they offered in the study; however, Bale's studies revealed an inner relationship between having good ideas and being liked. Stated more precisely, subjects with the highest idea rating were the persons with the highest disliked rating.

McKim (1974) in his reference to "incubation" offers relevant comments on memory and meditation.

> The importance of relaxed attention to creative thinking is well known. After intensive conscious preparation, the creative thinker commonly lets the problem 'incubate' subconsciously: I will regularly work on a problem late into the evening and until I am tired. The moment my head touches the pillow I fall asleep with the problem unsolved (Rugg, 1963). After a period of relaxed incubation, which can take place in the shower or on a peaceful walk as well as sleep, attention is not uncommonly riveted by the 'aha!' of sudden discovery. Frequently I will awaken four or five hours later . . . with a new assembly of the material.

> While subconscious incubation requires relaxation, a sudden flash of insight requires attention or is lost. Again, relaxed attention is valuable. (p. 35)

Memory, as Aldous Huxley (1962) reminds us, operates in much the same fashion:

> Everyone is familiar with the experience of forgetting a name, straining to capture it and ignominiously failing. Then, if one is wise, one will stop trying to remember and allow the mind to sink into a condition of alert passivity; the chances are that the name will come bobbing up into consciousness of its own accord. Memory works best, it would seem, when the mind is in a state of dynamic relaxation. (p. 20)

Knox (1981) reports age should pose no significant problem to memory or imagination. He states "in one study on the use of brainstorming in courses on applied imagination, it was concluded by Parnes and Meadow that the adults in their thirties and forties gained as much as did younger students" (Taylor & Barron, 1963).

Bloom (1956) defines analysis, synthesis, and evaluation, which are his highest three terms in his Taxonomy of Educational Objectives:

<u>Analysis</u> - The breakdown of a communication into its constituent elements or parts such that the relative hierarchy of ideas is made clear and/or the relations between the ideas expressed are made explicit. Such analyses are intended to clarify the communication, to indicate how the communication is organized, and the way in which it

manages to convey its effects, as well as its basis and arrangement (Bloom, p. 205).

Synthesis - The putting together of elements and parts so as to form a whole. This involves the process of working with pieces, parts, elements, etc., and arranging and combining them in such a way as to constitute a pattern or structure not clearly there before (Bloom, p. 94).

Evaluation - Judgments about the value of material and methods for given purposes. Quantitative and qualitative judgments about the extent to which material and methods satisfy criteria. Use of a standard of appraisal. The criteria may be those determined by the student or those which are given to him (Bloom, p. 94).

Logical relationships, perception and advocacy have been reviewed indirectly. These three thinking strategies are utilized in leadership, planning, problem solving, and virtually all the thinking strategies studied in this dissertation.

Based on the operational definition of wisdom presented in the survey instrument and the literature, the investigator views wisdom as the sum total of all previously reviewed "thinking strategies."

This review of school administrative thinking strategies would be incomplete if the investigator evaded the paramount

issue relative to the subject. Can administrators be taught and can they learn to enhance the practical usability of the thinking strategies delineated?

Nancy and Martin Kane (1979) believe that indeed creative thinking potential can be enhanced. They state,

> During the past 30 years, extensive and intriguing research on functions of the right and left cerebral hemispheres has been undertaken. Impetus has been generated by investigations of Dr. Roger W. Sperry through his work in split brain surgery. Theoreticians in the United States, Canada, and Russia have established a number of facts concerning activities monitored and performed by the right and left cerebral hemispheres. In addition, much speculation has been proffered. It has become apparent that there are separate and integrative roles of these two hemispheres which are connected by the corpus callosum. This continuing research will provide us with vitally needed information in our quest for understanding human behavior.
>
> Innovative educators have been attempting to design programs and enhancement activities that will improve performance in skills such as input, organization, output, communication, auditory-visual-motor processing, thinking, affect, laterality, right and left space, reading, math, content areas, etc. Certainly techniques have improved skills . . . .

Knox cites a host of authorities who concur that thinking capacity can be enhanced. Accordingly, he states, "there is some evidence regarding creativity during adulthood which indicates that it is both feasible and desirable and that educational activity can facilitate it" (1980, p. 446).

LEFT BRAIN/RIGHT BRAIN

LEFT HEMISPHERE FUNCTIONS	RIGHT HEMISPHERE FUNCTIONS
CRITICAL THINKING	CREATIVE THINKING
LOGICAL THINKING	INTUITIVE THINKING
ANALYSIS	SYNTHESIS
CONVERGENT THINKING	DIVERGENT THINKING
FOCAL THINKING	DIFFUSE THINKING
PARTS/SEGMENTED	HOLISTIC/GESTALT
SEQUENTIAL	SIMULTANEITY
LINEAR	NON-LINEAR
VERBAL	VISUO-SPATIAL
RECOGNIZING/REMEMBERING NAMES	RECOGNIZING/REMEMBERING FACES
RESPONDING TO VERBAL INSTRUCTIONS	RESPONDING TO VISUAL KINESTHETIC INSTRUCTIONS
RESPONDING TO LOGICAL/VERBAL	RESPONDING TO EMOTION/FEELING
CONTROLLED/SYSTEMATIC IN EXPERIMENTING	PLAYFUL/LOOSE IN EXPERIMENTING
SERIOUS, LOGICAL IDEAS	HUMOROUS IDEAS
OBJECTIVE PROCESSING OF INFORMATION	SUBJECTIVE PROCESSING OF INFORMATION
DISLIKES IMPROVISING	LIKES IMPROVISING
LITTLE USE OF METAPHORS AND ANALOGIES	USE OF METAPHORS AND ANALOGIES
RECEPTIVE	SELF-ACTING
ALGEBRAIC	GEOMETRIC
MATHEMATICAL REASONING	GEOMETRIC ORGANIZATION
ABSTRACT MATH COMPUTATION	SIMPLE MATH COMPUTATION
SEQUENCING OF CONCEPTS	RELATIONAL CONCEPTS
VERBAL	SPATIAL ORIENTATION, DIRECTIONALITY, SPATIAL LOCALIZATION
SYNTAX	SYMBOLIC PROCESS
GRAMMATIC LOGIC	TONAL QUALITIES, TONAL PATTERNS
ANALYSIS OF SPEECH SOUNDS, SYLLABLE RECOGNITION	TONAL MEMORY
VERBAL MEMORY	MUSICAL HEARING, MELODY, ETC.
PHONICS	SINGING (PITCH, RHYTHM, INTONATION, LYRICS)
WRITING	DRAWING, MODEL BUILDING
ACTION WORDS, MOVEMENT OF HANDS IN SPEECH	RANDOM EXPLORATION
ORDERING AND SEQUENCING	SPATIAL EXPLORATION
VERBAL EXPLORATION	DREAMING
PLANNING (SEQUENCE)	ASSUMING
VERIFYING	IMAGINATION
DUPLICATION AND APPLICATION	FANTASY
REALITY	INVENTING
IMPROVING KNOWN	FICTION
NON-FICTION	AFFECTIVE INTERACTION
INTERPRETING BEHAVIOR	VISUALIZED READING
WORD READING	VISUAL APPROACH TO READING
PHONETIC APPROACH TO READING	SUMMARIZING
OUTLINING	
(TELL HOW TO . . . . .)	(SHOW HOW TO . . . . .)

(Kane & Kane, 37)

Guilford (1977) concurs with Kane and Knox when he states

> Discoveries during the past quarter century, particularly, have shown the nature of human intellect. That knowledge is the best possible basis for managing our intellectual processes and resources and for promoting development.
>
> Instead of looking at intelligence as one general source for understanding and problem solving, measurable by a single value, the IQ, or intelligence quotient, we now see that it is composed of a very large number of distinct abilities or functions. Since we know about the various functions and what they are like, we are prepared to do something about them. (p. 150)

Guilford (1977) is more assertive when he states, "it should not be doubted for a moment that intellectual powers of those living today can be expanded . . ." (p. 1). The Structure of Intellect, Guilford's intellectual model, is designed to facilitate intellectual enhancement. Each ability is defined by a conjunction of three categories: operations, contents, and products. With five kinds of operations, five kinds of content, and six kinds of products, 5 X 5 X 6, 150 possible unique abilities are identified.

CHAPTER III

METHODOLOGY

The methods and procedures utilized for this dissertation were designed to provide answers to the stated hypotheses. This chapter consists of descriptions of the population to be used, the setting, the instrument, and procedures.

Population

The target population for this research composed two groups: (1) Dallas Independent School District principals and assistant principals, and (2) graduate students of educational administration courses at the Texas Woman's University.

Instrument

The Administrative Thinking Strategies Survey was developed by the investigator. This instrument has not been validated; however, a pilot analysis was conducted with 30 principals. All 25 definitions used in this instrument were developed by McFarland (Note 2). His definitions have been extracted from his unpublished manuscript with his permission. The instrument appears in a modifed "Likert

Scale" form. It requires paper and pencil rating responses from participants. There are five choices for each category of importance and five choices for each category for frequency of use. Written instructions were provided to each participant (see Appendix).

Sociodemographic Data

A demographic form was completed by each respondent to provide data relative to (1) job title, (2) age, (3) sex, (4) physical activity, (5) educational degrees, (6) enrollment data at Texas Woman's University. All students were examined in a class setting as a group (see Appendix

Null Hypotheses

1. When administrators evaluate a list of 25 selected thinking strategies, the frequency ratings for use of the thinking strategies will not differ significantly from the administrator's priority ratings of the importance of these same thinking strategies.

2. When graduate students enrolled in educational administration courses evaluate a list of thinking strategies relative to the types of thinking strategies utilized by school administrators, the frequency ratings for perceived ideal use of the thinking strategies will not differ significantly from the student's priority ratings of the perceived importance of these same thinking strategies.

3. When school administrators evaluate a list of thinking strategies, the priority ratings of the importance of the thinking strategies will not differ significantly from the priority ratings of the perceived importance of these same thinking strategies by graduate students enrolled in educational administration courses.

4. When graduate students enrolled in educational administration courses evaluate a list of 25 thinking strategies, their ratings of the perceived ideal frequency for use of the thinking strategies by administrators will not differ significantly from the school administrators' ratings of the actual frequency of use of these same thinking strategies.

Statistical Tools

All statistical analyses were computed with the SPSS statistical series. The following statistical procedures were utilized: (1) a chi-square test for significance comparing demographic groupings to frequency and importance of each thinking strategy; (2) a Pearson Product Moment Correlation comparing frequency of use for thinking strategies rating to importance rating; and (3) Spearman Correlation Coefficient to compare the four major hypotheses.

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

Sociodemographic Data

The sample was drawn from two populations, both located in northern Texas. One population includes the principals of a large urban school district (50 high schools and 130 elementary schools) and the other includes graduate students in educational administration in a predominantly female university. All 50 secondary principals were mailed a survey instrument; 80 elementary principals were randomly selected from the total population of 130 elementary principals and mailed an instrument; 45 students were chosen from three university classes in educational administration. The Survey of 25 Thinking Strategies (Appendix A), a Demographic Data Sheet (Appendix), and a letter of invitation (Appendix) were sent to each prospective participant.

According to the sociodemographic data collected from the 126 participants in the study, the sample was composed of 31 secondary principals, 50 elementary principals and 45 university students. Of the 53 women subjects

participating in the study, 18 were principals and 35 were graduate students. Of the 73 male participants, 63 were principals and 10 were university graduate students. All participants held a Bachelor's degree, many held a Master's degree, and 19 principals held a Doctor's degree. The participants' ages ranged from the 20's to over 60 years of age.

The demographic information revealed that the sample was heterogeneous and showed variance in age, sex, experience, and educational preparation. This information is shown in Table 1.

Discussion of the Four Hypotheses

Hypothesis 1:

When school administrators evaluate a list of 25 selected thinking strategies, the frequency ratings for use of the thinking strategies will differ significantly from the administrator's priority rating of the importance of these same thinking strategies.

A Spearman Correlation Coefficient analysis revealed a significant correlation at the .01 level of significance between the frequency ratings and importance ratings of the 25 thinking strategies by administrators, therefore, hypothesis 1 was rejected (see Table 2).

Table 1

Demographic Data

	High School Administrators	Elementary School Administrators	Graduate Students
TOTAL	31	50	45
Male	26	37	10
Female	5	13	35
DEGREE			
Masters	31	50	28
Doctorate	9	14	0
AGE			
20-30 years	0	0	10
30-40 years	1	11	24
40-50 years	18	14	9
50-60 years	10	20	2
over 60 years	3	1	0
	50 schools	130 schools	

Table 2

Results of Hypotheses

	Spearman Correlation	Significance
Hypothesis 1	0.8336	.001
Hypothesis 2	0.7943	.001
Hypothesis 3	0.9266	.001
Hypothesis 4	0.7826	.001

Table 3 shows the Pearson's Product Moment Correlation between importance and frequency of use ratings by principals for the 25 thinking strategies. The correlation between priority and frequency for leadership demonstrated no significant correlation at the .05 level between priority and use. Decision making showed a significant correlation at the .05 level of significance. The 23 other thinking strategies demonstrated significant correlation at the .01 level of significance.

Because the vast majority of participants give ratings of 3 and 4 on each of the 25 thinking strategies, the investigator compared frequency ratings 3 and 4 to importance ratings 3 and 4 for variance. The results revealed that conceptualization, analysis, synthesis, planning, idea finding, initiating, defining, reorganizing structure, meditation, and persuasion received higher ratings for importance than were received for frequency of use.

Hypothesis 2:

When graduate students enrolled in educational administration courses evaluate a list of 25 selected thinking strategies relative to the types of thinking strategies utilized by school administrators, the frequency rating for use of the thinking strategies will differ significantly

Table 3.1 - Conceptualization

HO1 \ HI1	2.	3.	4.	Row Total
1.	0 0.0 0.0 0.0	2 33.3 8.3 2.5	4 66.7 8.2 5.1	6 7.6
2.	4 28.6 66.7 5.1	4 28.6 16.7 5.1	6 42.9 12.2 7.6	14 17.7
3.	2 6.1 33.3 2.5	14 42.4 58.3 17.7	17 51.5 34.7 21.5	33 41.8
4.	0 0.0 0.0 0.0	4 15.4 16.7 5.1	22 84.6 44.9 27.8	26 32.9
Column Total	6 7.6	24 30.4	49 62.0	79 100.0

Significance = 0.0087
Pearson's R = 0.26686

Table 3.2 - Perception

H02 \ H12	1.	2.	3.	4.	Row Total
1.	1 33.3 100.0 1.3	0 0.0 0.0 0.0	2 66.7 9.5 2.5	0 0.0 0.0 0.0	3 3.8
2.	0 0.0 0.0 0.0	1 25.0 100.0 1.3	3 75.0 14.3 3.8	0 0.0 0.0 0.0	4 5.0
3.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	6 37.5 28.6 7.5	10 62.5 17.5 12.5	16 20.0
4.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	10 17.5 47.6 12.5	47 82.5 82.5 58.8	57 71.3
Column Total	1 1.3	1 1.3	21 26.3	57 71.3	80 100.0

Significance = 0.0000 Pearson's R = 0.59538

Table 3.3 - Analysis

HO3 \ HI3	2.	3.	4.	Row Total
1.	1 14.3 14.3 1.3	5 71.4 14.7 6.3	1 14.3 2.6 1.3	7 8.9
2.	4 22.2 57.1 5.1	9 50.0 26.5 11.4	5 27.8 13.2 6.3	18 22.8
3.	2 6.1 28.6 2.5	18 54.5 52.9 22.8	13 39.4 34.2 16.5	33 41.8
4.	0 0.0 0.0 0.0	2 9.5 5.9 2.5	19 90.5 50.0 24.1	21 26.6
Column Total	7 8.9	34 43.0	38 48.1	79 100.0

Significance = 0.0000 Pearson's R = 0.48132

Table 3.4 - Synthesis

H04 \ H14	Count / Row % / Col % / Total %	1.	2.	3.	4.	Row Total
1.		1	1	3	2	7
		14.3	14.3	42.9	28.6	8.8
		100.0	10.0	10.0	5.1	
		1.3	1.3	3.8	2.5	
2.		0	5	4	8	17
		0.0	29.4	23.5	47.1	21.3
		0.0	50.0	13.3	20.5	
		0.0	6.3	5.0	10.0	
3.		0	4	20	7	31
		0.0	12.9	64.5	22.6	38.8
		0.0	40.0	66.7	17.9	
		0.0	5.0	25.0	8.8	
4.		0	0	3	22	25
		0.0	0.0	12.0	88.0	31.3
		0.0	0.0	10.0	56.4	
		0.0	0.0	3.8	27.5	
Column Total		1	10	30	39	80
		1.3	12.5	37.5	48.8	100.0

Significance = 0.0001 Pearson's R = 0.41675

Table 3.5 - Interpersonal Interaction

H05 \ H15 (Count / Row % / Col % / Total %)	1.	2.	3.	4.	Row Total
1.	1 100.0 100.0 1.3	0 0.0 0.0 0.0	0 0.0 0.0 0.0	0 0.0 0.0 0.0	1 1.3
2.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	1 33.3 7.1 1.3	2 66.7 3.2 2.5	3 3.8
3.	0 0.0 0.0 0.0	2 16.7 100.0 2.5	7 58.3 50.0 8.9	3 25.0 4.8 3.8	12 15.2
4.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	6 9.5 42.9 7.6	57 90.5 91.9 72.2	63 79.7
Column Total	1 1.3	2 2.5	14 17.7	62 78.5	79 100.0

Significance = 0.0000 Pearson's R = 0.62191

Table 3.6 - Planning

H06 \ H16	3.	4.	Row Total
1.	0 0.0 0.0 0.0	1 100.0 1.4 1.3	1 1.3
2.	1 20.0 9.1 1.3	4 80.0 5.8 5.0	5 6.3
3.	9 27.3 81.8 11.3	24 72.7 34.8 30.0	33 41.3
4.	1 2.4 9.1 1.3	40 97.6 58.0 50.0	41 51.3
Column Total	11 13.8	69 86.3	80 100.0

Significance = 0.0113 Pearson's R = 0.25456

Table 3.7 - Leadership

H07 \ H17	3.	4.	Row Total
2.	0	2	2
	0.0	100.0	2.5
	0.0	2.8	
	0.0	2.5	
3.	4	12	16
	25.0	75.0	20.3
	50.0	16.9	
	5.1	15.2	
4.	4	57	61
	6.6	93.4	77.2
	50.0	80.3	
	5.1	72.2	
Column Total	8	71	79
	10.1	89.9	100.0

Significance = 0.0680 Pearson's R = 0.16923

Table 3.8 - Reading

H08 \ H18	2.	3.	4.	Row Total
1.	1 100.0 20.0 1.3	0 0.0 0.0 0.0	0 0.0 0.0 0.0	1 1.3
2.	2 40.0 40.0 2.5	3 60.0 14.3 3.8	0 0.0 0.0 0.0	5 6.3
3.	1 5.3 20.0 1.3	10 52.6 47.6 12.7	8 42.1 15.1 10.1	19 24.1
4.	1 1.9 20.0 1.3	8 14.8 38.1 10.1	45 83.3 84.9 57.0	54 68.4
Column Total	5 6.3	21 26.6	53 67.1	79 100.0

Significance = 0.0000 Pearson's R = 0.61169

Table 3.9 - Observation

H09 \ H19	2.	3.	4.	Row Total
2.	0 0.0 0.0 0.0	2 100.0 9.1 2.5	0 0.0 0.0 0.0	2 2.5
3.	1 7.1 50.0 1.3	10 71.4 45.5 12.7	3 21.4 5.5 3.8	14 17.7
4.	1 1.6 50.0 1.3	10 15.9 45.5 12.7	52 82.5 94.5 65.8	63 79.7
Column Total	2 2.5	22 27.8	55 69.6	79 100.0

Significance = 0.0000 Pearson's R = 0.51432

Table 3.10 - Listening

HO10 \ HI10	2.	3.	4.	Row Total
3.	0 0.0 0.0 0.0	5 71.4 41.7 6.4	2 28.6 3.1 2.6	7 9.0
4.	2 2.8 100.0 2.6	7 9.9 58.3 9.0	62 87.3 96.9 79.5	71 91.0
Column Total	2 2.6	12 15.4	64 82.1	78 100.0

Significance = 0.0010 Pearson's R = 0.34532

Table 3.11 - Classification

H011	Count / Row % / Col % / Total %	H111 1.	2.	3.	4.	Row Total
	1.	2 18.2 66.7 2.5	5 45.5 41.7 6.3	3 27.3 6.8 3.8	1 9.1 5.0 1.3	11 13.9
	2.	1 6.3 33.3 1.3	4 25.0 33.3 5.1	8 50.0 18.2 10.1	3 18.8 15.0 3.8	16 20.3
	3.	0 0.0 0.0 0.0	3 8.3 25.0 3.8	27 75.0 61.4 34.2	6 16.7 30.0 7.6	36 45.6
	4.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	6 37.5 13.6 7.6	10 62.5 50.0 12.7	16 20.3
	Column Total	3 3.8	12 15.2	44 55.7	20 25.3	79 100.0

Significance = 0.0000 Pearson's R = 0.53337

Table 3.12 - Logical Relationships

H012 \ H112	1.	2.	3.	4.	Row Total
1.	1 16.7 100.0 1.3	0 0.0 0.0 0.0	5 83.3 11.9 6.3	0 0.0 0.0 0.0	6 7.6
2.	0 0.0 0.0 0.0	5 27.8 55.6 6.3	12 66.7 28.6 15.2	1 5.6 3.7 1.3	18 22.8
3.	0 0.0 0.0 0.0	4 11.1 44.4 5.1	22 61.1 52.4 27.8	10 27.8 37.0 12.7	36 45.6
4.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	3 15.8 7.1 3.8	16 84.2 59.3 20.3	19 24.1
Column Total	1 1.3	9 11.4	42 53.2	27 34.2	79 100.0

Significance = 0.0000 Pearson's R = 0.56096

Table 3.13 - Decision Making

H013	Count / Row % / Col % / Total %	H113 3.	H113 4.	Row Total
	2.	0 0.0 0.0 0.0	1 100.0 1.3 1.3	1 1.3
	3.	1 20.0 50.0 1.3	4 80.0 5.2 5.1	5 6.3
	4.	1 1.4 50.0 1.3	72 98.6 93.5 91.1	73 92.4
	Column Total	2 2.5	77 97.5	79 100.0

Significance = 0.0360 Pearson's R = 0.20357

Table 3.14 - Advocacy

H014	Count / Row % / Col % / Total %	H114 1.	2.	3.	4.	Row Total
	1.	1	5	3	1	10
		10.0	50.0	30.0	10.0	12.7
		100.0	31.3	7.5	4.5	
		1.3	6.3	3.8	1.3	
	2.	0	7	7	0	14
		0.0	50.0	50.0	0.0	17.7
		0.0	43.8	17.5	0.0	
		0.0	8.9	8.9	0.0	
	3.	0	4	21	4	29
		0.0	13.8	72.4	13.8	36.7
		0.0	25.0	52.5	18.2	
		0.0	5.1	26.6	5.1	
	4.	0	0	9	17	26
		0.0	0.0	34.6	65.4	32.9
		0.0	0.0	22.5	77.3	
		0.0	0.0	11.4	21.5	
	Column Total	1	16	40	22	79
		1.3	20.3	50.6	27.8	100.0

Significance = 0.0000 Pearson's R = 0.63278

Table 3.15 - Imagination

HO15 \ H115 (Count / Row % / Col % / Total %)	1.	2.	3.	4.	Row Total
1.	1 9.1 50.0 1.3	5 45.5 45.5 6.3	5 45.5 14.3 6.3	0 0.0 0.0 0.0	11 13.9
2.	0 0.0 0.0 0.0	6 33.3 54.5 7.6	8 44.4 22.9 10.1	4 22.2 12.9 5.1	18 22.8
3.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	18 54.5 51.4 22.8	15 45.5 48.4 19.0	33 41.8
4.	1 5.9 50.0 1.3	0 0.0 0.0 0.0	4 23.5 11.4 5.1	12 70.6 38.7 15.2	17 21.5
Column Total	2 2.5	11 13.9	35 44.3	31 39.2	79 100.0

Significance = 0.0000 Pearson's R = 0.52727

Table 3.16 - Organization

HO16 \ HI16 (Count / Row % / Col % / Total %)	2.	3.	4.	Row Total
1.	1 25.0 100.0 1.3	0 0.0 0.0 0.0	3 75.0 4.4 3.8	4 5.1
2.	0 0.0 0.0 0.0	2 40.0 20.0 2.5	3 60.0 4.4 3.8	5 6.3
3.	0 0.0 0.0 0.0	7 28.0 70.0 8.9	18 72.0 26.5 22.8	25 31.6
4.	0 0.0 0.0 0.0	1 2.2 10.0 1.3	44 97.8 64.7 55.7	45 57.0
Column Total	1 1.3	10 12.7	68 86.1	79 100.0

Significance = 0.0002 Pearson's R = 0.38801

Table 3.17 - Wisdom

H017	Count / Row % / Col % / Total %	H117 2.	3.	4.	Row Total
	2.	1 33.3 50.0 1.3	1 33.3 6.3 1.3	1 33.3 1.7 1.3	3 3.8
	3.	1 4.8 50.0 1.3	6 28.6 37.5 7.7	14 66.7 23.3 17.9	21 26.9
	4.	0 0.0 0.0 0.0	9 16.7 56.3 11.5	45 83.3 75.0 57.7	54 69.2
	Column Total	2 2.6	16 20.5	60 76.9	78 100.0

Significance = 0.0014 Pearson's R = 0.33496

Table 3.18 - Idea Finding

H018	Count / Row % / Col % / Total %	H118 1.	2.	3.	4.	Row Total
	1.	0 0.0 0.0 0.0	4 36.4 30.4 5.1	7 63.6 18.4 8.9	0 0.0 0.0 0.0	11 13.9
	2.	1 5.0 100.0 1.3	7 35.0 63.6 8.9	9 45.0 23.7 11.4	3 15.0 10.3 3.8	20 25.3
	3.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	19 55.9 50.0 24.1	15 44.1 51.7 19.0	34 43.0
	4.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	3 21.4 7.9 3.8	11 78.6 37.9 13.9	14 17.7
	Column Total	1 1.3	11 13.9	38 48.1	29 36.7	79 100.0

Significance = 0.0000 Pearson's R = 0.58226

Table 3.19 - Problem Solving

H019 \ H119	1.	2.	3.	4.	Row Total
2.	1 20.0 100.0 1.3	0 0.0 0.0 0.0	2 40.0 15.4 2.6	2 40.0 3.2 2.6	5 6.4
3.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	5 26.3 38.5 6.4	14 73.7 22.2 17.9	19 24.4
4.	0 0.0 0.0 0.0	1 1.9 100.0 1.3	6 11.1 46.2 7.7	47 87.0 74.6 60.3	54 69.2
Column Total	1 1.3	1 1.3	13 16.7	63 80.8	78 100.0

Significance = 0.0014 Pearson's R = 0.33460

Table 3.20 - Evaluation

H020 \ H120 (Count / Row % / Col % / Total %)	1.	2.	3.	4.	Row Total
1.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	1 100.0 4.3 1.3	0 0.0 0.0 0.0	1 1.3
2.	0 0.0 0.0 0.0	1 16.7 33.3 1.3	3 50.0 13.0 3.8	2 33.3 3.8 2.5	6 7.5
3.	0 0.0 0.0 0.0	2 5.4 66.7 2.5	16 43.2 69.6 20.0	19 51.4 35.8 23.8	37 46.3
4.	1 2.8 100.0 1.3	0 0.0 0.0 0.0	3 8.3 13.0 3.8	32 88.9 60.4 40.0	36 45.0
Column Total	1 1.3	3 3.8	23 28.8	53 66.3	80 100.0

Significance = 0.0005 Pearson's R = 0.36302

Table 3.21 - Raising Questions

H021 \ H121	1.	2.	3.	4.	Row Total
1.	3	1	4	0	8
	37.5	12.5	50.0	0.0	10.0
	75.0	7.7	10.0	0.0	
	3.8	1.3	5.0	0.0	
2.	1	11	2	2	16
	6.3	68.8	12.5	12.5	20.0
	25.0	84.6	5.0	8.7	
	1.3	13.8	2.5	2.5	
3.	0	1	27	6	34
	0.0	2.9	79.4	17.6	42.5
	0.0	7.7	67.5	26.1	
	0.0	1.3	33.8	7.5	
4.	0	0	7	15	22
	0.0	0.0	31.8	68.2	27.5
	0.0	0.0	17.5	65.2	
	0.0	0.0	8.8	18.8	
Column Total	4	13	40	23	80
	5.0	16.3	50.0	28.8	100.0

Significance = 0.0000 Pearson's R = 0.67350

Table 3.22 - Initiating, Defining, Reorganizing Structure

H022 \ H122	1.	2.	3.	4.	Row Total
0.	1 100.0 33.3 1.3	0 0.0 0.0 0.0	0 0.0 0.0 0.0	0 0.0 0.0 0.0	1 1.3
1.	2 10.0 66.7 2.5	2 10.0 22.2 2.5	12 60.0 36.4 15.0	4 20.0 11.4 5.0	20 25.0
2.	0 0.0 0.0 0.0	4 33.3 44.4 5.0	2 16.7 6.1 2.5	6 50.0 17.1 7.5	12 15.0
3.	0 0.0 0.0 0.0	2 6.1 22.2 2.5	19 57.6 57.6 23.8	12 36.4 34.3 15.0	33 41.3
4.	0 0.0 0.0 0.0	1 7.1 11.1 1.3	0 0.0 0.0 0.0	13 92.9 37.1 16.3	14 17.5
Column Total	3 3.8	9 11.3	33 41.3	35 43.8	80 100.0

Significance = 0.0000 Pearson's R = 0.43692

Table 3.23 - Meditation

HO23 \ HI23 (Count / Row % / Col % / Total %)	1.	2.	3.	4.	Row Total
1.	3 50.0 100.0 3.8	2 33.3 16.7 2.5	1 16.7 2.9 1.3	0 0.0 0.0 0.0	6 7.5
2.	0 0.0 0.0 0.0	8 36.4 66.7 10.0	7 31.8 20.6 8.8	7 31.8 22.6 8.8	22 27.5
3.	0 0.0 0.0 0.0	1 3.2 8.3 1.3	19 61.3 55.9 23.8	11 35.5 35.5 13.8	31 38.8
4.	0 0.0 0.0 0.0	1 4.8 8.3 1.3	7 33.3 20.6 8.8	13 61.9 41.9 16.3	21 26.3
Column Total	3 3.8	12 15.0	34 42.5	31 38.8	80 100.0

Significance = 0.0000 Pearson's R = 0.53110

Table 3.24 - Persuasion

HO24 \ HI24	Count / Row % / Col % / Total %	1.	2.	3.	4.	Row Total
1.		1	4	1	3	9
		11.1	44.4	11.1	33.3	11.3
		100.0	40.0	3.4	7.5	
		1.3	5.0	1.3	3.8	
2.		0	4	7	4	15
		0.0	26.7	46.7	26.7	18.8
		0.0	40.0	24.1	10.0	
		0.0	5.0	8.8	5.0	
3.		0	2	16	15	33
		0.0	6.1	48.5	45.5	41.3
		0.0	20.0	55.2	37.5	
		0.0	2.5	20.0	18.8	
4.		0	0	5	18	23
		0.0	0.0	21.7	78.3	28.8
		0.0	0.0	17.2	45.0	
		0.0	0.0	6.3	22.5	
Column Total		1	10	29	40	80
		1.3	12.5	36.3	50.0	100.0

Significance = 0.0000 Pearson's R = 0.48496

Table 3.25 - Memory

HO25 \ HI25	2.	3.	4.	Row Total
1.	1 33.3 16.7 1.2	2 66.7 6.7 2.5	0 0.0 0.0 0.0	3 3.7
2.	0 0.0 0.0 0.0	5 83.3 16.7 6.2	1 16.7 2.2 1.2	6 7.4
3.	3 15.8 50.0 3.7	12 63.2 40.0 14.8	4 21.1 8.9 4.9	19 23.5
4.	2 3.8 33.3 2.5	11 20.8 36.7 13.6	40 75.5 88.9 49.4	53 65.4
Column Total	6 7.4	30 37.0	45 55.6	81 100.0

Significance = 0.0000 Pearson's R = 0.47864

from the student's priority rating of the importance of these same thinking strategies.

A Spearman Correlation Coefficient analysis revealed a significant correlation at the .01 level of significance between the frequency ratings and importance ratings of the 25 thinking strategies by students of educational administration courses, therefore, hypothesis 2 was rejected (see Table 2).

Table 4 shows the Pearson's Product Moment correlation between importance and frequency ratings by students for the 25 thinking strategies. Analysis and organization did not obtain significance at the .05 level of significance. Perception and raising questions were significant at the .05 level of significance. The other 21 thinking strategies showed significant correlations at the .01 level of significance. A comparison of rows 3 and 4 to columns 3 and 4 for variance revealed that conceptualization, leadership, logical relationships, idea finding, problem solving, and evaluation received higher ratings for importance than the ratings for frequency of use. Interpersonal interaction received higher ratings for frequency of use than the ratings for importance.

Table 4.1 - Conceptualization

HO1 \ HI1	1.	3.	4.	Row Total
1.	0 0.0 0.0 0.0	2 66.7 7.7 4.4	1 33.3 5.6 2.2	3 6.7
2.	1 9.1 100.0 2.2	9 81.8 34.6 20.0	1 9.1 5.6 2.2	11 24.4
3.	0 0.0 0.0 0.0	11 73.3 42.3 24.4	4 26.7 22.2 8.9	15 33.3
4.	0 0.0 0.0 0.0	4 25.0 15.4 8.9	12 75.0 66.7 26.7	16 35.6
Column Total	1 2.2	26 57.8	18 40.0	45 100.0

Pearson's R = 0.45036 Significance = 0.0010

Table 4.2 - Perception

H02 \ H12 (Count / Row % / Col % / Total %)	2.	3.	4.	Row Total
1.	0 0.0 0.0 0.0	1 100.0 4.8 2.2	0 0.0 0.0 0.0	1 2.2
2.	0 0.0 0.0 0.0	1 100.0 4.8 2.2	0 0.0 0.0 0.0	1 2.2
3.	3 17.6 75.0 6.7	8 47.1 38.1 17.8	6 35.3 30.0 13.3	17 37.8
4.	1 3.8 25.0 2.2	11 42.3 52.4 24.4	14 53.8 70.0 31.1	26 57.8
Column Total	4 8.9	21 46.7	20 44.4	45 100.0

Pearson's R = 0.25688 Significance = 0.0442

Table 4.3 - Analysis

H03 \ H13	2.	3.	4.	Row Total
0.	0 0.0 0.0 0.0	1 100.0 5.6 2.3	0 0.0 0.0 0.0	1 2.3
1.	0 0.0 0.0 0.0	3 75.0 16.7 6.8	1 25.0 4.5 2.3	4 9.1
2.	1 25.0 25.0 2.3	1 25.0 5.6 2.3	2 50.0 9.1 4.5	4 9.1
3.	0 0.0 0.0 0.0	10 71.4 55.6 22.7	4 28.6 18.2 9.1	14 31.8
4.	3 14.3 75.0 6.8	3 14.3 16.7 6.8	15 71.4 68.2 34.1	21 47.7
Column Total	4 9.1	18 40.9	22 50.0	44 100.0

Pearson's R = 0.21620 Significance = 0.0793

Table 4.4 - Synthesis

H04 \ HI4 (Count / Row % / Col % / Total %)	2.	3.	4.	Row Total
1.	1 50.0 50.0 2.2	1 50.0 4.3 2.2	0 0.0 0.0 0.0	2 4.4
2.	1 14.3 50.0 2.2	4 57.1 17.4 8.9	2 28.6 10.0 4.4	7 15.6
3.	0 0.0 0.0 0.0	12 75.0 52.2 26.7	4 25.0 20.0 8.9	16 35.6
4.	0 0.0 0.0 0.0	6 30.0 26.1 13.3	14 70.0 70.0 31.1	20 44.4
Column Total	2 4.4	23 51.1	20 44.4	45 100.0

Pearson's R = 0.51429 Significance = 0.0002

Table 4.5 - Interpersonal Interaction

H05 \ H15 (Count / Row % / Col % / Total %)	2.	3.	4.	5.	Row Total
2.	2 50.0 66.7 4.4	2 50.0 33.3 4.4	0 0.0 0.0 0.0	0 0.0 0.0 0.0	4 8.9
3.	0 0.0 0.0 0.0	2 33.3 33.3 4.4	4 66.7 11.4 8.9	0 0.0 0.0 0.0	6 13.3
4.	1 2.9 33.3 2.2	2 5.7 33.3 4.4	31 88.6 88.6 68.9	1 2.9 100.0 2.2	35 77.8
Column Total	3 6.7	6 13.3	35 77.8	1 2.2	45 100.0

Pearson's R = 0.62352 Significance = 0.0000

Table 4.6 - Planning

HO6 \ HI6	2.	3.	4.	Row Total
1.	1 100.0 33.3 2.2	0 0.0 0.0 0.0	0 0.0 0.0 0.0	1 2.2
2.	0 0.0 0.0 0.0	1 50.0 50.0 2.2	1 50.0 2.5 2.2	2 4.4
3.	1 10.0 33.3 2.2	1 10.0 50.0 2.2	8 80.0 20.0 17.8	10 22.2
4.	1 3.1 33.3 2.2	0 0.0 0.0 0.0	31 96.9 77.5 68.9	32 71.1
Column Total	3 6.7	2 4.4	40 88.9	45 100.0

Pearson's R = 0.49588 Significance = 0.0003

Table 4.7 - Leadership

H07 \ H17	3.	4.	Row Total
1.	1 50.0 33.3 2.3	1 50.0 2.4 2.3	2 4.5
2.	0 0.0 0.0 0.0	4 100.0 9.8 9.1	4 9.1
3.	2 25.0 66.7 4.5	6 75.0 14.6 13.6	8 18.2
4.	0 0.0 0.0 0.0	30 100.0 73.2 68.2	30 68.2
Column Total	3 6.8	41 93.2	44 100.0

Pearson's R = 0.37598 Significance = 0.0059

Table 4.8 - Reading

H08 \ H18	2.	3.	4.	Row Total
1.	0 0.0 0.0 0.0	1 100.0 8.3 2.2	0 0.0 0.0 0.0	1 2.2
2.	2 33.3 50.0 4.4	3 50.0 25.0 6.7	1 16.7 3.4 2.2	6 13.3
3.	1 14.3 25.0 2.2	3 42.9 25.0 6.7	3 42.9 10.3 6.7	7 15.6
4.	1 3.2 25.0 2.2	5 16.1 41.7 11.1	25 80.6 86.2 55.6	31 68.9
Column Total	4 8.9	12 26.7	29 64.4	45 100.0

Pearson's R = 0.51699 Significance = 0.0001

Table 4.9 - Observation

H09 \ H19	2.	3.	4.	Row Total
2.	1 16.7 100.0 2.2	3 50.0 17.6 6.7	2 33.3 7.4 4.4	6 13.3
3.	0 0.0 0.0 0.0	8 80.0 47.1 17.8	2 20.0 7.4 4.4	10 22.2
4.	0 0.0 0.0 0.0	6 20.7 35.3 13.3	23 79.3 85.2 51.1	29 64.4
Column Total	1 2.2	17 37.8	27 60.0	45 100.0

Pearson's R = 0.50155 Significance = 0.0002

Table 4.10 - Listening

HO10	Count / Row % / Col % / Total %	HI10 3.	HI10 4.	Row Total
	2.	3 100.0 30.0 6.7	0 0.0 0.0 0.0	3 6.7
	3.	3 37.5 30.0 6.7	5 62.5 14.3 11.1	8 17.8
	4.	4 11.8 40.0 8.9	30 88.2 85.7 66.7	34 75.6
	Column Total	10 22.2	35 77.8	45 100.0

Pearson's P = 0.53386 Significance = 0.0001

Table 4.11 - Classification

H011 \ H111	Count / Row % / Col % / Total %	1.	2.	3.	4.	Row Total
1.		1	3	0	0	4
		25.0	75.0	0.0	0.0	8.9
		50.0	27.3	0.0	0.0	
		2.2	6.7	0.0	0.0	
2.		0	6	3	1	10
		0.0	60.0	30.0	10.0	22.2
		0.0	54.5	13.6	10.0	
		0.0	13.3	6.7	2.2	
3.		0	2	15	3	20
		0.0	10.0	75.0	15.0	44.4
		0.0	18.2	68.2	30.0	
		0.0	4.4	33.3	6.7	
4.		1	0	4	6	11
		9.1	0.0	36.4	54.5	24.4
		50.0	0.0	18.2	60.0	
		2.2	0.0	8.9	13.3	
Column Total		2	11	22	10	45
		4.4	24.4	48.9	22.2	100.0

Pearson's R = 0.57015 Significance = 0.0000

Table 4.12 - Logical Relationships

H012 \ H112	1.	2.	3.	4.	Row Total
1.	1 25.0 100.0 2.2	2 50.0 22.2 4.4	1 25.0 6.3 2.2	0 0.0 0.0 0.0	4 8.9
2.	0 0.0 0.0 0.0	5 62.5 55.6 11.1	2 25.0 12.5 4.4	1 12.5 5.3 2.2	8 17.8
3.	0 0.0 0.0 0.0	1 6.7 11.1 2.2	9 60.0 56.3 20.0	5 33.3 26.3 11.1	15 33.3
4.	0 0.0 0.0 0.0	1 5.6 11.1 2.2	4 22.2 25.0 8.9	13 72.2 68.4 28.9	18 40.0
Column Total	1 2.2	9 20.0	16 35.6	19 42.2	45 100.0

Pearson's R = 0.66048 Significance = 0.0000

Table 4.13 - Decision Making

HO13 \ HI13	2.	3.	4.	Row Total
1.	0 0.0 0.0 0.0	2 66.7 33.3 4.4	1 33.3 2.6 2.2	3 6.7
2.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	1 100.0 2.6 2.2	1 2.2
3.	1 12.5 100.0 2.2	2 25.0 33.3 4.4	5 62.5 13.2 11.1	8 17.8
4.	0 0.0 0.0 0.0	2 6.1 33.3 4.4	31 93.9 81.6 68.9	33 73.3
Column Total	1 2.2	6 13.3	38 84.4	45 100.0

Pearson's R = 0.40625 Significance = 0.0028

Table 4.14 - Advocacy

H014 \ H114 (Count / Row % / Col % / Total %)	0.	1.	2.	3.	4.	Row Total
0.	1 100.0 100.0 2.3	0 0.0 0.0 0.0	0 0.0 0.0 0.0	0 0.0 0.0 0.0	0 0.0 0.0 0.0	1 2.3
1.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	4 80.0 36.4 9.3	0 0.0 0.0 0.0	1 20.0 7.1 2.3	5 11.6
2.	0 0.0 0.0 0.0	2 22.2 100.0 4.7	3 33.3 27.3 7.0	3 33.3 20.0 7.0	1 11.1 7.1 2.3	9 20.9
3.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	4 25.0 36.4 9.3	9 56.3 60.0 20.9	3 18.8 21.4 7.0	16 37.2
4.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	0 0.0 0.0 0.0	3 25.0 20.0 7.0	9 75.0 64.3 20.9	12 27.9
Column Total	1 2.3	2 4.7	11 25.6	15 34.9	14 32.6	43 100.0

Pearson's R = 0.65254 Significance = 0.0000

Table 4.15 - Imagination

H015 \ H115	2.	3.	4.	Row Total
1.	2 50.0 33.3 4.7	2 50.0 14.3 4.7	0 0.0 0.0 0.0	4 9.3
2.	2 25.0 33.3 4.7	2 25.0 14.3 4.7	4 50.0 17.4 9.3	8 18.6
3.	1 7.7 16.7 2.3	6 46.2 42.9 14.0	6 46.2 26.1 14.0	13 30.2
4.	1 5.6 16.7 2.3	4 22.2 28.6 9.3	13 72.2 56.5 30.2	18 41.9
Column Total	6 14.0	14 32.6	23 53.5	43 100.0

Pearson's R = 0.43230 Significance = 0.0019

Table 4.16 - Organization

HO16	Count / Row % / Col % / Total %	HI16 1.	3.	4.	Row Total
	2.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	1 100.0 2.6 2.3	1 2.3
	3.	0 0.0 0.0 0.0	2 18.2 66.7 4.7	9 81.8 23.1 20.9	11 25.6
	4.	1 3.2 100.0 2.3	1 3.2 33.3 2.3	29 93.5 74.4 67.4	31 72.1
	Column Total	1 2.3	3 7.0	39 90.7	43 100.0

Pearson's R = 0.01674 Significance = 0.4576

Table 4.17 - Wisdom

H017 \ H117 (Count / Row % / Col % / Total %)	0.	2.	3.	4.	Row Total
1.	1 50.0 100.0 2.3	0 0.0 0.0 0.0	0 0.0 0.0 0.0	1 50.0 2.9 2.3	2 4.7
2.	0 0.0 0.0 0.0	1 33.3 100.0 2.3	0 0.0 0.0 0.0	2 66.7 5.9 4.7	3 7.0
3.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	5 41.7 71.4 11.6	7 58.3 20.6 16.3	12 27.9
4.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	2 7.7 28.6 4.7	24 92.3 70.6 55.8	26 60.5
Column Total	1 2.3	1 2.3	7 16.3	34 79.1	43 100.0

Pearson's R = 0.53503 Significance = 0.0001

Table 4.18 - Idea Finding

H018 \ H118 (Count / Row % / Col % / Total %)	0.	1.	2.	3.	4.	Row Total
1.	1 20.0 100.0 2.3	0 0.0 0.0 0.0	2 40.0 50.0 4.7	1 20.0 6.7 2.3	1 20.0 4.5 2.3	5 11.6
2.	0 0.0 0.0 0.0	1 12.5 100.0 2.3	1 12.5 25.0 2.3	0 0.0 0.0 0.0	6 75.0 27.3 14.0	8 18.6
3.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	1 4.8 25.0 2.3	12 57.1 80.0 27.9	8 38.1 36.4 18.6	21 48.8
4.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	0 0.0 0.0 0.0	2 22.2 13.3 4.7	7 77.8 31.8 16.3	9 20.9
Column Total	1 2.3	1 2.3	4 9.3	15 34.9	22 51.2	43 100.0

Pearson's R =0.41948 Significance = 0.0026

Table 4.19 - Problem Solving

HO19 \ H119	2.	3.	4.	Row Total
0.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	1 100.0 2.9 2.4	1 2.4
1.	0 0.0 0.0 0.0	1 100.0 14.3 2.4	0 0.0 0.0 0.0	1 2.4
2.	0 0.0 0.0 0.0	2 33.3 28.6 4.8	4 66.7 11.8 9.5	6 14.3
3.	1 10.0 100.0 2.4	4 40.0 57.1 9.5	5 50.0 14.7 11.9	10 23.8
4.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	24 100.0 70.6 57.1	24 57.1
Column Total	1 2.4	7 16.7	34 81.0	42 100.0

Pearson's R =0.36088 Significance = 0.0094

Table 4.20 - Evaluation

H020	Count / Row % / Col % / Total %	H120 2.	3.	4.	Row Total
	1.	2 50.0 100.0 4.7	2 50.0 20.0 4.7	0 0.0 0.0 0.0	4 9.3
	2.	0 0.0 0.0 0.0	4 44.4 40.0 9.3	5 55.6 16.1 11.6	9 20.9
	3.	0 0.0 0.0 0.0	3 21.4 30.0 7.0	11 78.6 35.5 25.6	14 32.6
	4.	0 0.0 0.0 0.0	1 6.3 10.0 2.3	15 93.8 48.4 34.9	16 37.2
	Column Total	2 4.7	10 23.3	31 72.1	43 100.0

Pearson's R = 0.62526 Significance = 0.0000

Table 4.21 - Raising Questions

H021 \ H121	1.	2.	3.	4.	Row Total
1.	1 20.0 100.0 2.3	2 40.0 18.2 4.7	2 40.0 14.3 4.7	0 0.0 0.0 0.0	5 11.6
2.	0 0.0 0.0 0.0	1 16.7 9.1 2.3	3 50.0 21.4 7.0	2 33.3 11.8 4.7	6 14.0
3.	0 0.0 0.0 0.0	3 18.8 27.3 7.0	7 43.8 50.0 16.3	6 37.5 35.3 14.0	16 37.2
4.	0 0.0 0.0 0.0	5 31.3 45.5 11.6	2 12.5 14.3 4.7	9 56.3 52.9 20.9	16 37.2
Column Total	1 2.3	11 25.6	14 32.6	17 39.5	43 100.0

Pearson's R =0.30181 Significance = 0.0246

Table 4.22 - Initiating Defining, Reorganizing Structure

H022 \ H122 (Count / Row % / Col % / Total %)	1.	2.	3.	4.	Row Total
1.	1 11.1 100.0 2.3	5 55.6 62.5 11.6	2 22.2 10.5 4.7	1 11.1 6.7 2.3	9 20.9
2.	0 0.0 0.0 0.0	1 11.1 12.5 2.3	5 55.6 26.3 11.6	3 33.3 20.0 7.0	9 20.9
3.	0 0.0 0.0 0.0	2 12.5 25.0 4.7	11 68.8 57.9 25.6	3 18.8 20.0 7.0	16 37.2
4.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	1 11.1 5.3 2.3	8 88.9 53.3 18.6	9 20.9
Column Total	1 2.3	8 18.6	19 44.2	15 34.9	43 100.0

Pearson's R = 0.57349 Significance = 0.0000

Table 4.23 - Meditation

H023 \ H123 (Count / Row % / Col % / Total %)	0.	1.	2.	3.	4.	Row Total
0.	1 100.0 100.0 2.3	0 0.0 0.0 0.0	0 0.0 0.0 0.0	0 0.0 0.0 0.0	0 0.0 0.0 0.0	1 2.3
1.	0 0.0 0.0 0.0	4 50.0 100.0 9.3	2 25.0 16.7 4.7	1 12.5 11.1 2.3	1 12.5 5.9 2.3	8 18.6
2.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	6 46.2 50.0 14.0	4 30.8 44.4 9.3	3 23.1 17.6 7.0	13 30.2
3.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	4 36.4 33.3 9.3	4 36.4 44.4 9.3	3 27.3 17.6 7.0	11 25.6
4.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	0 0.0 0.0 0.0	0 0.0 0.0 0.0	10 100.0 58.8 23.3	10 23.3
Column Total	1 2.3	4 9.3	12 27.9	9 20.9	17 39.5	43 100.0

Pearson's R = 0.69741 Significance = 0.0000

Table 4.24 - Persuasion

H124	Count / Row % / Col % / Total %	H124 1.	2.	3.	4.	Row Total
	0.	1 100.0 33.3 2.3	0 0.0 0.0 0.0	0 0.0 0.0 0.0	0 0.0 0.0 0.0	1 2.3
	1.	1 33.3 33.3 2.3	1 33.3 16.7 2.3	0 0.0 0.0 0.0	1 33.3 4.5 2.3	3 7.0
	2.	1 12.5 33.3 2.3	2 25.0 33.3 4.7	3 37.5 25.0 7.0	2 25.0 9.1 4.7	8 18.6
	3.	0 0.0 0.0 0.0	2 13.3 33.3 4.7	8 53.3 66.7 18.6	5 33.3 22.7 11.6	15 34.9
	4.	0 0.0 0.0 0.0	1 6.3 16.7 2.3	1 6.3 8.3 2.3	14 87.5 63.6 32.6	16 37.2
	Column Total	3 7.0	6 14.0	12 27.9	22 51.2	43 100.0

Pearson's R = 0.61298 Significance = 0.0000

Table 4.25 - Memory

H025 \ HI25 (Count / Row % / Col % / Total %)	0.	1.	3.	4.	Row Total
1.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	1 100.0 5.3 2.3	0 0.0 0.0 0.0	1 2.3
2.	0 0.0 0.0 0.0	1 25.0 100.0 2.3	3 75.0 15.8 7.0	0 0.0 0.0 0.0	4 9.3
3.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	8 80.0 42.1 18.6	2 20.0 9.1 4.7	10 23.3
4.	1 3.6 100.0 2.3	0 0.0 0.0 0.0	7 25.0 36.8 16.3	20 71.4 90.9 46.5	28 65.1
Column Total	1 2.3	1 2.3	19 44.2	22 51.2	43 100.0

Pearson's R = 0.38946 Significance = 0.0049

Hypothesis 3:

When administrators evaluate a list of thinking strategies, the priority ratings of the importance of the thinking strategies will differ significantly from the priority ratings of the importance of these same thinking strategies by graduate students enrolled in educational administration courses.

A Spearman Correlation Coefficient analysis revealed a significant correlation at the .01 level of significance between administrators and students of educational administration courses ratings of importance on the 25 thinking strategies; therefore, hypothesis 3 was rejected (see Table 2).

A Chi-square test comparing principals' ratings to the ratings by university students revealed significant differences for planning, decision making, and meditation at the .05 level. Conceptualization and perception were highly significant at the .01 level. Other thinking strategies showed no significant difference between principals and graduate students. These results can be found in Table 6.

Hypothesis 4:

When graduate students enrolled in educational administration courses evaluate a list of 25 thinking strategies, the ratings of the students' perceptions of

Table 5.1 - Conceptualization

HO1

NEWGROUP Count Row % Col % Total %	PRINCIPAL 1.	STUDENT 2.	Row Total
1.	6 66.7 7.6 4.8	3 33.3 6.7 2.4	9 7.3
2.	14 56.0 17.7 11.3	11 44.0 24.4 8.9	25 20.2
3.	33 68.8 41.8 26.6	15 31.3 33.3 12.1	48 38.7
4.	26 61.9 32.9 21.0	16 38.1 35.6 12.9	42 33.9
Column Total	79 63.7	45 36.3	124 100.0

Chi square = 1.26335 with 3 degrees of freedom
Significance = 0.7379

Table 5.2 - Perception

HO2

Count / Row % / Col % / Total %	NEWGROUP PRINCIPAL	NEWGROUP STUDENT	Row Total
1.	3 75.0 3.8 2.4	1 25.0 2.2 0.8	4 3.2
2.	4 80.0 5.0 3.2	1 20.0 2.2 0.8	5 4.0
3.	16 48.5 20.0 12.8	17 51.5 37.8 13.6	33 26.4
4.	57 68.7 71.3 45.6	26 31.3 57.8 20.8	83 66.4
Column Total	80 64.0	45 36.0	125 100.0

Chi square = 5.0067 with 3 degrees of freedom
Significance = 0.1717

Table 5.3 - Analysis

HO3

Count / Row % / Col % / Total %	NEWGROUP PRINCIPAL	NEWGROUP STUDENT	Row Total
0.	0 0.0 0.0 0.0	1 100.0 2.3 0.8	1 0.8
1.	7 63.6 8.9 5.7	4 36.4 9.1 3.3	11 8.9
2.	18 81.8 22.8 14.6	4 18.2 9.1 3.3	22 17.9
3.	33 70.2 41.8 26.8	14 29.8 31.8 11.4	47 38.2
4.	21 50.0 26.6 17.1	21 50.0 47.7 17.1	42 34.1
Column Total	79 64.2	44 35.8	123 100.0

Chi square = 9.19315 with 4 degrees of freedom
Significance = 0.0564

Table 5.4 - Synthesis

HO4

NEWGROUP Count Row % Col % Total %	PRINCIPAL 1.	STUDENT 2.	Row Total
1.	7 77.8 8.8 5.6	2 22.2 4.4 1.6	9 7.2
2.	17 70.8 21.3 13.6	7 29.2 15.6 5.6	24 19.2
3.	31 66.0 38.8 24.8	16 34.0 35.6 12.8	47 37.6
4.	25 55.6 31.3 20.0	20 44.4 44.4 16.0	45 36.0
Column Total	80 64.0	45 36.0	125 100.0

Chi square = 2.69882 with 3 degrees of freedom
Significance = 0.4404

Table 5.5 - Interpersonal Interactions

HO5

NEWGROUP Count Row % Col % Total %	PRINCIPA 1.	STUDENT 2.	Row Total
1.	1 100.0 1.3 0.8	0 0.0 0.0 0.0	1 0.8
2.	3 42.9 3.8 2.4	4 57.1 8.9 3.2	7 5.6
3.	12 66.7 15.2 9.7	6 33.3 13.3 4.8	18 14.5
4.	63 64.3 79.7 50.8	35 35.7 77.8 28.2	98 79.0
Column Total	79 63.7	45 36.3	124 100.0

Chi square 1.96825 with 3 degrees of freedom
Significance = 0.5790

Table 5.6 - Planning

H06

Count / Row % / Col % / Total %	NEWGROUP PRINCIPAL	NEWGROUP STUDENT	Row Total
1.	1 50.0 1.3 0.8	1 50.0 2.2 0.8	2 1.6
2.	5 71.4 6.3 4.0	2 28.6 4.4 1.6	7 5.6
3.	33 76.7 41.3 26.4	10 23.3 22.2 8.0	43 34.4
4.	41 56.2 51.3 32.8	32 43.8 71.1 25.6	73 58.4
Column Total	80 64.0	45 36.0	125 100.0

Chi square = 5.31427 with 3 degrees of freedom
Significance = 0.1502

Table 5.7 - Leadership

H07

Count / Row % / Col % / Total %	NEWGROUP PRINCIPAL	NEWGROUP STUDENT	Row Total
1.	0	2	2
	0.0	100.0	1.6
	0.0	4.5	
	0.0	1.6	
2.	2	4	6
	33.3	66.7	4.9
	2.5	9.1	
	1.6	3.3	
3.	16	8	24
	66.7	33.3	19.5
	20.3	18.2	
	13.0	6.5	
4.	61	30	91
	67.0	33.0	74.0
	77.2	68.2	
	49.6	24.4	
Column Total	79	44	123
	64.2	35.8	100.0

Chi square = 6.45727 with 3 degrees of freedom
Significance = 0.0914

Table 5.8 - Reading

H08	Count / Row % / Col % / Total %	NEWGROUP PRINCIPA	STUDENT	Row Total
		1.	2.	
	1.	1 50.0 1.3 0.8	1 50.0 2.2 0.8	2 1.6
	2.	5 45.5 6.3 4.0	6 54.5 13.3 4.8	11 8.9
	3.	19 73.1 24.1 15.3	7 26.9 15.6 5.6	26 21.0
	4.	54 63.5 68.4 43.5	31 36.5 68.9 25.0	85 68.5
	Column Total	79 63.7	45 36.3	124 100.0

Chi square = 2.73602 with 3 degrees of freedom
Significance = 0.4341

Table 5.9 - Observation

H09

Count / Row % / Col % / Total %	NEWGROUP PRINCIPAL 1.	STUDENT 2.	Row Total
2.	2	6	8
	25.0	75.0	6.5
	2.5	13.3	
	1.6	4.8	
3.	14	10	24
	58.3	41.7	19.4
	17.7	22.2	
	11.3	8.1	
4.	63	29	92
	68.5	31.5	74.2
	79.7	64.4	
	50.8	23.4	
Column Total	79	45	124
	63.7	36.3	100.0

Chi square = 6.38969 with 2 degrees of freedom
Significance = 0.0410

Table 5.10 - Listening

H010

Count / Row % / Col % / Total %	NEWGROUP PRINCIPAL	NEWGROUP STUDENT	Row Total
2.	0 0.0 0.0 0.0	3 100.0 6.7 2.4	3 2.4
3.	7 46.7 9.0 5.7	8 53.3 17.8 6.5	15 12.2
4.	71 67.6 91.0 57.7	34 32.4 75.6 27.6	105 85.4
Column Total	78 63.4	45 36.6	123 100.0

Chi square = 7.81353 with 2 degrees of freedom
Significance = 0.0201

Table 5.11 - Classification

H011

Count / Row % / Col % / Total %	NEWGROUP PRINCIPA 1.	STUDENT 2.	Row Total
1.	11 73.3 13.9 8.9	4 26.7 8.9 3.2	15 12.1
2.	16 61.5 20.3 12.9	10 38.5 22.2 8.1	26 21.0
3.	36 64.3 45.6 29.0	20 35.7 44.4 16.1	56 45.2
4.	16 59.3 20.3 12.9	11 40.7 24.4 8.9	27 21.8
Column Total	79 63.7	45 36.3	124 100.0

Chi square = 0.89321 with 3 degrees of freedom
Significance = 0.8271

Table 5.12 - Logical Relationships

HO12

Count / Row % / Col % / Total %	NEWGROUP PRINCIPAL 1.	NEWGROUP STUDENT 2.	Row Total
1.	6	4	10
	60.0	40.0	8.1
	7.6	8.9	
	4.8	3.2	
2.	18	8	26
	69.2	30.8	21.0
	22.8	17.8	
	14.5	6.5	
3.	36	15	51
	70.6	29.4	41.1
	45.6	33.3	
	29.0	12.1	
4.	19	18	37
	51.4	48.6	29.8
	24.1	40.0	
	15.3	14.5	
Column Total	79 63.7	45 36.3	124 100.0

Chi square = 3.89013 with 3 degrees of freedom
Significance = 0.2736

Table 5.13 - Decision Making

HO13

NEWGROUP Count Row % Col % Total %	PRINCIPA STUDENT 1.	2.	Row Total
1.	0 0.0 0.0 0.0	3 100.0 6.7 2.4	3 2.4
2.	1 50.0 1.3 0.8	1 50.0 2.2 0.8	2 1.6
3.	5 38.5 6.3 4.0	8 61.5 17.8 6.5	13 10.5
4.	73 68.9 92.4 58.9	33 31.1 73.3 26.6	106 85.5
Column Total	79 63.7	45 36.3	124 100.0

Chi square = 10.23344 with 3 degrees of freedom
Significance = 0.0167

Table 5.14 - Advocacy

H014

Count / Row % / Col % / Total %	NEWGROUP PRINCIPAL	NEWGROUP STUDENT	Row Total
0.	0 0.0 0.0 0.0	1 100.0 2.3 0.8	1 0.8
1.	10 66.7 12.7 8.2	5 33.3 11.6 4.1	15 12.3
2.	14 60.9 17.7 11.5	9 39.1 20.9 7.4	23 18.9
3.	29 64.4 36.7 23.8	16 35.6 37.2 13.1	45 36.9
4.	26 68.4 32.9 21.3	12 31.6 27.9 9.8	38 31.1
Column Total	79 64.8	43 35.2	122 100.0

Chi square = 2.23909 with 4 degrees of freedom
Significance = 0.6919

Table 5.15 - Imagination

H015

NEWGROUP Count Row % Col % Total %	PRINCIPA 1.	STUDENT 2.	Row Total
1.	11 73.3 13.9 9.0	4 26.7 9.3 3.3	15 12.3
2.	18 69.2 22.8 14.8	8 30.8 18.6 6.6	26 21.3
3.	33 71.7 41.8 27.0	13 28.3 30.2 10.7	46 37.7
4.	17 48.6 21.5 13.9	18 51.4 41.9 14.8	35 28.7
Column Total	79 64.8	43 35.2	122 100.0

Chi square = 5.71140 with 3 degrees of freedom
Significance = 0.1265

Table 5.16 - Organization

H016

Count / Row % / Col % / Total %	NEWGROUP PRINCIPA 1.	STUDENT 2.	Row Total
1.	4 100.0 5.1 3.3	0 0.0 0.0 0.0	4 3.3
2.	5 83.3 6.3 4.1	1 16.7 2.3 0.8	6 4.9
3.	25 69.4 31.6 20.5	11 30.6 25.6 9.0	36 29.5
4.	45 59.2 57.0 36.9	31 40.8 72.1 25.4	76 62.3
Column Total	79 64.8	43 35.2	122 100.0

Chi square = 4.45502 with 3 degrees of freedom
Significance = 6.2163

Table 5.17 - Wisdom

H017	NEWGROUP Count Row % Col % Total %	PRINCIPA L 1.	STUDENT 2.	Row Total
	1.	0 0.0 0.0 0.0	2 100.0 4.7 1.7	2 1.7
	2.	3 50.0 3.8 2.5	3 50.0 7.0 2.5	6 5.0
	3.	21 63.6 26.9 17.4	12 36.4 27.9 9.9	33 27.3
	4.	54 67.5 69.2 44.6	26 32.5 60.5 21.5	80 66.1
	Column Total	78 64.5	43 35.5	121 100.0

Chi square = 4.50774 with 3 degrees of freedom
Significance = 0.2116

Table 5.18 - Idea Finding

H018

Count / Row % / Col % / Total %	NEWGROUP PRINCIPA STUDENT 1.	2.	Row Total
1.	11 68.8 13.9 9.0	5 31.3 11.6 4.1	16 13.1
2.	20 71.4 25.3 16.4	8 28.6 18.6 6.6	28 23.0
3.	34 61.8 43.0 27.9	21 38.2 48.8 17.2	55 45.1
4.	14 60.9 17.7 11.5	9 39.1 20.9 7.4	23 18.9
Column Total	79 64.8	43 35.2	122 100.0

Chi square = 1.01825 with 3 degrees of freedom
Significance = 0.7968

Table 5.19 - Problem Solving

H019

NEWGROUP Count Row % Col % Total %	PRINCIPAL	STUDENT	Row Total
	1.	2.	
0.	0 0.0 0.0 0.0	1 100.0 2.4 0.8	1 0.8
1.	0 0.0 0.0 0.0	1 100.0 2.4 0.8	1 0.8
2.	5 45.5 6.4 4.2	6 54.5 14.3 5.0	11 9.2
3.	19 65.5 24.4 15.8	10 34.5 23.8 8.3	29 24.2
4.	54 69.2 69.2 45.0	24 30.8 57.1 20.0	78 65.0
Column Total	78 65.0	42 35.0	120 100.0

Chi square = 6.17854 with 4 degrees of freedom
Significance = 0.1862

Table 5.20 - Evaluation

HO20

Count / Row % / Col % / Total %	NEWGROUP PRINCIPAL	STUDENT	Row Total
	1.	2.	
1.	1	4	5
	20.0	80.0	4.1
	1.3	9.3	
	0.8	3.3	
2.	6	9	15
	40.0	60.0	12.2
	7.5	20.9	
	4.9	7.3	
3.	37	14	51
	72.5	27.5	41.5
	46.3	32.6	
	30.1	11.4	
4.	36	16	52
	69.2	30.8	42.3
	45.0	37.2	
	29.3	13.0	
Column Total	80	43	123
	65.0	35.0	100.0

Chi square = 10.26350 with 3 degrees of freedom
Significance = 0.0165

Table 5.21 - Raising Questions

H021

NEWGROUP Count Row % Col % Total %	PRINCIPAL STUDENT 1.	2.	Row Total
1.	8 61.5 19.0 6.5	5 38.5 11.6 4.1	13 10.6
2.	16 72.7 20.0 13.0	6 27.3 14.0 4.9	22 17.9
3.	34 68.0 42.5 27.6	16 32.0 37.2 13.0	50 40.7
4.	22 57.9 27.5 17.9	16 42.1 37.2 13.0	38 30.9
Column Total	80 65.0	43 35.0	123 100.0

Chi square = 1.68777 with 3 degrees of freedom
Significance = 0.6397

Table 5.22 - Initiating, Defining Reorganizing Structure

H022

Count / Row % / Col % / Total %	NEWGROUP PRINCIPAL	NEWGROUP STUDENT	Row Total
0.	1 100.0 1.3 0.8	0 0.0 0.0 0.0	1 0.8
1.	20 69.0 25.0 16.3	9 31.0 20.9 7.3	29 23.6
2.	12 57.1 15.0 9.8	9 42.9 20.9 7.3	21 17.1
3.	33 67.3 41.3 26.8	16 32.7 37.2 13.0	49 39.8
4.	14 60.9 17.5 11.4	9 39.1 20.9 7.3	23 18.7
Column Total	80 65.0	43 35.0	123 100.0

Chi square = 1.60066 with 4 degrees of freedom
Significance = 0.8087

Table 5.23 - Meditation

H023

Count / Row % / Col % / Total %	NEWGROUP PRINCIPA STUDENT 0	1.	2.	Row Total
0.	0	1		1
	0.0	100.0		0.8
	0.0	2.3		
	0.0	0.8		
1.	6	8		14
	42.9	57.1		11.4
	7.5	18.6		
	4.9	6.5		
2.	22	13		35
	62.9	37.1		28.5
	27.5	30.2		
	17.9	10.6		
3.	31	11		42
	73.8	26.2		34.1
	38.8	25.6		
	25.2	8.9		
4.	21	10		31
	67.7	32.3		25.2
	26.3	23.3		
	17.1	8.1		
Column Total	80	43		123
	65.0	35.0		100.0

Chi square = 6.48365 with 4 degrees of freedom
Significance = 0.1658

Table 5.24 - Persuasion

H024	NEWGROUP Count Row % Col % Total %	PRINCIPA 1.	STUDENT 2.	Row Total
	0.	0 0.0 0.0 0.0	1 100.0 2.3 0.8	1 0.8
	1.	9 75.0 11.3 7.3	3 25.0 7.0 2.4	12 9.8
	2.	15 65.2 18.8 12.2	8 34.8 18.6 6.5	23 18.7
	3.	33 68.8 41.3 26.8	15 31.3 34.9 12.2	48 39.0
	4.	23 59.0 28.8 18.7	16 41.0 37.2 13.0	39 31.7
	Column Total	80 65.0	43 35.0	123 100.0

Chi square = 3.30591 with 4 degrees of freedom
Significance = 0.5080

Table 5.25 - Memory

H025	NEWGROUP Count Row % Col % Total %	PRINCIPA 1.	STUDENT 2.	Row Total
	1.	3 75.0 3.7 2.4	1 25.0 2.3 0.8	4 3.2
	2.	6 60.0 7.4 4.8	4 40.0 9.3 3.2	10 8.1
	3.	19 65.5 23.5 15.3	10 34.5 23.3 8.1	29 23.4
	4.	53 65.4 65.4 42.7	28 34.6 65.1 22.6	81 65.3
	Column total	81 65.3	43 34.7	124 100.0

Chi square = 0.29135 with 3 degrees of freedom
Significance = 0.9616

the frequency for use of the thinking strategies by administrators will differ significantly from the school administrator's ratings of the actual frequency of use of these same thinking strategies by administrators.

A Spearman Correlation Coefficient analysis revealed a significant correlation at the .01 level of significance between administrators and students of educational administration courses in ratings of frequency of use for the 25 thinking strategies; therefore, hypothesis 4 was rejected (see Table 2).

A Chi-square test comparing principals' ratings to the ratings by university students revealed significant differences for observation, listening, decision making, and evaluation at the .05 level. The four hypotheses were rejected. Demographic factors were analyzed. No other significant differences were found (Table 5).

Pearson's R Statistical Comparison of Frequency Ratings to Priority Ratings: High School Principals

Statistical analysis revealed in Table 2 that there was only one thinking strategy, leadership, that obtained no significance at the .05 level between frequency of use and importance ratings among principals. Upon closer statistical scrutiny (Pearson's R) it was discovered that for high school principals, four thinking strategies

Table 6.1 - Conceptualization

HI1	NEWGROUP PRINCIPAL	STUDENT	Row Total
1.	0 0.0 0.0 0.0	1 100.0 2.2 0.8	1 0.8
2.	6 100.0 7.4 4.8	0 0.0 0.0 0.0	6 4.8
3.	25 49.0 30.9 19.8	26 51.0 57.8 20.6	51 40.5
4.	50 73.5 61.7 39.7	18 26.5 40.0 14.3	68 54.0
Column Total	81 64.3	45 35.7	126 100.0

Chi square = 12.84096 with 3 degrees of freedom
Significance = 0.0050

Table 6.2 - Perception

HI2	NEWGROUP PRINCIPA	STUDENT	Row Total
1.	1 100.0 1.2 0.8	0 0.0 0.0 0.0	1 0.8
2.	1 20.0 1.2 0.8	4 80.0 8.9 3.2	5 4.0
3.	21 50.0 25.9 16.7	21 50.0 46.7 16.7	42 33.3
4.	58 74.4 71.6 46.0	20 25.6 44.4 15.9	78 61.9
Column Total	81 64.3	45 35.7	126 100.0

Chi square = 12.00729 with 3 degrees of freedom
Significance = 0.0074

Table 6.3 - Analysis

HI3	NEWGROUP PRINCIPAL	STUDENT	Row Total
2.	7 63.6 8.0 5.5	4 36.4 8.9 3.2	11 8.7
3.	34 65.4 42.0 27.0	18 34.6 40.0 14.3	52 41.3
4.	40 63.5 49.4 31.7	23 36.5 51.1 18.3	63 50.0
Column Total	81 64.3	45 35.7	126 100.0

Chi square = 0.04665 with 2 degrees of freedom
Significance = 0.9769

Table 6.4 - Synthesis

HI4	NEWGROUP PRINCIPAL	STUDENT	Row Total
	1.	2.	
1.	1 100.0 1.2 0.8	0 0.0 0.0 0.0	1 0.8
2.	10 83.3 12.3 7.9	2 16.7 4.4 1.6	12 9.5
3.	31 57.4 38.3 24.6	23 42.6 51.1 18.3	54 42.9
4.	39 66.1 48.1 31.0	20 33.9 44.4 15.9	59 46.8
Column Total	81 64.3	45 35.7	126 100.0

Chi square = 3.64935 with 3 degrees of freedom
Significance = 0.3019

Table 6.5 - Interpersonal Interaction

HI5	NEWGROUP PRINCIPA	STUDENT	Row Total
1.	1 100.0 1.2 0.8	0 0.0 0.0 0.0	1 0.8
2.	2 40.0 2.5 1.6	3 60.0 6.7 2.4	5 4.0
3.	14 70.0 17.3 11.1	6 30.0 13.3 4.8	20 15.9
4.	64 64.6 79.0 50.8	35 35.4 77.8 27.8	99 78.6
5.	0 0.0 0.0 0.0	1 100.0 2.2 0.8	1 0.8
Column Total	81 64.3	45 35.7	126 100.0

Chi square = 3.93006 with 4 degrees of freedom
Significance = 0.4156

Table 6.6 - Planning

HI6	NEWGROUP Count Row % Col % Total %	PRINCIPA STUDENT 1.	2.	Row Total
	2.	0 0.0 0.0 0.0	3 100.0 6.7 2.4	3 2.4
	3.	11 84.6 13.6 8.7	2 15.4 4.4 1.6	13 10.3
	4.	70 63.6 86.4 55.6	40 36.4 88.9 31.7	110 87.3
	Column Total	81 64.3	45 35.7	126 100.0

Chi square = 7.76037 with 2 degrees of freedom
Significance = 0.0206

Table 6.7 - Leadership

HI7	NEWGROUP Count Row % Col % Total %	PRINCIPA 1.	STUDENT 2.	Row Total
	3.	8 72.7 10.1 6.5	3 27.3 6.7 2.4	11 8.9
	4.	71 62.8 89.9 57.3	42 37.2 93.3 33.9	113 91.1
	Column Total	79 63.7	45 36.3	124 100.0

Chi square = 0.10442 with 1 degree of freedom
Significance = 0.7466

Table 6.8 - Reading

HI8	NEWGROUP Count Row % Col % Total %	PRINCIPAL 1.	STUDENT 2.	Row Total
	2.	5 55.6 6.3 4.0	4 44.4 8.9 3.2	9 7.3
	3.	21 63.6 26.6 16.9	12 36.4 26.7 9.7	33 26.6
	4.	53 64.6 67.1 42.7	29 35.4 64.4 23.4	82 66.1
	Column Total	79 63.7	45 36.3	124 100.0

Chi square = 0.28921 with 2 degrees of freedom
Significance = 0.8654

Table 6.9 - Observation

HI9	NEWGROUP Count Row % Col % Total %	PRINCIPAL	STUDENT	Row Total
		1.	2.	
	2.	2	1	3
		66.7	33.3	2.4
		2.5	2.2	
		1.6	0.8	
	3.	22	17	39
		56.4	43.6	31.5
		27.8	37.8	
		17.7	13.7	
	4.	55	27	82
		67.1	32.9	66.1
		69.6	60.0	
		44.4	21.8	
	Column Total	79 63.7	45 36.3	124 100.0

Chi square = 1.31134 with 2 degrees of freedom
Significance = 0.5191

Table 6.10 - Listening

HI10	NEWGROUP PRINCIPA STUDENT		Row Total
	1.	2.	
2.	2 100.0 2.5 1.6	0 0.0 0.0 0.0	2 1.6
3.	12 54.5 15.2 9.7	10 45.5 22.2 8.1	22 17.7
4.	65 65.0 82.3 52.4	35 35.0 77.8 28.2	100 80.6
Column Total	79 63.7	45 36.3	124 100.0

Chi square = 2.01038 with 2 degrees of freedom
Significance = 0.3660

Table 6.11 - Classification

HI11	NEWGROUP PRINCIPA	STUDENT	Row Total
	1.	2.	
1.	3 60.0 3.8 2.4	2 40.0 4.4 1.6	5 4.0
2.	12 52.2 15.2 9.7	11 47.8 24.4 8.9	23 18.5
3.	44 66.7 55.7 35.5	22 33.3 48.9 17.7	66 53.2
4.	20 66.7 25.3 16.1	10 33.3 22.2 8.1	30 24.2
Column Total	79 63.7	45 36.3	124 100.0

Chi square = 1.71662 with 3 degrees of freedom
Significance = 0.6332

Table 6.12 - Logical Relationships

HI12 \ NEWGROUP	PRINCIPAL	STUDENT	Row Total
Count / Row % / Col % / Total %	1.	2.	
1.	1 50.0 1.3 0.8	1 50.0 2.2 0.8	2 1.6
2.	9 50.0 11.4 7.3	9 50.0 20.0 7.3	18 14.5
3.	42 72.4 53.2 33.9	16 27.6 35.6 12.9	58 46.8
4.	27 58.7 34.2 21.8	19 41.3 42.2 15.3	46 37.1
Column Total	79 63.7	45 36.3	124 100.0

Chi square = 4.02663 with 3 degrees of freedom
Significance = 0.2586

Table 6.13 - Decision Making

HI13	NEWGROUP PRINCIPA	STUDENT	Row Total
Count / Row % / Col % / Total %	1.	2.	
2.	0 0.0 0.0 0.0	1 100.0 2.2 0.8	1 0.8
3.	2 25.0 2.5 1.6	6 75.0 13.3 4.8	8 6.5
4.	77 67.0 97.5 62.1	38 33.0 84.4 30.6	115 92.7
Column Total	79 63.7	45 36.3	124 100.0

Chi square = 7.46472 with 2 degrees of freedom
Significance = 0.0239

Table 6.14 - Advocacy

HI14	NEWGROUP PRINCIPA	STUDENT	Row Total
Count / Row % / Col % / Total %	1.	2.	
0.	0 0.0 0.0 0.0	1 100.0 2.3 0.8	1 0.8
1.	1 33.3 1.3 0.8	2 66.7 4.7 1.6	3 2.5
2.	16 59.3 20.3 13.1	11 40.7 25.6 9.0	27 22.1
3.	40 72.7 50.6 32.8	15 27.3 34.9 12.3	55 45.1
4.	22 61.1 27.8 18.0	14 38.9 32.6 11.5	36 29.5
Column Total	79 64.8	43 35.2	122 100.0

Chi square = 5.23341 with 4 degrees of freedom
Significance = 0.2642

Table 6.15 - Imagination

HI15	NEWGROUP PRINCIPA	STUDENT	Row Total
Count / Row % / Col % / Total %	1.	2.	
1.	2 100.0 2.5 1.6	0 0.0 0.0 0.0	2 1.6
2.	11 64.7 13.9 9.0	6 35.3 14.0 4.9	17 13.9
3.	35 71.4 44.3 28.7	14 28.6 32.6 11.5	49 40.2
4.	31 57.4 39.2 25.4	23 42.6 53.5 18.9	54 44.3
Column Total	79 64.8	43 35.2	122 100.0

Chi square = 3.32209 with 3 degrees of freedom
Significance = 0.3446

Table 6.16 - Organization

HI16	NEWGROUP PRINCIPAL	STUDENT	Row Total
1.	0 0.0 0.0 0.0	1 100.0 2.3 0.8	1 0.8
2.	1 100.0 1.3 0.8	0 0.0 0.0 0.0	1 0.8
3.	10 76.9 12.7 8.2	3 23.1 7.0 2.5	13 10.7
4.	68 63.6 86.1 55.7	39 36.4 90.7 32.0	107 87.7
Column Total	79 64.6	43 35.2	122 100.0

Chi square = 3.29281 with 3 degrees of freedom
Significance = 0.3486

Table 6.17 - Wisdom

HI17	NEWGROUP PRINCIPAL	STUDENT	Row Total
0.	0 0.0 0.0 0.0	1 100.0 2.3 0.8	1 0.8
2.	2 66.7 2.5 1.6	1 33.3 2.3 0.8	3 2.5
3.	17 70.8 21.5 13.9	7 29.2 16.3 5.7	24 19.7
4.	60 63.8 75.9 49.2	34 36.2 79.1 27.9	94 77.0
Column Total	79 64.8	43 35.2	122 100.0

Chi square = 2.26583 with 3 degrees of freedom
Significance = 0.5191

Table 6.18 - Idea Finding

HI18	NEWGROUP PRINCIPA STUDENT		Row Total
	1.	2.	
0.	0 0.0 0.0 0.0	1 100.0 2.3 0.8	1 0.8
1.	1 50.0 1.3 0.8	1 50.0 2.3 0.8	2 1.6
2.	11 73.3 13.9 9.0	4 26.7 9.3 3.3	15 12.3
3.	38 71.7 48.1 31.1	15 28.3 34.9 12.3	53 43.4
4.	29 56.9 36.7 23.8	22 43.1 51.2 18.0	51 41.8
Column Total	79 64.8	43 35.2	122 100.0

Chi square = 5.02300 with 4 degrees of freedom
Significance = 0.2849

Table 6.19 - Problem Solving

HI19	NEWGROUP PRINCIPA	STUDENT	Row Total
1.	1 100.0 1.3 0.8	0 0.0 0.0 0.0	1 0.8
2.	1 50.0 1.3 0.8	1 50.0 2.3 0.8	2 1.7
3.	13 65.0 16.7 10.7	7 35.0 16.3 5.8	20 16.5
4.	63 64.3 80.8 52.1	35 35.7 81.4 28.9	98 81.0
Column Total	78 64.5	43 35.5	121 100.0

Chi square = 0.73776 with 3 degrees of freedom
Significance = 0.8643

Table 6.20 - Evaluation

HI20	NEWGROUP PRINCIPA STUDENT		Row Total
	1.	2.	
1.	1 100.0 1.2 0.8	0 0.0 0.0 0.0	1 0.8
2.	3 60.0 3.7 2.4	2 40.0 4.5 1.6	5 4.0
3.	23 69.7 28.4 18.4	10 30.3 22.7 8.0	33 26.4
4.	54 62.8 66.7 43.2	32 37.2 72.7 25.6	86 68.8
Column Total	81 64.8	44 35.2	125 100.0

Chi square = 1.09287 with 3 degrees of freedom
Significance = 0.7788

Table 6.21 - Raising Questions

HI21	NEWGROUP PRINCIPA	STUDENT	Row Total
	1.	2.	
1.	4 80.0 3.9 3.2	1 20.0 2.3 0.8	5 4.0
2.	13 52.0 15.9 10.4	12 48.0 27.3 9.6	25 20.0
3.	41 74.5 50.6 32.8	14 25.5 31.8 11.2	55 44.0
4.	23 57.5 28.4 18.4	17 42.5 38.6 13.6	40 32.0
Column Total	81 64.8	44 35.2	125 100.0

Chi square = 5.52678 with 3 degrees of freedom
Significance = 0.1370

Table 6.22 - Initiating Defining, Reorganizing Structure

HI22	NEWGROUP PRINCIPA	STUDENT	Row Total
1.	3 75.0 3.7 2.4	1 25.0 2.3 0.8	4 3.2
2.	9 52.9 11.1 7.3	8 47.1 18.6 6.5	17 13.7
3.	33 63.5 40.7 26.6	19 36.5 44.2 15.3	52 41.9
4.	36 70.6 44.4 29.0	15 29.4 34.9 12.1	51 41.1
Column Total	81 65.3	43 34.7	124 100.0

Chi square = 2.01962 with 3 degrees of freedom
Significance = 0.5683

Table 6.23 - Meditation

HI23	NEWGROUP PRINCIPA STUDENT 1.	2.	Row Total
0.	0 0.0 0.0 0.0	1 100.0 2.3 0.8	1 0.8
1.	3 37.5 3.7 2.4	5 62.5 11.4 4.0	8 6.4
2.	12 50.0 14.8 9.6	12 50.0 27.3 9.6	24 19.2
3.	35 79.5 43.2 28.0	9 20.5 20.5 7.2	44 35.2
4.	31 64.6 38.3 24.8	17 35.4 38.6 13.6	48 38.4
Column Total	81 64.8	44 35.2	125 100.0

Chi square = 10.95478 with 4 degrees of freedom
Significance = 0.0271

Table 6.24 - Persuasion

HI24	NEWGROUP PRINCIPAL	STUDENT	Row Total
1.	1 25.0 1.2 0.8	3 75.0 6.8 2.4	4 3.2
2.	10 62.5 12.3 8.0	6 37.5 13.6 4.8	16 12.8
3.	29 70.7 35.8 23.2	12 29.3 27.3 9.6	41 32.8
4.	41 64.1 50.6 32.8	23 35.9 52.3 18.4	64 51.2
Column Total	81 64.8	44 35.2	125 100.0

Chi square = 3.46267 with 3 degrees of freedom
Significance = 0.3256

Table 6.25 - Memory

HI25	NEWGROUP PRINCIPA	STUDENT	Row Total
Count / Row % / Col % / Total %	1.	2.	
0.	0 0.0 0.0 0.0	1 100.0 2.3 0.8	1 0.8
1.	0 0.0 0.0 0.0	1 100.0 2.3 0.8	1 0.8
2.	6 85.7 7.4 4.8	1 14.3 2.3 0.8	7 5.6
3.	30 61.2 37.0 24.0	19 38.8 43.2 15.2	49 39.2
4.	45 67.2 55.6 36.0	22 32.8 50.0 17.6	67 53.6
Column Total	81 64.8	44 35.2	125 100.0

Chi square = 5.46298 with 4 degrees of freedom
Significance = 0.2430

(conceptualization, perception, planning, and problem solving) failed to produce significance at the .05 level. A comparison of rows 3 and 4 to columns 3 and 4 in Table 7 indicates eight thinking strategies received higher importance ratings than were received for frequency of use ratings. Logical relationships, imagination, organization, evaluation, persuasion, synthesis, wisdom and initiating, defining, and reorganizing structure required higher ratings for importance than the ratings for frequency of use. Observation and listening received higher ratings for frequency of use than the ratings for importance. This information is displayed in Table 7.

A Comparison of Frequency Ratings to Priority Ratings: Elementary Principals

A Pearson's R analysis revealed that elementary principals did not obtain significance at the .05 level of significance for decision making and leadership. Conceptualization and planning obtained significance at the .05 level of confidence. All other thinking strategies demonstrated significance at the .01 level of confidence. A comparison of rows 3 and 4 to columns 3 and 4 in Table 8 revealed that analysis, synthesis, classification, logical relationships, organization, idea

Table 7.1 - Conceptualization

H01	Count / Row % / Col % / Total %	H11 2.	3.	4.	Row Total
	1.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	2 100.0 11.1 6.5	2 6.5
	2.	3 42.9 75.0 9.7	3 42.9 33.3 9.7	1 14.3 5.6 3.2	7 22.6
	3.	1 7.1 25.0 3.2	4 28.6 44.4 12.9	9 64.3 50.0 29.0	14 45.2
	4.	0 0.0 0.0 0.0	2 25.0 22.2 6.5	6 75.0 33.3 19.4	8 25.8
	Column Total	4 12.9	9 29.0	18 58.1	31 100.0

Pearson's R = 0.28379 Significance = 0.0609

Table 7.2 - Perception

H02 \ H12	3.	4.	Row Total
2.	1 100.0 10.0 3.2	0 0.0 0.0 0.0	1 3.2
3.	4 40.0 40.0 12.9	6 60.0 28.6 19.4	10 32.3
4.	5 25.0 50.0 16.1	15 75.0 71.4 48.4	20 64.5
Column Total	10 32.3	21 67.7	31 100.0

Pearson's R = 0.26745 Significance = 0.0729

Table 7.3 - Analysis

H03 \ H13	2.	3.	4.	Row Total
1.	0 0.0 0.0 0.0	1 100.0 7.7 3.3	0 0.0 0.0 0.0	1 3.3
2.	1 14.3 50.0 3.3	4 57.1 30.8 13.3	2 28.6 13.3 6.7	7 23.3
3.	1 7.7 50.0 3.3	8 61.5 61.5 26.7	4 30.8 26.7 13.3	13 43.3
4.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	9 100.0 60.0 30.0	9 30.0
Column Total	2 6.7	13 43.3	15 50.0	30 100.0

Pearson's R = 0.53059 Significance = 0.0013

Table 7.4 - Synthesis

HO4 \ HI4 (Count / Row % / Col % / Total %)	2.	3.	4.	Row Total
1.	0 0.0 0.0 0.0	2 66.7 16.7 6.5	1 33.3 6.7 3.2	3 9.7
2.	2 40.0 50.0 6.5	1 20.0 8.3 3.2	2 40.0 13.3 6.5	5 16.1
3.	2 13.3 50.0 6.5	9 60.0 75.0 29.0	4 26.7 26.7 12.9	15 48.4
4.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	8 100.0 53.3 25.8	8 25.8
Column Total	4 12.9	12 38.7	15 48.4	31 100.0

Pearson's R = 0.36577 Significance = 0.0215

Table 7.5 - Interpersonal Interaction

H05 \ H15	1.	2.	3.	4.	Row Total
1.	1 100.0 100.0 3.3	0 0.0 0.0 0.0	0 0.0 0.0 0.0	0 0.0 0.0 0.0	1 3.3
3.	0 0.0 0.0 0.0	2 66.7 100.0 6.7	1 33.3 33.3 3.3	0 0.0 0.0 0.0	3 10.0
4.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	2 7.7 66.7 6.7	24 92.3 100.0 80.0	26 86.7
Column Total	1 3.3	2 6.7	3 10.0	24 80.0	30 100.0

Pearson's R = 0.89443 Significance = 0.0000

Table 7.6 - Planning

HO6 \ HI6	3.	4.	Row Total
2.	0	2	2
	0.0	100.0	6.5
	0.0	6.9	
	0.0	6.5	
3.	2	8	10
	20.0	80.0	32.3
	100.0	27.6	
	6.5	25.8	
4.	0	19	19
	0.0	100.0	61.3
	0.0	65.5	
	0.0	61.3	
Column Total	2	29	31
	6.5	93.5	100.0

Pearson's R = 0.23464 Significance = 0.1019

Table 7.7 - Leadership

H07 \ H17	3.	4.	Row Total
3.	1 20.0 50.0 3.2	4 80.0 13.8 12.9	5 16.1
4.	1 3.8 50.0 3.2	25 96.2 86.2 80.6	26 83.9
Column Total	2 6.5	29 93.5	31 100.0

Pearson's R = 0.24184 Significance = 0.0950

Table 7.8 - Reading

H08 \ HI8	2.	3.	4.	Row Total
2.	1 50.0 100.0 3.2	1 50.0 14.3 3.2	0 0.0 0.0 0.0	2 6.5
3.	0 0.0 0.0 0.0	4 50.0 57.1 12.9	4 50.0 17.4 12.9	8 25.8
4.	0 0.0 0.0 0.0	2 9.5 28.6 6.5	19 90.5 82.6 61.3	21 67.7
Column Total	1 3.2	7 22.6	23 74.2	31 100.0

Pearson's R = 0.66772 Significance = 0.0000

Table 7.9 - Observation

H09	Count / Row % / Col % / Total %	H19 3.	H19 4.	Row Total
	2.	1 100.0 10.0 3.2	0 0.0 0.0 0.0	1 3.2
	3.	5 71.4 50.0 16.1	2 28.6 9.5 6.5	7 22.6
	4.	4 17.4 40.0 12.9	19 82.6 90.5 61.3	23 74.2
	Column Total	10 32.3	21 67.7	31 100.0

Pearson's R = 0.54351 Significance 0.0008

Table 7.10 - Listening

H010 \ H110	Count / Row % / Col % / Total %	3.	4.	Row Total
3.		3	1	4
		75.0	25.0	12.9
		50.0	4.0	
		9.7	3.2	
4.		3	24	27
		11.1	88.9	87.1
		50.0	96.0	
		9.7	77.4	
Column Total		6	25	31
		19.4	80.6	100.0

Pearson's R = 0.54212 Significance 0.0008

Table 7.11 - Classification

HO11 \ HI11	2.	3.	4.	Row Total
1.	3 100.0 75.0 9.7	0 0.0 0.0 0.0	0 0.0 0.0 0.0	3 9.7
2.	1 50.0 25.0 3.2	1 50.0 5.0 3.2	0 0.0 0.0 0.0	2 6.5
3.	0 0.0 0.0 0.0	16 80.0 80.0 51.6	4 20.0 57.1 12.9	20 64.5
4.	0 0.0 0.0 0.0	3 50.0 15.0 9.7	3 50.0 42.9 9.7	6 19.4
Column Total	4 12.9	20 64.5	7 22.6	31 100.0

Pearson's R = 0.69876 Significance = 0.0000

Table 7.12 - Logical Relationships

H012 \ H112 (Count / Row % / Col % / Total %)	2.	3.	4.	Row Total
1.	0 0.0 0.0 0.0	1 100.0 5.9 3.2	0 0.0 0.0 0.0	1 3.2
2.	2 28.6 66.7 6.5	5 71.4 29.4 16.1	0 0.0 0.0 0.0	7 22.6
3.	1 6.7 33.3 3.2	10 66.7 58.8 32.3	4 26.7 36.4 12.9	15 48.4
4.	0 0.0 0.0 0.0	1 12.5 5.9 3.2	7 87.5 63.6 22.6	8 25.8
Column Total	3 9.7	17 54.8	11 35.5	31 100.0

Pearson's R = 0.61531 Significance = 0.0001

Table 7.13 - Decision Making

		HI13	
	Count Row % Col % Total %	4.	Row Total
HO13	3.	2 100.0 6.5 6.5	2 6.5
	4.	29 100.0 93.5 93.5	29 93.5
	Column Total	31 100.0	31 100.0

Statistics cannot be computed

Table 7.14 - Advocacy

H014 \ H114	1.	2.	3.	4.	Row Total
1.	1 25.0 100.0 3.3	2 50.0 40.0 6.7	1 25.0 6.7 3.3	0 0.0 0.0 0.0	4 13.3
2.	0 0.0 0.0 0.0	2 50.0 40.0 6.7	2 50.0 13.3 6.7	0 0.0 0.0 0.0	4 13.3
3.	0 0.0 0.0 0.0	1 8.3 20.0 3.3	9 75.0 60.0 30.0	2 16.7 22.2 6.7	12 40.0
4.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	3 30.0 20.0 10.0	7 70.0 77.8 23.3	10 33.3
Column Total	1 3.3	5 16.7	15 50.0	9 30.0	30 100.0

Pearson's R = 0.74170 Significance = 0.0000

Table 7.15 - Imagination

HO15 \ HI15 (Count / Row % / Col % / Total %)	2.	3.	4.	Row Total
1.	2 66.7 50.0 6.7	1 33.3 8.3 3.3	0 0.0 0.0 0.0	3 10.0
2.	2 33.3 50.0 6.7	2 33.3 16.7 6.7	2 33.3 14.3 6.7	6 20.0
3.	0 0.0 0.0 0.0	6 40.0 50.0 20.0	9 60.0 64.3 30.0	15 50.0
4.	0 0.0 0.0 0.0	3 50.0 25.0 10.0	3 50.0 21.4 10.0	6 20.0
Column Total	4 13.3	12 40.0	14 46.7	30 100.0

Pearson's R = 0.49216 Significance = 0.0029

Table 7.16 - Organization

H016	Count / Row % / Col % / Total %	H116 3.	H116 4.	Row Total
	1.	0 0.0 0.0 0.0	1 100.0 3.7 3.3	1 3.3
	2.	1 100.0 33.3 3.3	0 0.0 0.0 0.0	1 3.3
	3.	2 25.0 66.7 6.7	6 75.0 22.2 20.0	8 26.7
	4.	0 0.0 0.0 0.0	20 100.0 74.1 66.7	20 66.7
	Column Total	3 10.0	27 90.0	30 100.0

Pearson's R = 0.41917 Significance = 0.0106

Table 7.17 - Wisdom

H017	Count / Row % / Col % / Total %	H117 3.	H117 4.	Row Total
	2.	1 50.0 25.0 3.4	1 50.0 4.0 3.4	2 6.9
	3.	2 25.0 50.0 6.9	6 75.0 24.0 20.7	8 27.6
	4.	1 5.3 25.0 3.4	18 94.7 72.0 62.1	19 65.5
	Column Total	4 13.8	25 86.2	29 100.0

Pearson's R = 0.38013 Significance = 0.0210

Table 7.18 - Idea Finding

H018	HI18 Count / Row % / Col % / Total %	2.	3.	4.	Row Total
	1.	3	1	0	4
		75.0	25.0	0.0	13.3
		60.0	8.3	0.0	
		10.0	3.3	0.0	
	2.	2	2	2	6
		33.3	33.3	33.3	20.0
		40.0	16.7	15.4	
		6.7	6.7	6.7	
	3.	0	8	6	14
		0.0	57.1	42.9	46.7
		0.0	66.7	46.2	
		0.0	26.7	20.0	
	4.	0	1	5	6
		0.0	16.7	83.3	20.0
		0.0	8.3	38.5	
		0.0	3.3	16.7	
	Column Total	5	12	13	30
		16.7	40.0	43.3	100.0

Pearson's R = 0.64828 Significance = 0.0001

Table 7.19 - Problem Solving

HO19	Count / Row % / Col % / Total %	HI19 3.	HI19 4.	Row Total
	3.	2 18.2 66.7 6.7	9 81.8 33.3 30.0	11 36.7
	4.	1 5.3 33.3 3.3	18 94.7 66.7 60.0	19 63.3
	Column Total	3 10.0	27 90.0	30 100.0

Pearson's R = 0.20751 Significance = 0.1356

Table 7.20 - Evaluation

4020	Count / Row % / Col % / Total %	HI20 3.	HI20 4.	Row Total
	2.	2 100.0 28.6 6.5	0 0.0 0.0 0.0	2 6.5
	3.	5 31.3 71.4 16.1	11 68.8 45.8 35.5	16 51.6
	4.	0 0.0 0.0 0.0	13 100.0 54.2 41.9	13 41.9
	Column Total	7 22.6	24 77.4	31 100.0

Pearson's R = 0.57820 Significance = 0.0003

Table 7.21 - Raising Questions

H021 \ H121 (Count / Row % / Col % / Total %)	1.	2.	3.	4.	Row Total
1.	2 100.0 100.0 6.5	0 0.0 0.0 0.0	0 0.0 0.0 0.0	0 0.0 0.0 0.0	2 6.5
2.	0 0.0 0.0 0.0	3 75.0 100.0 9.7	1 25.0 6.3 3.2	0 0.0 0.0 0.0	4 12.9
3.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	14 82.4 87.5 45.2	3 17.6 30.0 9.7	17 54.8
4.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	1 12.5 6.3 3.2	7 87.5 70.0 22.6	8 25.8
Column Total	2 6.5	3 9.7	16 51.6	10 32.3	31 100.0

Pearson's R = 0.88444 Significance = 0.0000

Table 7.22 - Initiating, Defining, Reorganizing Structure

H022	Count / Row % / Col % / Total %	H122 1.	3.	4.	Row Total
	1.	1 33.3 100.0 3.2	1 33.3 7.1 3.2	1 33.3 6.3 3.2	3 9.7
	2.	0 0.0 0.0 0.0	1 20.0 7.1 3.2	4 80.0 25.0 12.9	5 16.1
	3.	0 0.0 0.0 0.0	12 75.0 85.7 38.7	4 25.0 25.0 12.9	16 51.6
	4.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	7 100.0 43.8 22.6	7 22.6
	Column Total	1 3.2	14 45.2	16 51.6	31 100.0

Pearson's R =0.37978 Significance = 0.0175

Table 7.23 - Meditation

H023 \ H123 (Count / Row % / Col % / Total %)	1.	2.	3.	4.	Row Total
1.	1 50.0 100.0 3.2	0 0.0 0.0 0.0	1 50.0 7.1 3.2	0 0.0 0.0 0.0	2 6.5
2.	0 0.0 0.0 0.0	2 28.6 66.7 6.5	3 42.9 21.4 9.7	2 28.6 15.4 6.5	7 22.6
3.	0 0.0 0.0 0.0	1 9.1 33.3 3.2	5 45.5 35.7 16.1	5 45.5 38.5 16.1	11 35.5
4.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	5 45.5 35.7 16.1	6 54.5 46.2 19.4	11 35.5
Column Total	1 3.2	3 9.7	14 45.2	13 41.9	31 100.0

Pearson's R = 0.46308 Significance = 0.0044

Table 7.24 - Persuasion

HO24 \ HI24 (Count / Row % / Col % / Total %)	2.	3.	4.	Row Total
1.	1 33.3 50.0 3.2	0 0.0 0.0 0.0	2 66.7 11.8 6.5	3 9.7
2.	1 16.7 50.0 3.2	4 66.7 33.3 12.9	1 16.7 5.9 3.2	6 19.4
3.	0 0.0 0.0 0.0	7 53.8 58.3 22.6	6 46.2 35.3 19.4	13 41.9
4.	0 0.0 0.0 0.0	1 11.1 8.3 3.2	8 88.9 47.1 25.8	9 29.0
Column Total	2 6.5	12 38.7	17 54.8	31 100.0

Pearson's R = 0.42077 Significance = 0.0092

Table 7.25 - Memory

H025	Count / Row % / Col % / Total %	H125 2.	3.	4.	Row Total
	1.	0	1	0	1
		0.0	100.0	0.0	3.2
		0.0	6.7	0.0	
		0.0	3.2	0.0	
	2.	0	2	0	2
		0.0	100.0	0.0	6.5
		0.0	13.3	0.0	
		0.0	6.5	0.0	
	3.	1	10	2	13
		7.7	76.9	15.4	41.9
		100.0	66.7	13.3	
		3.2	32.3	6.5	
	4.	0	2	13	15
		0.0	13.3	86.7	48.4
		0.0	13.3	86.7	
		0.0	6.5	41.9	
	Column Total	1 3.2	15 48.4	15 48.4	31 100.0

Pearson's R = 0.62445 Significance = 0.0001

finding, initiating, defining and reorganizing structure, meditation, and memory received higher importance ratings than the ratings for frequency of use ratings. It should be noted that listening was close to the .05 level of significance (.055). This information can be found in Table 8.

Chi-square Test for Significance for Three Groups

When all principals and students were compared relative to importance ratings, a significant difference was revealed on six thinking strategies (see Table 5). In contrast, when the sample was dissected into three groups (high school principals, elementary principals, and university students), the data revealed only two thinking strategies with Chi-square significance at the .05 level (perception and planning). All other thinking strategies were found to have no significant differences. A comparison of rows to columns in Table 9 reveal that perception and planning were given higher importance ratings by high school principals than by university students.

Relative to frequency of use among the three groups, there were no significant differences on any thinking strategies. This information is delineated in Table 10.

Table 8.1 - Conceptualization

HO1	Count / Row % / Col % / Total %	HI1 2.	3.	4.	Row Total
	1.	0 0.0 0.0 0.0	2 50.0 13.3 4.2	2 50.0 6.5 4.2	4 8.3
	2.	1 14.3 50.0 2.1	1 14.3 6.7 2.1	5 71.4 16.1 10.4	7 14.6
	3.	1 5.3 50.0 2.1	10 52.6 66.7 20.8	8 42.1 25.8 16.7	19 39.6
	4.	0 0.0 0.0 0.0	2 11.1 13.3 4.2	16 88.9 51.6 33.3	18 37.5
	Column Total	2 4.2	15 31.3	31 64.6	48 100.0

Pearson's R = 0.24618 Significance = 0.0458

Table 8.2 - Perception

Count / Row % / Col % / Total %	1.	2.	3.	4.	Row Total
1.	1 33.3 100.0 2.0	0 0.0 0.0 0.0	2 66.7 18.2 4.1	0 0.0 0.0 0.0	3 6.1
2.	0 0.0 0.0 0.0	1 33.3 100.0 2.0	2 66.7 18.2 4.1	0 0.0 0.0 0.0	3 6.1
3.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	2 33.3 18.2 4.1	4 66.7 11.1 8.2	6 12.2
4.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	5 13.5 45.5 10.2	32 86.5 88.9 65.3	37 75.5
Column Total	1 2.0	1 2.0	11 22.4	36 73.5	49 100.0

Pearson's R = 0.69784 Significance = 0.0000

Table 8.3 - Analysis

H03 \ H13	2.	3.	4.	Row Total
1.	1 16.7 20.0 2.0	4 66.7 19.0 8.2	1 16.7 4.3 2.0	6 12.2
2.	3 27.3 60.0 6.1	5 45.5 23.8 10.2	3 27.3 13.0 6.1	11 22.4
3.	1 5.0 20.0 2.0	10 50.0 47.6 20.4	9 45.0 39.1 18.4	20 40.8
4.	0 0.0 0.0 0.0	2 16.7 9.5 4.1	10 83.3 43.5 20.4	12 24.5
Column Total	5 10.2	21 42.9	23 46.9	49 100.0

Pearson's R = 0.45497 Significance = 0.0005

Table 8.4 - Synthesis

H04 \ H14 (Count / Row % / Col % / Total %)	1.	2.	3.	4.	Row Total
1.	1 25.0 100.0 2.0	1 25.0 16.7 2.0	1 25.0 5.6 2.0	1 25.0 4.2 2.0	4 8.2
2.	0 0.0 0.0 0.0	3 25.0 50.0 6.1	3 25.0 16.7 6.1	6 50.0 25.0 12.2	12 24.5
3.	0 0.0 0.0 0.0	2 12.5 33.3 4.1	11 68.8 61.1 22.4	3 18.8 12.5 6.1	16 32.7
4.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	3 17.6 16.7 6.1	14 82.4 58.3 28.6	17 34.7
Column Total	1 2.0	6 12.2	18 36.7	24 49.0	49 100.0

Pearson's R = 0.44498 Significance = 0.0007

Table 8.5 - Interpersonal Interaction

H05 \ H15	3.	4.	Row Total
2.	1 33.3 9.1 2.0	2 66.7 5.3 4.1	3 6.1
3.	6 66.7 54.5 12.2	3 33.3 7.9 6.1	9 18.4
4.	4 10.8 36.4 8.2	33 89.2 86.8 67.3	37 75.5
Column Total	11 22.4	38 77.6	49 100.0

Pearson's R = 0.39157 Significance = 0.0027

Table 8.6 - Planning

H06 \ H16	3.	4.	Row Total
1.	0 0.0 0.0 0.0	1 100.0 2.5 2.0	1 2.0
2.	1 33.3 11.1 2.0	2 66.7 5.0 4.1	3 6.1
3.	7 30.4 77.8 14.3	16 69.6 40.0 32.7	23 46.9
4.	1 4.5 11.1 2.0	21 95.5 52.5 42.9	22 44.9
Column Total	9 18.4	40 81.6	49 100.0

Pearson's R = 0.23967 Significance = 0.0486

Table 8.7 - Leadership

H07 \ H17	3.	4.	Row Total
2.	0	2	2
	0.0	100.0	4.2
	0.0	4.8	
	0.0	4.2	
3.	3	8	11
	27.3	72.7	22.9
	50.0	19.0	
	6.3	16.7	
4.	3	32	35
	8.6	91.4	72.9
	50.0	76.2	
	6.3	66.7	
Column Total	6	42	48
	12.5	87.5	100.0

Pearson's R = 0.12978 Significance = 0.1897

Table 8.8 - Reading

HO8 \ HI8	2.	3.	4.	Row Total
1.	1 100.0 25.0 2.1	0 0.0 0.0 0.0	0 0.0 0.0 0.0	1 2.1
2.	1 33.3 25.0 2.1	2 66.7 14.3 4.2	0 0.0 0.0 0.0	3 6.3
3.	1 9.1 25.0 2.1	6 54.5 42.9 12.5	4 36.4 13.3 8.3	11 22.9
4.	1 3.0 25.0 2.1	6 18.2 42.9 12.5	26 78.8 86.7 54.2	33 68.8
Column Total	4 8.3	14 29.2	30 62.5	48 100.0

Pearson's R = 0.59110 Significance = 0.0000

Table 8.9 - Observation

H09 \ H19	2.	3.	4.	Row Total
2.	0 0.0 0.0 0.0	1 100.0 8.3 2.1	0 0.0 0.0 0.0	1 2.1
3.	1 14.3 50.0 2.1	5 71.4 41.7 10.4	1 14.3 2.9 2.1	7 14.6
4.	1 2.5 50.0 2.1	6 15.0 50.0 12.5	33 82.5 97.1 68.8	40 83.3
Column Total	2 4.2	12 25.0	34 70.8	48 100.0

Pearson's R = 0.51340 Significance = 0.0001

Table 8.10 - Listening

HO10	Count / Row % / Col % / Total %	HI10 2.	3.	4.	Row Total
	3.	0 0.0 0.0 0.0	2 66.7 33.3 4.3	1 33.3 2.6 2.1	3 6.4
	4.	2 4.5 100.0 4.3	4 9.1 66.7 8.5	38 86.4 97.4 80.9	44 93.6
	Column Total	2 4.3	6 12.8	39 83.0	47 100.0

Pearson's R = 0.23582 Significance = 0.0553

Table 8.11 - Classification

H011	Count / Row % / Col % / Total %	H111 1.	2.	3.	4.	Row Total
	1.	2	2	3	1	8
		25.0	25.0	37.5	12.5	16.7
		66.7	25.0	12.5	7.7	
		4.2	4.2	6.3	2.1	
	2.	1	3	7	3	14
		7.1	21.4	50.0	21.4	29.2
		33.3	37.5	29.2	23.1	
		2.1	6.3	14.6	6.3	
	3.	0	3	11	2	16
		0.0	18.8	68.8	12.5	33.3
		0.0	37.5	45.8	15.4	
		0.0	6.3	22.9	4.2	
	4.	0	0	3	7	10
		0.0	0.0	30.0	70.0	20.8
		0.0	0.0	12.5	53.8	
		0.0	0.0	6.3	14.6	
	Column Total	3	8	24	13	48
		6.3	16.7	50.0	27.1	100.0

Pearson's R = 0.46870 Significance = 0.0004

Table 8.12 - Logical Relationships

H012	Count / Row % / Col % / Total %	H112 1.	2.	3.	4.	Row Total
	1.	1	0	4	0	5
		20.0	0.0	80.0	0.0	10.4
		100.0	0.0	16.0	0.0	
		2.1	0.0	8.3	0.0	
	2.	0	3	7	1	11
		0.0	27.3	63.6	9.1	22.9
		0.0	50.0	28.0	6.3	
		0.0	6.3	14.6	2.1	
	3.	0	3	12	6	21
		0.0	14.3	57.1	28.6	43.8
		0.0	50.0	48.0	37.5	
		0.0	6.3	25.0	12.5	
	4.	0	0	2	9	11
		0.0	0.0	18.2	81.8	22.9
		0.0	0.0	8.0	56.3	
		0.0	0.0	4.2	18.8	
	Column Total	1	6	25	16	48
		2.1	12.5	52.1	33.3	100.0

Pearson's R = 0.53115 Significance = 0.0001

Table 8.13 - Decision Making

H013	Count / Row % / Col % / Total %	H113 3.	H113 4.	Row Total
	2.	0 0.0 0.0 0.0	1 100.0 2.2 2.1	1 2.1
	3.	1 33.3 50.0 2.1	2 66.7 4.3 4.2	3 6.3
	4.	1 2.3 50.0 2.1	43 97.7 93.5 89.6	44 91.7
	Column Total	2 4.2	46 95.8	48 100.0

Pearson's R = 0.22465 Significance = 0.0624

Table 8.14 - Advocacy

HO14	Count / Row % / Col % / Total %	H114 2.	3.	4.	Row Total
	1.	3	2	1	6
		50.0	33.3	16.7	12.2
		27.3	8.0	7.7	
		6.1	4.1	2.0	
	2.	5	5	0	10
		50.0	50.0	0.0	20.4
		45.5	20.0	0.0	
		10.2	10.2	0.0	
	3.	3	12	2	17
		17.6	70.6	11.8	34.7
		27.3	48.0	15.4	
		6.1	24.5	4.1	
	4.	0	6	10	16
		0.0	37.5	62.5	32.7
		0.0	24.0	76.9	
		0.0	12.2	20.4	
	Column Total	11	25	13	49
		22.4	51.0	26.5	100.0

Pearson's R = 0.56063 Significance = 0.0000

Table 8.15 - Imagination

H015	H115 Count / Row % / Col % / Total %	1.	2.	3.	4.	Row Total
	1.	1	3	4	0	8
		12.5	37.5	50.0	0.0	16.3
		50.0	42.9	17.4	0.0	
		2.0	6.1	8.2	0.0	
	2.	0	4	6	2	12
		0.0	33.3	50.0	16.7	24.5
		0.0	57.1	26.1	11.8	
		0.0	8.2	12.2	4.1	
	3.	0	0	12	6	18
		0.0	0.0	66.7	33.3	36.7
		0.0	0.0	52.2	35.3	
		0.0	0.0	24.5	12.2	
	4.	1	0	1	9	11
		9.1	0.0	9.1	81.8	22.4
		50.0	0.0	4.3	52.9	
		2.0	0.0	2.0	18.4	
	Column Total	2	7	23	17	49
		4.1	14.3	46.9	34.7	100.0

Pearson's R = 0.53805 Significance = 0.0000

Table 8.16 - Organization

H016 \ H116	2.	3.	4.	Row Total
1.	1 33.3 100.0 2.0	0 0.0 0.0 0.0	2 66.7 4.9 4.1	3 6.1
2.	0 0.0 0.0 0.0	1 25.0 14.3 2.0	3 75.0 7.3 6.1	4 8.2
3.	0 0.0 0.0 0.0	5 29.4 71.4 10.2	12 70.6 29.3 24.5	17 34.7
4.	0 0.0 0.0 0.0	1 4.0 14.3 2.0	24 96.0 58.5 49.0	25 51.0
Column Total	1 2.0	7 14.3	41 83.7	49 100.0

Pearson's R = 0.36618 Significance = 0.0048

Table 8.17 - Wisdom

4017 \ H117	2.	3.	4.	Row Total
2.	1 100.0 50.0 2.0	0 0.0 0.0 0.0	0 0.0 0.0 0.0	1 2.0
3.	1 7.7 50.0 2.0	4 30.8 33.3 8.2	8 61.5 22.9 16.3	13 26.5
4.	0 0.0 0.0 0.0	8 22.9 66.7 16.3	27 77.1 77.1 55.1	35 71.4
Column Total	2 4.1	12 24.5	35 71.4	49 100.0

Pearson's R = 0.37681 Significance = 0.0038

Table 8.18 - Idea Finding

Count / Row % / Col % / Total %	1.	2.	3.	4.	Row Total
1.	0 0.0 0.0 0.0	1 14.3 16.7 2.0	6 85.7 23.1 12.2	0 0.0 0.0 0.0	7 14.3
2.	1 7.1 100.0 2.0	5 35.7 83.3 10.2	7 50.0 26.9 14.3	1 7.1 6.3 2.0	14 28.6
3.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	11 55.0 42.3 22.4	9 45.0 56.3 18.4	20 40.8
4.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	2 25.0 7.7 4.1	6 75.0 37.5 12.2	8 16.3
Column Total	1 2.0	6 12.2	26 53.1	16 32.7	49 100.0

Pearson's R = 0.53716 Significance = 0.0000

Table 8.19 - Problem Solving

H019	Count / Row % / Col % / Total %	H119 1.	2.	3.	4.	Row Total
	2.	1	0	2	2	5
		20.0	0.0	40.0	40.0	10.4
		100.0	0.0	20.0	5.6	
		2.1	0.0	4.2	4.2	
	3.	0	0	3	5	8
		0.0	0.0	37.5	62.5	16.7
		0.0	0.0	30.0	13.9	
		0.0	0.0	6.3	10.4	
	4.	0	1	5	29	35
		0.0	2.9	14.3	82.9	72.9
		0.0	100.0	50.0	80.6	
		0.0	2.1	10.4	60.4	
	Column Total	1	1	10	36	48
		2.1	2.1	20.8	75.0	100.0

Pearson's R = 0.37386 Significance = 0.0044

Table 8.20 - Evaluation

H020 \ H120	1.	2.	3.	4.	Row Total
1.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	1 100.0 6.3 2.0	0 0.0 0.0 0.0	1 2.0
2.	0 0.0 0.0 0.0	1 25.0 33.3 2.0	1 25.0 6.3 2.0	2 50.0 6.9 4.1	4 8.2
3.	0 0.0 0.0 0.0	2 9.5 66.7 4.1	11 52.4 68.8 22.4	8 38.1 27.6 16.3	21 42.9
4.	1 4.3 100.0 2.0	0 0.0 0.0 0.0	3 13.0 18.8 6.1	19 82.6 65.5 38.8	23 46.9
Column Total	1 2.0	3 6.1	16 32.7	29 59.2	49 100.0

Pearson's R = 0.31105 Significance = 0.0148

Table 8.21 - Raising Questions

H021 \ H121 (Count / Row % / Col % / Total %)	1.	2.	3.	4.	Row Total
1.	1 16.7 50.0 2.0	1 16.7 10.0 2.0	4 66.7 16.7 8.2	0 0.0 0.0 0.0	6 12.2
2.	1 8.3 50.0 2.0	8 66.7 80.0 16.3	1 8.3 4.2 2.0	2 16.7 15.4 4.1	12 24.5
3.	0 0.0 0.0 0.0	1 5.9 10.0 2.0	13 76.5 54.2 26.5	3 17.6 23.1 6.1	17 34.7
4.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	6 42.9 25.0 12.2	8 57.1 61.5 16.3	14 28.6
Column Total	2 4.1	10 20.4	24 49.0	13 26.5	49 100.0

Pearson's R = 0.56546 Significance = 0.0000

Table 8.22 - Initiating, Defining, Reorganizing Structure

Q022 \ Q122 (Count / Row % / Col % / Total %)	1.	2.	3.	4.	Row Total
0.	1 100.0 50.0 2.0	0 0.0 0.0 0.0	0 0.0 0.0 0.0	0 0.0 0.0 0.0	1 2.0
1.	1 5.9 50.0 2.0	2 11.8 22.2 4.1	11 64.7 57.9 22.4	3 17.6 15.8 6.1	17 34.7
2.	0 0.0 0.0 0.0	4 57.1 44.4 8.2	1 14.3 5.3 2.0	2 28.6 10.5 4.1	7 14.3
3.	0 0.0 0.0 0.0	2 11.8 22.2 4.1	7 41.2 36.8 14.3	8 47.1 42.1 16.3	17 34.7
4.	0 0.0 0.0 0.0	1 14.3 11.1 2.0	0 0.0 0.0 0.0	6 85.7 31.6 12.2	7 14.3
Column Total	2 4.1	9 18.4	19 38.8	19 38.8	49 100.0

Pearson's R = 0.41415 Significance = 0.0015

Table 8.23 - Meditation

H023	H123				
Count / Row % / Col % / Total %	1.	2.	3.	4.	Row Total
1.	2 50.0 100.0 4.1	2 50.0 22.2 4.1	0 0.0 0.0 0.0	0 0.0 0.0 0.0	4 8.2
2.	0 0.0 0.0 0.0	6 40.0 66.7 12.2	4 26.7 20.0 8.2	5 33.3 27.8 10.2	15 30.6
3.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	14 70.0 70.0 28.6	6 30.0 33.3 12.2	20 40.8
4.	0 0.0 0.0 0.0	1 10.0 11.1 2.0	2 20.0 10.0 4.1	7 70.0 38.9 14.3	10 20.4
Column Total	2 4.1	9 18.4	20 40.8	18 36.7	49 100.0

Pearson's R = 0.56482 Significance = 0.0000

Table 8.24 - Persuasion

H024	Count / Row % / Col % / Total %	H124 1.	2.	3.	4.	Row Total
	1.	1 16.7 100.0 2.0	3 50.0 37.5 6.1	1 16.7 5.9 2.0	1 16.7 4.3 2.0	6 12.2
	2.	0 0.0 0.0 0.0	3 33.3 37.5 6.1	3 33.3 17.6 6.1	3 33.3 13.0 6.1	9 18.4
	3.	0 0.0 0.0 0.0	2 10.0 25.0 4.1	9 45.0 52.9 18.4	9 45.0 39.1 18.4	20 40.8
	4.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	4 28.6 23.5 8.2	10 71.4 43.5 20.4	14 28.6
	Column Total	1 2.0	8 16.3	17 34.7	23 46.9	49 100.0

Pearson's R = 0.52123 Significance = 0.0001

Table 8.25 - Memory

H025	Count / Row % / Col % / Total %	2.	3.	4.	Row Total
	1.	1 50.0 20.0 2.0	1 50.0 6.7 2.0	0 0.0 0.0 0.0	2 4.0
	2.	0 0.0 0.0 0.0	3 75.0 20.0 6.0	1 25.0 3.3 2.0	4 8.0
	3.	2 33.3 40.0 4.0	2 33.3 13.3 4.0	2 33.3 6.7 4.0	6 12.0
	4.	2 5.3 40.0 4.0	9 23.7 60.0 18.0	27 71.1 90.0 54.0	38 76.0
	Column Total	5 10.0	15 30.0	30 60.0	50 100.0

Pearson's R = 0.40995 Significance = 0.0016

Table 9.1 - Conceptualization

GROUP	Count / Row % / Col % / Total %	1.	2.	3.	4.	Row Total
		h11				
HIGH SCHOOL	1.	0	4	9	16	31
		0.0	12.9	29.0	58.1	24.6
		0.0	66.7	17.6	26.5	
		0.0	3.2	7.1	14.3	
ELEMENTARY	2.	0	2	16	32	50
		0.0	4.0	32.0	64.0	39.7
		0.0	33.3	31.4	47.1	
		0.0	1.6	12.7	25.4	
TWO	3.	1	0	26	18	45
		2.2	0.0	57.8	40.0	35.7
		100.0	0.0	51.0	26.5	
		0.8	0.0	20.6	14.3	
	Column Total	1	6	51	68	126
		0.8	4.8	40.5	54.0	100.0

Chi square = 16.19289 with 6 degrees of freedom
Significance = 0.0128

Table 9.2 - Perception

GROUP	Count / Row % / Col % / Total %	1.	2.	3.	4.	Row Total
		H12				
HIGH SCHOOL	1.	0	0	10	21	31
		0.0	0.0	32.3	67.7	24.6
		0.0	0.0	23.8	26.9	
		0.0	0.0	7.9	16.7	
ELEMENTARY	2.	1	1	11	37	50
		2.0	2.0	22.0	74.0	39.7
		100.0	20.0	26.2	47.4	
		0.8	0.8	8.7	29.4	
TWO	3.	0	4	21	20	45
		0.0	8.9	46.7	44.4	35.7
		0.0	80.0	50.0	25.6	
		0.0	3.2	16.7	15.9	
	Column Total	1	5	42	78	126
		0.8	4.0	33.3	61.9	100.0

Chi square = 13.88977 with 6 degrees of freedom
Significance = 0.0309

Table 9.3 - Analysis

GROUP	Count / Row % / Col % / Total %	H13 2.	3.	4.	Row Total
HIGH SCHOOL	1.	2 6.5 18.2 1.6	13 41.9 25.0 10.3	16 51.6 25.4 12.7	31 24.6
ELEMENTARY	2.	5 10.0 45.5 4.0	21 42.0 40.4 16.7	24 48.0 38.1 19.0	50 39.7
TWO	3.	4 8.9 36.4 3.2	18 40.0 34.6 14.3	23 51.1 36.5 18.3	45 35.7
	Column Total	11 8.7	52 41.3	63 50.0	126 100.0

Chi square = 0.37262 with 4 degrees of freedom
Significance = 0.9847

Table 9.4 - Synthesis

GROUP	Count / Row % / Col % / Total %	H14 1.	2.	3.	4.	Row Total
HIGH SCHOOL	1.	0	4	12	15	31
		0.0	12.9	38.7	48.4	24.6
		0.0	33.3	22.2	25.4	
		0.0	3.2	9.5	11.9	
ELEMENTARY	2.	1	6	19	24	50
		2.0	12.0	38.0	48.0	39.7
		100.0	50.0	35.2	40.7	
		0.8	4.8	15.1	19.0	
TWO	3.	0	2	23	20	45
		0.0	4.4	51.1	44.4	35.7
		0.0	16.7	42.6	33.9	
		0.0	1.6	18.3	15.9	
	Column Total	1	12	54	59	126
		0.8	9.5	42.9	46.8	100.0

Chi square = 4.63305 with 6 degrees of freedom
Significance = 0.5917

Table 9.5 - Interpersonal Interaction

GROUP	Count / Row % / Col % / Total %	1.	2.	3.	4.	5.	Row Total
		N15					
HIGH SCHOOL	1.	1	2	3	25	0	31
		3.2	6.5	9.7	80.6	0.0	24.6
		100.0	40.0	15.0	25.3	0.0	
		0.8	1.6	2.4	19.8	0.0	
ELEMENTARY	2.	0	0	11	39	0	50
		0.0	0.0	22.0	78.0	0.0	39.7
		0.0	0.0	55.0	39.4	0.0	
		0.0	0.0	8.7	31.0	0.0	
TWO	3.	0	3	6	35	1	45
		0.0	6.7	13.3	77.8	2.2	35.7
		0.0	60.0	30.0	35.4	100.0	
		0.0	2.4	4.8	27.8	0.8	
	Column Total	1	5	20	99	1	126
		0.8	4.0	15.9	78.6	0.8	100.0

Chi square = 10.29381 with 8 degrees of freedom
Significance = 0.2450

Table 9.6 - Planning

GROUP	Count / Row % / Col % / Total %	H16 2.	3.	4.	Row Total
HIGH SCHOOL	1.	0 0.0 0.0 0.0	2 6.5 15.4 1.6	29 93.5 26.4 23.0	31 24.6
ELEMENTARY	2.	0 0.0 0.0 0.0	9 18.0 69.2 7.1	41 82.0 37.3 32.5	50 39.7
TWO	3.	3 6.7 100.0 2.4	2 4.4 15.4 1.6	40 88.9 36.4 31.7	45 35.7
	Column Total	3 2.4	13 10.3	110 87.3	126 100.0

Chi square = 10.52623 with 4 degrees of freedom
Significance = 0.0324

Table 9.7 - Leadership

GROUP	Count / Row % / Col % / Total %	H17 3.	H17 4.	Row Total
HIGH SCHOOL	1.	2	29	31
		6.5	93.5	25.0
		18.2	25.7	
		1.6	23.4	
ELEMENTARY	2.	6	42	48
		12.5	87.5	38.7
		54.5	37.2	
		4.8	33.9	
TWO	3.	3	42	45
		6.7	93.3	36.3
		27.3	37.2	
		2.4	33.9	
	Column Total	11	113	124
		8.9	91.1	100.0

Chi square = 1.27691 with 2 degrees of freedom
Significance = 0.5281

Table 9.8 - Reading

GROUP	Count / Row % / Col % / Total %	N18 2.	3.	4.	Row Total
HIGH SCHOOL	1.	1 3.2 11.1 0.8	7 22.6 21.2 5.6	23 74.2 28.0 18.5	31 25.0
ELEMENTARY	2.	4 8.3 44.4 3.2	14 29.2 42.4 11.3	30 62.5 36.6 24.2	48 38.7
TWO	3.	4 8.9 44.4 3.2	12 26.7 36.4 9.7	29 64.4 35.4 23.4	45 36.3
	Column Total	9 7.3	33 26.6	82 66.1	124 100.0

Chi square = 1.66266 with 4 degrees of freedom
Significance = 0.7975

Table 9.9 - Observation

GROUP	Count / Row % / Col % / Total %	H19 2.	3.	4.	Row Total
HIGH SCHOOL	1.	0 0.0 0.0 0.0	10 32.3 25.6 8.1	21 67.7 25.6 16.9	31 25.0
ELEMENTARY	2.	2 4.2 66.7 1.6	12 25.0 30.8 9.7	34 70.8 41.5 27.4	48 38.7
TWO	3.	1 2.2 33.3 0.8	17 37.8 43.6 13.7	27 60.0 32.9 21.8	45 36.3
	Column Total	3 2.4	39 31.5	82 66.1	124 100.0

Chi square = 3.00566 with 4 degrees of freedom
Significance = 0.5569

Table 9.10 - Listening

GROUP	Count / Row % / Col % / Total %	H110 2.	3.	4.	Row Total
HIGH SCHOOL	1.	0 0.0 0.0 0.0	6 19.4 27.3 4.8	25 80.6 25.0 20.2	31 25.0
ELEMENTARY	2.	2 4.2 100.0 1.6	6 12.5 27.3 4.8	40 83.3 40.0 32.3	48 38.7
TWO	3.	0 0.0 0.0 0.0	10 22.2 45.5 8.1	35 77.8 35.0 28.2	45 36.3
	Column Total	2 1.6	22 17.7	100 80.6	124 100.0

Chi square = 4.55354 with 4 degrees of freedom
Significance = 0.3362

Table 9.11 - Classification

GROUP	Count / Row % / Col % / Total %	1.	2.	3.	4.	Row Total
		AIII				
HIGH SCHOOL	1.	0 0.0 0.0 0.0	4 12.9 17.4 3.2	20 64.5 30.3 16.1	7 22.6 23.3 5.6	31 25.0
ELEMENTARY	2.	3 6.3 60.0 2.4	8 16.7 34.8 6.5	24 50.0 36.4 19.4	13 27.1 43.3 10.5	48 38.7
TWO	3.	2 4.4 40.0 1.6	11 24.4 47.8 8.9	22 48.9 33.3 17.7	10 22.2 33.3 8.1	45 36.3
	Column Total	5 4.0	23 18.5	66 53.2	30 24.2	124 100.0

Chi square = 4.58866 with 6 degrees of freedom
Significance = 0.5975

Table 9.12 - Logical Relationships

GROUP	Count / Row % / Col % / Total %	1.	2.	3.	4.	Row Total
		A112				
HIGH SCHOOL	1.	0	3	17	11	31
		0.0	9.7	54.8	35.5	25.0
		0.0	16.7	29.3	23.9	
		0.0	2.4	13.7	8.9	
ELEMENTARY	2.	1	6	25	16	48
		2.1	12.5	52.1	33.3	38.7
		50.0	33.3	43.1	34.8	
		0.8	4.8	20.2	12.9	
TWO	3.	1	9	16	19	45
		2.2	20.0	35.6	42.2	36.3
		50.0	50.0	27.6	41.3	
		0.8	7.3	12.9	15.3	
	Column Total	2	18	58	46	124
		1.6	14.5	46.8	37.1	100.0

Chi square = 4.69091 with 6 degrees of freedom
Significance = 0.5840

Table 9.13 - Decision Making

GROUP	Count / Row % / Col % / Total %	H113 2.	3.	4.	Row Total
HIGH SCHOOL	1.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	31 100.0 27.0 25.0	31 25.0
ELEMENTARY	2.	0 0.0 0.0 0.0	2 4.2 25.0 1.6	46 95.8 40.0 37.1	48 38.7
TWO	3.	1 2.2 100.0 0.8	6 13.3 75.0 4.8	38 84.4 33.0 30.6	45 36.3
	Column Total	1 0.8	8 6.5	115 92.7	124 100.0

Chi square = 8.00684 with 4 degrees of freedom
Significance = 0.0913

Table 9.14 - Advocacy

GROUP	Count / Row % / Col % / Total %	0.	1.	2.	3.	4.	Row Total
HIGH SCHOOL	1.	0	1	5	15	9	30
		0.0	3.3	16.7	50.0	30.0	24.6
		0.0	33.3	18.5	27.3	25.0	
		0.0	0.8	4.1	12.3	7.4	
ELEMENTARY	2.	0	0	11	25	13	49
		0.0	0.0	22.4	51.0	26.5	40.2
		0.0	0.0	40.7	45.5	36.1	
		0.0	0.0	9.0	20.5	10.7	
TWO	3.	1	2	11	15	14	43
		2.3	4.7	25.6	34.9	32.6	35.2
		100.0	66.7	40.7	27.3	38.9	
		0.8	1.6	9.0	12.3	11.5	
	Column Total	1	3	27	55	36	122
		0.8	2.5	22.1	45.1	29.5	100.0

Chi square = 6.43552 with 8 degrees of freedom
Significance = 0.5986

Table 9.15 - Imagination

GROUP	Count / Row % / Col % / Total %	H115 1.	2.	3.	4.	Row Total
HIGH SCHOOL	1.	0 0.0 0.0 0.0	4 13.3 23.5 3.3	12 40.0 24.5 9.8	14 46.7 25.9 11.5	30 24.6
ELEMENTARY	2.	2 4.1 100.0 1.6	7 14.3 41.2 5.7	23 46.9 46.9 18.9	17 34.7 31.5 13.9	49 40.2
TWO	3.	0 0.0 0.0 0.0	6 14.0 35.3 4.9	14 32.6 28.6 11.5	23 53.5 42.6 18.9	43 35.2
	Column Total	2 1.6	17 13.9	49 40.2	54 44.3	122 100.0

Chi square = 6.05087 with 6 degrees of freedom
Significance = 0.4175

Table 9.16 - Organization

GROUP	Count / Row % / Col % / Total %	HI16 1.	2.	3.	4.	Row Total
HIGH SCHOOL	1.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	3 10.0 23.1 2.5	27 90.0 25.2 22.1	30 24.6
ELEMENTARY	2.	0 0.0 0.0 0.0	1 2.0 100.0 0.8	7 14.3 53.8 5.7	41 83.7 38.3 33.6	49 40.2
TWO	3.	1 2.3 100.0 0.8	0 0.0 0.0 0.0	3 7.0 23.1 2.5	39 90.7 36.4 32.0	43 35.2
	Column Total	1 0.8	1 0.8	13 10.7	107 87.7	122 100.0

Chi square = 4.64396 with 6 degrees of freedom
Significance = 0.5902

Table 9.17 - Wisdom

GROUP	Count / Row % / Col % / Total %	H117 0.	2.	3.	4.	Row Total
HIGH SCHOOL	1.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	5 16.7 20.8 4.1	25 83.3 26.6 20.5	30 24.6
ELEMENTARY	2.	0 0.0 0.0 0.0	2 4.1 66.7 1.6	12 24.5 50.0 9.8	35 71.4 37.2 28.7	49 40.2
TWO	3.	1 2.3 100.0 0.8	1 2.3 33.3 0.8	7 16.3 29.2 5.7	34 79.1 36.2 27.9	43 35.2
	Column total	1 0.8	3 2.5	24 19.7	94 77.0	122 100.0

Chi square = 4.44765 with 6 degrees of freedom
Significance = 0.6163

Table 9.18 - Idea Finding

GROUP	Count / Row % / Col % / Total %	0.	1.	2.	3.	4.	Row Total
HIGH SCHOOL	1.	0	0	5	12	13	30
		0.0	0.0	16.7	40.0	43.3	24.6
		0.0	0.0	33.3	22.6	25.5	
		0.0	0.0	4.1	9.8	10.7	
ELEMENTARY	2.	0	1	6	26	16	49
		0.0	2.0	12.2	53.1	32.7	40.2
		0.0	50.0	40.0	49.1	31.4	
		0.0	0.8	4.9	21.3	13.1	
TWO	3.	1	1	4	15	22	43
		2.3	2.3	9.3	34.9	51.2	35.2
		100.0	50.0	26.7	28.3	43.1	
		0.8	0.8	3.3	12.3	18.0	
	Column Total	1	2	15	53	51	122
		0.8	1.6	12.3	43.1	41.8	100.0

Chi square = 7.03010 with 8 degrees of freedom
Significance = 0.5334

Table 9.19 - Problem Solving

GROUP	Count / Row % / Col % / Total %	H119 1.	2.	3.	4.	Row Total
HIGH SCHOOL	1.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	3 10.0 15.0 2.5	27 90.0 27.6 22.3	30 24.8
ELEMENTARY	2.	1 2.1 100.0 0.8	1 2.1 50.0 0.8	10 20.8 50.0 8.3	36 75.0 36.7 29.8	48 39.7
TWO	3.	0 0.0 0.0 0.0	1 2.3 50.0 0.8	7 16.3 35.0 5.8	35 81.4 35.7 28.9	43 35.5
	Column Total	1 0.8	2 1.7	20 16.5	98 81.0	121 100.0

Chi square = 4.01579 with 6 degrees of freedom
Significance = 0.6745

Table 9.20 - Evaluation

GROUP	H120 Count / Row % / Col % / Total %	1.	2.	3.	4.	Row Total
HIGH SCHOOL	1.	0	0	7	24	31
		0.0	0.0	22.6	77.4	24.8
		0.0	0.0	21.2	27.9	
		0.0	0.0	5.6	19.2	
ELEMENTARY	2.	1	3	16	30	50
		2.0	6.0	32.0	60.0	40.0
		100.0	60.0	48.5	34.9	
		0.8	2.4	12.8	24.0	
TWO	3.	0	2	10	32	44
		0.0	4.5	22.7	72.7	35.2
		0.0	40.0	30.3	37.2	
		0.0	1.6	8.0	25.6	
	Column Total	1	5	33	86	125
		0.8	4.0	26.4	68.8	100.0

Chi square = 5.25896 with 6 degrees of freedom
Significance = 0.5111

Table 9.21 - Raising Questions

GROUP	Count / Row % / Col % / Total %	H121 1.	2.	3.	4.	Row Total
HIGH SCHOOL	1.	2	3	16	10	31
		6.5	9.7	51.6	32.3	24.8
		40.0	12.0	29.1	25.0	
		1.6	2.4	12.8	8.0	
ELEMENTARY	2.	2	10	25	13	50
		4.0	20.0	50.0	26.0	40.0
		40.0	40.0	45.5	32.5	
		1.6	8.0	20.0	10.4	
TWO	3.	1	12	14	17	44
		2.3	27.3	31.8	38.6	35.2
		20.0	48.0	25.5	42.5	
		0.8	9.6	11.2	13.6	
	Column Total	5	25	55	40	125
		4.0	20.0	44.0	32.0	100.0

Chi square = 7.07934 with 6 degrees of freedom
Significance = 0.3136

Table 9.22 - Initiating, Defining, Reorganizing Structure

GROUP	Count / Row % / Col % / Total %	1.	2.	3.	4.	Row Total
HIGH SCHOOL	1.	1	0	14	16	31
		3.2	0.0	45.2	51.6	25.0
		25.0	0.0	26.9	31.4	
		0.8	0.0	11.3	12.9	
ELEMENTARY	2.	2	9	19	20	50
		4.0	18.0	38.0	40.0	40.3
		50.0	52.9	36.5	39.2	
		1.6	7.3	15.3	16.1	
TWO	3.	1	8	19	15	43
		2.3	18.6	44.2	34.9	34.7
		25.0	47.1	36.5	29.4	
		0.8	6.5	15.3	12.1	
	Column Total	4	17	52	51	124
		3.2	13.7	41.9	41.1	100.0

Chi square = 7.43900 with 6 degrees of freedom
Significance = 0.2821

Table 9.23 - Meditation

GROUP	H123 Count / Row % / Col % / Total %	0.	1.	2.	3.	4.	Row Total
HIGH SCHOOL	1.	0	1	3	14	13	31
		0.0	3.2	9.7	45.2	41.9	24.8
		0.0	12.5	12.5	31.8	27.1	
		0.0	0.8	2.4	11.2	10.4	
ELEMENTARY	2.	0	2	9	21	18	50
		0.0	4.0	18.0	42.0	36.0	40.0
		0.0	25.0	37.5	47.7	37.5	
		0.0	1.6	7.2	16.8	14.4	
TWO	3.	1	5	12	9	17	44
		2.3	11.4	27.3	20.5	38.6	35.2
		100.0	62.5	50.0	20.5	35.4	
		0.8	4.0	9.6	7.2	13.6	
	Column Total	1	8	24	44	48	125
		0.8	6.4	19.2	35.2	38.4	100.0

Chi square = 11.89293 with 8 degrees of freedom
Significance = 0.1560

Table 9.24 - Persuasion

GROUP	Count / Row % / Col % / Total %	H124 1.	2.	3.	4.	Row Total
HIGH SCHOOL	1.	0 0.0 0.0 0.0	2 6.5 12.5 1.6	12 38.7 29.3 9.6	17 54.8 26.6 13.6	31 24.8
ELEMENTARY	2.	1 2.0 25.0 0.8	8 16.0 50.0 6.4	17 34.0 41.5 13.6	24 48.0 37.5 19.2	50 40.0
TWO	3.	3 6.8 75.0 2.4	6 13.6 37.5 4.8	12 27.3 29.3 9.6	23 52.3 35.9 18.4	44 35.2
	Column Total	4 3.2	16 12.8	41 32.8	64 51.2	125 100.0

Chi square = 5.36907 with 6 degrees of freedom
Significance = 0.4974

Table 9.25 - Memory

GROUP	Count / Row % / Col % / Total %	H125 0.	1.	2.	3.	4.	Row Total
HIGH SCHOOL	1.	0	0	1	15	15	31
		0.0	0.0	3.2	48.4	48.4	24.8
		0.0	0.0	14.3	30.6	22.4	
		0.0	0.0	0.8	12.0	12.0	
ELEMENTARY	2.	0	0	5	15	30	50
		0.0	0.0	10.0	30.0	60.0	40.0
		0.0	0.0	71.4	30.6	44.8	
		0.0	0.0	4.0	12.0	24.0	
TWO	3.	1	1	1	19	22	44
		2.3	2.3	2.3	43.2	50.0	35.2
		100.0	100.0	14.3	38.8	32.8	
		0.8	0.8	0.8	15.2	17.6	
	Column Total	1	1	7	49	67	125
		0.8	0.8	5.6	39.2	53.6	100.0

Chi square = 9.16294 with 8 degrees of freedom
Significance = 0.3287

Table 10.1 - Conceptualization

GROUP	Count / Row % / Col % / Total %	H01 1.	2.	3.	4.	Row Total
HIGH SCHOOL	1.	2 6.5 22.2 1.6	7 22.6 28.0 5.6	14 45.2 29.2 11.3	8 25.8 19.0 6.5	31 25.0
ELEMENTARY	2.	4 8.3 44.4 3.2	7 14.6 28.0 5.6	19 39.6 39.6 15.3	18 37.5 42.9 14.5	48 38.7
TWO	3.	3 6.7 33.3 2.4	11 24.4 44.0 8.9	15 33.3 31.3 12.1	16 35.6 38.1 12.9	45 36.3
	Column Total	9 7.3	25 20.2	48 38.7	42 33.9	124 100.0

Chi square = 2.86454 with 6 degrees of freedom
Significance = 0.8256

Table 10.2 - Perception

GROUP	Count / Row % / Col % / Total %	HO2 1.	2.	3.	4.	Row Total
HIGH SCHOOL	1.	0 0.0 0.0 0.0	1 3.2 20.0 0.8	10 32.3 30.3 8.0	20 64.5 24.1 16.0	31 24.8
ELEMENTARY	2.	3 6.1 75.0 2.4	3 6.1 60.0 2.4	6 12.2 18.2 4.8	37 75.5 44.6 29.6	49 39.2
TWO	3.	1 2.2 25.0 0.8	1 2.2 20.0 0.8	17 37.8 51.5 13.6	26 57.8 31.3 20.8	45 36.0
	Column Total	4 3.2	5 4.0	33 26.4	83 66.4	125 100.0

Chi square = 10.84945 with 6 degrees of freedom
Significance = 0.0931

Table 10.3 - Analysis

GROUP	Count / Row % / Col % / Total %	H03 0.	1.	2.	3.	4.	Row Total
HIGH SCHOOL	1.	0	1	7	13	9	30
		0.0	3.3	23.3	43.3	30.0	24.4
		0.0	9.1	31.8	27.7	21.4	
		0.0	0.8	5.7	10.6	7.3	
ELEMENTARY	2.	0	6	11	20	12	49
		0.0	12.2	22.4	40.8	24.5	39.8
		0.0	54.5	50.0	42.6	28.6	
		0.0	4.9	8.9	16.3	9.8	
TWU	3.	1	4	4	14	21	44
		2.3	9.1	9.1	31.8	47.7	35.8
		100.0	36.4	18.2	29.8	50.0	
		0.8	3.3	3.3	11.4	17.1	
	Column Total	1	11	22	47	42	123
		0.8	8.9	17.9	38.2	34.1	100.0

Chi square = 11.04997 with 8 degrees of freedom
Significance = 0.1989

Table 10.4 - Synthesis

GROUP	Count / Row % / Col % / Total %	H04 1.	2.	3.	4.	Row Total
HIGH SCHOOL	1.	3 9.7 33.3 2.4	5 16.1 20.8 4.0	15 48.4 31.9 12.0	8 25.8 17.8 6.4	31 24.8
ELEMENTARY	2.	4 8.2 44.4 3.2	12 24.5 50.0 9.6	16 32.7 34.0 12.8	17 34.7 37.8 13.6	49 39.2
TWO	3.	2 4.4 22.2 1.6	7 15.6 29.2 5.6	16 35.6 34.0 12.8	20 44.4 44.4 16.0	45 36.0
	Column Total	9 7.2	24 19.2	47 37.6	45 36.0	125 100.0

Chi square = 5.11731 with 6 degrees of freedom
Significance = 0.5289

Table 10.5 - Interpersonal Interaction

GROUP	Count / Row % / Col % / Total %	HUB 1.	2.	3.	4.	Row Total
HIGH SCHOOL	1.	1	0	3	26	30
		3.3	0.0	10.0	86.7	24.2
		100.0	0.0	16.7	26.5	
		0.8	0.0	2.4	21.0	
ELEMENTARY	2.	0	3	9	37	49
		0.0	6.1	18.4	75.5	39.5
		0.0	42.9	50.0	37.8	
		0.0	2.4	7.3	29.8	
TWO	3.	0	4	6	35	45
		0.0	8.9	13.3	77.8	36.3
		0.0	57.1	33.3	35.7	
		0.0	3.2	4.8	28.2	
	Column Total	1	7	18	98	124
		0.8	5.6	14.5	79.0	100.0

Chi square = 6.95804 with 6 degrees of freedom
Significance = 0.3247

Table 10.6 - Planning

GROUP	Count / Row % / Col % / Total %	ROW 1.	2.	3.	4.	Row Total
HIGH SCHOOL	1.	0 0.0 0.0 0.0	2 6.5 28.6 1.6	10 32.3 23.3 8.0	19 61.3 26.0 15.2	31 24.8
ELEMENTARY	2.	1 2.0 50.0 0.8	3 6.1 42.9 2.4	23 46.9 53.5 18.4	22 44.9 30.1 17.6	49 39.2
TWO	3.	1 2.2 50.0 0.8	2 4.4 28.6 1.6	10 22.2 23.3 8.0	32 71.1 43.8 25.6	45 36.0
	Column Total	2 1.6	7 5.6	43 34.4	73 58.4	125 100.0

Chi square = 7.87546 with 6 degrees of freedom
Significance = 0.2474

Table 10.7 - Leadership

GROUP	H07 Count / Row % / Col % / Total %	1.	2.	3.	4.	Row Total
HIGH SCHOOL	1.	0	0	5	26	31
		0.0	0.0	16.1	83.9	25.2
		0.0	0.0	20.8	28.6	
		0.0	0.0	4.1	21.1	
ELEMENTARY	2.	0	2	11	35	48
		0.0	4.2	22.9	72.9	39.0
		0.0	33.3	45.8	38.5	
		0.0	1.6	8.9	28.5	
TWO	3.	2	4	8	30	44
		4.5	9.1	18.2	68.2	35.8
		100.0	66.7	33.3	33.0	
		1.6	3.3	6.5	24.4	
	Column Total	2	6	24	91	123
		1.6	4.9	19.5	74.0	100.0

Chi square = 7.87787 with 6 degrees of freedom
Significance = 0.2472

Table 10.8 - Reading

GROUP	Count / Row % / Col % / Total %	HU8 1.	2.	3.	4.	Row Total
HIGH SCHOOL	1.	0	2	8	21	31
		0.0	6.5	25.8	67.7	25.0
		0.0	18.2	30.8	24.7	
		0.0	1.6	6.5	16.9	
ELEMENTARY	2.	1	3	11	33	48
		2.1	6.3	22.9	68.8	38.7
		50.0	27.3	42.3	38.8	
		0.8	2.4	8.9	26.6	
TWO	3.	1	6	7	31	45
		2.2	13.3	15.6	68.9	36.3
		50.0	54.5	26.9	36.5	
		0.8	4.8	5.6	25.0	
	Column Total	2	11	26	85	124
		1.6	8.9	21.0	68.5	100.0

Chi square = 3.32155 with 6 degrees of freedom
Significance = 0.7675

Table 10.9 - Observation

GROUP	Count / Row % / Col % / Total %	H09 2.	3.	4.	Row Total
HIGH SCHOOL	1.	1 3.2 12.5 0.8	7 22.6 29.2 5.6	23 74.2 25.0 18.5	31 25.0
ELEMENTARY	2.	1 2.1 12.5 0.8	7 14.6 29.2 5.6	40 83.3 43.5 32.3	48 38.7
TWO	3.	6 13.3 75.0 4.8	10 22.2 41.7 8.1	29 64.4 31.5 23.4	45 36.3
	Column Total	8 6.5	24 19.4	92 74.2	124 100.0

Chi square = 7.26228 with 4 degrees of freedom
Significance = 0.1227

Table 10.10 - Listening

GROUP	Count / Row % / Col % / Total %	H010 2.	3.	4.	Row Total
HIGH SCHOOL	1.	0 0.0 0.0 0.0	4 12.9 26.7 3.3	27 87.1 25.7 22.0	31 25.2
ELEMENTARY	2.	0 0.0 0.0 0.0	3 6.4 20.0 2.4	44 93.6 41.9 35.8	47 38.2
TWU	3.	3 6.7 100.0 2.4	8 17.8 53.3 6.5	34 75.6 32.4 27.6	45 36.6
	Column Total	3 2.4	15 12.2	105 85.4	123 100.0

Chi square = 8.55774 with 4 degrees of freedom
Significance = 0.0732

Table 10.11 - Classification

GROUP	Count / Row % / Col % / Total %	1.	2.	3.	4.	Row Total
		HOI1				
1. HIGH SCHOOL		3	2	20	6	31
		9.7	6.5	64.5	19.4	25.0
		20.0	7.7	35.7	22.2	
		2.4	1.6	16.1	4.8	
2. ELEMENTARY		8	14	16	10	48
		16.7	29.2	33.3	20.8	38.7
		53.3	53.8	28.6	37.0	
		6.5	11.3	12.9	8.1	
3. TWO		4	10	20	11	45
		8.9	22.2	44.4	24.4	36.3
		26.7	38.5	35.7	40.7	
		3.2	8.1	16.1	8.9	
	Column Total	15	26	56	27	124
		12.1	21.0	45.2	21.8	100.0

Chi square = 10.36321 with 6 degrees of freedom
Significance = 0.1102

Table 10.12 - Logical Relationships

GROUP	Count / Row % / Col % / Total %	H012 1.	2.	3.	4.	Row Total
HIGH SCHOOL	1.	1 3.2 10.0 0.8	7 22.6 26.9 5.6	15 48.4 29.4 12.1	8 25.8 21.6 6.5	31 25.0
ELEMENTARY	2.	5 10.4 50.0 4.0	11 22.9 42.3 8.9	21 43.8 41.2 16.9	11 22.9 29.7 8.9	48 38.7
TWO	3.	4 8.9 40.0 3.2	8 17.8 30.8 6.5	15 33.3 29.4 12.1	18 40.0 48.6 14.5	45 36.3
	Column Total	10 8.1	26 21.0	51 41.1	37 29.8	124 100.0

Chi square = 5.25003 with 6 degrees of freedom
Significance = 0.5122

Table 10.13 - Decision Making

GROUP	H013 Count / Row % / Col % / Total %	1.	2.	3.	4.	Row Total
HIGH SCHOOL	1.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	2 6.5 15.4 1.6	29 93.5 27.4 23.4	31 25.0
ELEMENTARY	2.	0 0.0 0.0 0.0	1 2.1 50.0 0.8	3 6.3 23.1 2.4	44 91.7 41.5 35.5	48 38.7
TWO	3.	3 6.7 100.0 2.4	1 2.2 50.0 0.8	8 17.8 61.5 6.5	33 73.3 31.1 26.6	45 36.3
	Column Total	3 2.4	2 1.6	13 10.5	106 85.5	124 100.0

Chi square = 10.74883 with 6 degrees of freedom
Significance = 0.0965

Table 10.14 - Advocacy

GROUP	H014 Count / Row % / Col % / Total %	0.	1.	2.	3.	4.	Row Total
HIGH SCHOOL	1.	0	4	4	12	10	30
		0.0	13.3	13.3	40.0	33.3	24.6
		0.0	26.7	17.4	26.7	26.3	
		0.0	3.3	3.3	9.8	8.2	
ELEMENTARY	2.	0	6	10	17	16	49
		0.0	12.2	20.4	34.7	32.7	40.2
		0.0	40.0	43.5	37.8	42.1	
		0.0	4.9	8.2	13.9	13.1	
TWO	3.	1	5	9	16	12	43
		2.3	11.6	20.9	37.2	27.9	35.2
		100.0	33.3	39.1	35.6	31.6	
		0.8	4.1	7.4	13.1	9.8	
	Column Total	1	15	23	45	38	122
		0.8	12.3	18.9	36.9	31.1	100.0

Chi square = 2.89585 with 8 degrees of freedom
Significance = 0.9407

Table 10.15 - Imagination

GROUP	Count / Row % / Col % / Total %	H015 1.	2.	3.	4.	Row Total
HIGH SCHOOL	1.	3 10.0 20.0 2.5	6 20.0 23.1 4.9	15 50.0 32.6 12.3	6 20.0 17.1 4.9	30 24.6
ELEMENTARY	2.	8 16.3 53.3 6.6	12 24.5 46.2 9.8	18 36.7 39.1 14.8	11 22.4 31.4 9.0	49 40.2
TWO	3.	4 9.3 26.7 3.3	8 18.6 30.8 6.6	13 30.2 28.3 10.7	18 41.9 51.4 14.8	43 35.2
	Column Total	15 12.3	26 21.3	46 37.7	35 28.7	122 100.0

Chi square = 7.40047 with 6 degrees of freedom
Significance = 0.2854

Table 10.16 - Organization

GROUP	H016 Count / Row % / Col % / Total %	1.	2.	3.	4.	Row Total
HIGH SCHOOL	1.	1 3.3 25.0 0.8	1 3.3 16.7 0.8	8 26.7 22.2 6.6	20 66.7 26.3 16.4	30 24.6
ELEMENTARY	2.	3 6.1 75.0 2.5	4 8.2 66.7 3.3	17 34.7 47.2 13.9	25 51.0 32.9 20.5	49 40.2
TWO	3.	0 0.0 0.0 0.0	1 2.3 16.7 0.8	11 25.6 30.6 9.0	31 72.1 40.8 25.4	43 35.2
	Column Total	4 3.3	6 4.9	36 29.5	76 62.3	122 100.0

Chi square = 6.91671 with 6 degrees of freedom
Significance = 0.3286

Table 10.17 - Wisdom

GROUP	H017 Count / Row % / Col % / Total %	1.	2.	3.	4.	Row Total
HIGH SCHOOL	1.	0	2	8	19	29
		0.0	6.9	27.6	65.5	24.0
		0.0	33.3	24.2	23.8	
		0.0	1.7	6.6	15.7	
ELEMENTARY	2.	0	1	13	35	49
		0.0	2.0	26.5	71.4	40.5
		0.0	16.7	39.4	43.8	
		0.0	0.8	10.7	28.9	
TWO	3.	2	3	12	26	43
		4.7	7.0	27.9	60.5	35.5
		100.0	50.0	36.4	32.5	
		1.7	2.5	9.9	21.5	
	Column Total	2	6	33	80	121
		1.7	5.0	27.3	66.1	100.0

Chi square = 5.47772 with 6 degrees of freedom
Significance = 0.4842

Table 10.18 - Idea Finding

GROUP	Count / Row % / Col % / Total %	1.	2.	3.	4.	Row Total
		H018				
HIGH SCHOOL	1.	4	6	14	6	30
		13.3	20.0	46.7	20.0	24.6
		25.0	21.4	25.5	26.1	
		3.3	4.9	11.5	4.9	
ELEMENTARY	2.	7	14	20	8	49
		14.3	28.6	40.8	16.3	40.2
		43.8	50.0	36.4	34.8	
		5.7	11.5	16.4	6.6	
TWO	3.	5	8	21	9	43
		11.6	18.6	48.8	20.9	35.2
		31.3	28.6	38.2	39.1	
		4.1	6.6	17.2	7.4	
	Column Total	16	28	55	23	122
		13.1	23.0	45.1	18.9	100.0

Chi square = 1.90124 with 6 degrees of freedom
Significance = 0.9286

Table 10.19 - Problem Solving

GROUP	H019 Count / Row % / Col % / Total %	0.	1.	2.	3.	4.	Row Total
HIGH SCHOOL	1.	0	0	0	11	19	30
		0.0	0.0	0.0	36.7	63.3	25.0
		0.0	0.0	0.0	37.9	24.4	
		0.0	0.0	0.0	9.2	15.8	
ELEMENTARY	2.	0	0	5	8	35	48
		0.0	0.0	10.4	16.7	72.9	40.0
		0.0	0.0	45.5	27.6	44.9	
		0.0	0.0	4.2	6.7	29.2	
TWO	3.	1	1	6	10	24	42
		2.4	2.4	14.3	23.8	57.1	35.0
		100.0	100.0	54.5	34.5	30.8	
		0.8	0.8	5.0	8.3	20.0	
	Column Total	1	1	11	29	78	120
		0.8	0.8	9.2	24.2	65.0	100.0

Chi square = 11.68041 with 8 degrees of freedom
Significance = 0.1660

Table 10.20 - Evaluation

GROUP	Count / Row % / Col % / Total %	1.	2.	3.	4.	Row Total
		H020				
HIGH SCHOOL	1.	0 0.0 0.0 0.0	2 6.5 13.3 1.6	16 51.6 31.4 13.0	13 41.9 25.0 10.6	31 25.2
ELEMENTARY	2.	1 2.0 20.0 0.8	4 8.2 26.7 3.3	21 42.9 41.2 17.1	23 46.9 44.2 18.7	49 39.8
TWO	3.	4 9.3 80.0 3.3	9 20.9 60.0 7.3	14 32.6 27.5 11.4	16 37.2 30.8 13.0	43 35.0
	Column Total	5 4.1	15 12.2	51 41.5	52 42.3	123 100.0

Chi square = 10.96716 with 6 degrees of freedom
Significance = 0.0894

Table 10.21 - Raising Questions

GROUP	Count / Row % / Col % / Total %	H021 1.	2.	3.	4.	Row Total
HIGH SCHOOL	1.	2 6.5 15.4 1.6	4 12.9 18.2 3.3	17 54.8 34.0 13.8	8 25.8 21.1 6.5	31 25.2
ELEMENTARY	2.	6 12.2 46.2 4.9	12 24.5 54.5 9.8	17 34.7 34.0 13.8	14 28.6 36.8 11.4	49 39.8
TWO	3.	5 11.6 38.5 4.1	6 14.0 27.3 4.9	16 37.2 32.0 13.0	16 37.2 42.1 13.0	43 35.0
	Column Total	13 10.6	22 17.9	50 40.7	38 30.9	123 100.0

Chi square = 5.65838 with 6 degrees of freedom
Significance = 0.4625

Table 10.22 - Initiating, Defining, Reorganizing Structure

GROUP	HU22 0.	1.	2.	3.	4.	Row Total
1. HIGH SCHOOL	0	3	5	16	7	31
	0.0	9.7	16.1	51.6	22.6	25.2
	0.0	10.3	23.8	32.7	30.4	
	0.0	2.4	4.1	13.0	5.7	
2. ELEMENTARY	1	17	7	17	7	49
	2.0	34.7	14.3	34.7	14.3	39.8
	100.0	58.6	33.3	34.7	30.4	
	0.8	13.8	5.7	13.8	5.7	
3. TWO	0	9	9	16	9	43
	0.0	20.9	20.9	37.2	20.9	35.0
	0.0	31.0	42.9	32.7	39.1	
	0.0	7.3	7.3	13.0	7.3	
Column Total	1	29	21	49	23	123
	0.8	23.6	17.1	39.8	18.7	100.0

Chi square = 9.71413 with 8 degrees of freedom
Significance = 0.2857

Table 10.23 - Meditation

GROUP	M023 Count / Row % / Col % / Total %	0.	1.	2.	3.	4.	Row Total
HIGH SCHOOL	1.	0 0.0 0.0 0.0	2 6.5 14.3 1.6	7 22.6 20.0 5.7	11 35.5 26.2 8.9	11 35.5 35.5 8.9	31 25.2
ELEMENTARY	2.	0 0.0 0.0 0.0	4 8.2 28.6 3.3	15 30.6 42.9 12.2	20 40.8 47.6 16.3	10 20.4 32.3 8.1	49 39.8
TWO	3.	1 2.3 100.0 0.8	8 18.6 57.1 6.5	13 30.2 37.1 10.6	11 25.6 26.2 8.9	10 23.3 32.3 8.1	43 35.0
	Column Total	1 0.8	14 11.4	35 28.5	42 34.1	31 25.2	123 100.0

Chi square = 8.83332 with 8 degrees of freedom
Significance = 0.3566

Table 10.24 - Persuasion

GROUP	Count / Row % / Col % / Total %	0.	1.	2.	3.	4.	Row Total
HIGH SCHOOL	1.	0	3	6	13	9	31
		0.0	9.7	19.4	41.9	29.0	25.2
		0.0	25.0	26.1	27.1	23.1	
		0.0	2.4	4.9	10.6	7.3	
ELEMENTARY	2.	0	6	9	20	14	49
		0.0	12.2	18.4	40.8	28.6	39.8
		0.0	50.0	39.1	41.7	35.9	
		0.0	4.9	7.3	16.3	11.4	
TWO	3.	1	3	8	15	16	43
		2.3	7.0	18.6	34.9	37.2	35.0
		100.0	25.0	34.8	31.3	41.0	
		0.8	2.4	6.5	12.2	13.0	
	Column Total	1	12	23	48	39	123
		0.8	9.8	18.7	39.0	31.7	100.0

Chi square = 3.45147 with 8 degrees of freedom
Significance = 0.9029

Table 10.25 - Memory

GROUP	H025 Count / Row % / Col % / Total %	1.	2.	3.	4.	Row Total
HIGH SCHOOL	1.	1 3.2 25.0 0.8	2 6.5 20.0 1.6	13 41.9 44.8 10.5	15 48.4 18.5 12.1	31 25.0
ELEMENTARY	2.	2 4.0 50.0 1.6	4 8.0 40.0 3.2	6 12.0 20.7 4.8	38 76.0 46.9 30.6	50 40.3
TWO	3.	1 2.3 25.0 0.8	4 9.3 40.0 3.2	10 23.3 34.5 8.1	28 65.1 34.6 22.6	43 34.7
	Column Total	4 3.2	10 8.1	29 23.4	81 65.3	124 100.0

Chi square = 9.94975 with 6 degrees of freedom
Significance = 0.1268

Comparison of Frequency Ratings to Importance Ratings by Female Principals: (Pearson's R)

When female principals were extracted from the sample and a level of significance set at .05, these data were revealed: analysis and persuasion were significant at the .05 level of significance. Reading, observation, classification, logical relationships, advocacy, idea finding, raising questions, initiating, defining and reorganizing structure, meditation, and memory were significant at the .01 level of significance. After comparing rows 3 and 4 to columns 3 and 4 in Table 11, it was discovered that analysis, classification, logical relationships and initiating, defining, and reorganizing structure received higher importance ratings than the ratings for frequency of use. It should be noted that interpersonal interaction, listening, decision making, and organization could not be statistically computed. The reason is that 100% of the female principals rated interpersonal interaction and listening a 4 on frequency of use. Decision making and organization received 100% concurrence on assigning importance ratings a rating of 4 (see Table 11).

Table 11.1 - Conceptualization

HO1

Count / Row % / Col % / Total %	3.	4.	Row Total
2.	1 33.3 20.0 6.7	2 66.7 20.0 13.3	3 20.0
3.	3 75.0 60.0 20.0	1 25.0 10.0 6.7	4 26.7
4.	1 12.5 20.0 6.7	7 87.5 70.0 46.7	8 53.3
Column Total	5 33.3	10 66.7	15 100.0

Pearson's R = 0.29881 Significance = 0.1397

Table 11.2 - Perception

HO2

Count / Row % / Col % / Total %	H12 3.	H12 4.	Row Total
3.	0	1	1
	0.0	100.0	6.3
	0.0	7.1	
	0.0	6.3	
4.	2	13	15
	13.3	86.7	93.8
	100.0	92.9	
	12.5	81.3	
Column Total	2	14	16
	12.5	87.5	100.0

Pearson's R = 0.09759 Significance = 0.3596

Table 11.3 - Analysis

HO3	Count / Row % / Col % / Total %	RT3 2.	3.	4.	Row Total
	2.	1 25.0 100.0 6.7	2 50.0 40.0 13.3	1 25.0 11.1 6.7	4 26.7
	3.	0 0.0 0.0 0.0	2 40.0 40.0 13.3	3 60.0 33.3 20.0	5 33.3
	4.	0 0.0 0.0 0.0	1 16.7 20.0 6.7	5 83.3 55.6 33.3	6 40.0
	Column Total	1 6.7	5 33.3	9 60.0	15 100.0

Pearson's R = 0.52653 Significance = 0.0219

Table 11.4 - Synthesis

H04 \ H14	2.	3.	4.	Row Total
2.	1 33.3 100.0 6.3	0 0.0 0.0 0.0	2 66.7 20.0 12.5	3 18.8
3.	0 0.0 0.0 0.0	3 75.0 60.0 18.8	1 25.0 10.0 6.3	4 25.0
4.	0 0.0 0.0 0.0	2 22.2 40.0 12.5	7 77.8 70.0 43.8	9 56.3
Column Total	1 6.3	5 31.3	10 62.5	16 100.0

Pearson's R = 0.34500 Significance = 0.0953

Table 11.5 - Interpersonal Interaction

HO5	Count / Row % / Col % / Total %	HI5 3.	HI5 4.	Row Total
	4.	2 13.3 100.0 13.3	13 86.7 100.0 86.7	15 100.0
	Column Total	2 13.3	13 86.7	15 100.0

Statistics cannot be computed

Table 11.6 - Planning

H06	H16		
Count / Row % / Col % / Total %	3.	4.	Row Total
1.	0 0.0 0.0 0.0	1 100.0 6.7 6.3	1 6.3
3.	1 25.0 100.0 6.3	3 75.0 20.0 18.8	4 25.0
4.	0 0.0 0.0 0.0	11 100.0 73.3 68.8	11 68.8
Column Total	1 6.3	15 93.8	16 100.0

Pearson's R = 0.18429 Significance = 0.2472

Table 11.7 - Leadership

HO7	Q17 Count / Row % / Col % / Total %	3.	4.	Row Total
	2.	0	1	1
		0.0	100.0	5.9
		0.0	6.3	
		0.0	5.9	
	3.	1	1	2
		50.0	50.0	11.8
		100.0	6.3	
		5.9	5.9	
	4.	0	14	14
		0.0	100.0	82.4
		0.0	87.5	
		0.0	82.4	
	Column total	1	16	17
		5.9	94.1	100.0

Pearson's R = 0.35046 Significance = 0.0839

Table 11.8 - Reading

H08	Count / Row % / Col % / Total %	H18 2.	3.	4.	Row Total
	2.	1 100.0 100.0 5.9	0 0.0 0.0 0.0	0 0.0 0.0 0.0	1 5.9
	3.	0 0.0 0.0 0.0	1 50.0 50.0 5.9	1 50.0 7.1 5.9	2 11.8
	4.	0 0.0 0.0 0.0	1 7.1 50.0 5.9	13 92.9 92.9 76.5	14 82.4
	Column Total	1 5.9	2 11.8	14 82.4	17 100.0

Pearson's R = 0.80233 Significance = 0.0001

Table 11.9 - Observation

H09	H19 Count / Row % / Col % / Total %	3.	4.	Row Total
	3.	1 100.0 50.0 5.9	0 0.0 0.0 0.0	1 5.9
	4.	1 6.3 50.0 5.9	15 93.8 100.0 88.2	16 94.1
	Column Total	2 11.8	15 88.2	17 100.0

Pearson's R = 0.68465 Significance = 0.0012

Table 11.10 - Listening

H010	H110		
Count / Row % / Col % / Total %	3.	4.	Row Total
4.	2 11.8 100.0 11.8	15 88.2 100.0 88.2	17 100.0
Column Total	2 11.8	15 88.2	17 100.0

Statistics cannot be computed

HO11	H111			
Count / Row % / Col % / Total %	1.	3.	4.	Row Total
1.	1 100.0 100.0 5.9	0 0.0 0.0 0.0	0 0.0 0.0 0.0	1 5.9
2.	0 0.0 0.0 0.0	2 66.7 25.0 11.8	1 33.3 12.5 5.9	3 17.6
3.	0 0.0 0.0 0.0	6 75.0 75.0 35.3	2 25.0 25.0 11.8	8 47.1
4.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	5 100.0 62.5 29.4	5 29.4
Column Total	1 5.9	8 47.1	8 47.1	17 100.0

Pearson's R = 0.73463 Significance = 0.0004

Table 11.12 - Logical Relationships

HO12	Count / Row % / Col % / Total %	2.	3.	4.	Row Total
	2.	2	1	1	4
		50.0	25.0	25.0	23.5
		66.7	25.0	10.0	
		11.8	5.9	5.9	
	3.	1	3	4	8
		12.5	37.5	50.0	47.1
		33.3	75.0	40.0	
		5.9	17.6	23.5	
	4.	0	0	5	5
		0.0	0.0	100.0	29.4
		0.0	0.0	50.0	
		0.0	0.0	29.4	
	Column Total	3	4	10	17
		17.6	23.5	58.8	100.0

Pearson's R = 0.58754 Significance = 0.0066

Table 11.13 - Decision Making

HO13	Count / Row % / Col % / Total %	HI13 4.	Row Total
	3.	1 100.0 5.9 5.9	1 5.9
	4.	16 100.0 94.1 94.1	16 94.1
	Column Total	17 100.0	17 100.0

Statistics cannot be computed

Table 11.14 - Advocacy

HO14	Count / Row % / Col % / Total %	HI14 2.	3.	4.	Row Total
	1.	1	1	0	2
		50.0	50.0	0.0	11.8
		25.0	11.1	0.0	
		5.9	5.9	0.0	
	2.	3	1	0	4
		75.0	25.0	0.0	23.5
		75.0	11.1	0.0	
		17.6	5.9	0.0	
	3.	0	5	1	6
		0.0	83.3	16.7	35.3
		0.0	55.6	25.0	
		0.0	29.4	5.9	
	4.	0	2	3	5
		0.0	40.0	60.0	29.4
		0.0	22.2	75.0	
		0.0	11.8	17.6	
	Column Total	4	9	4	17
		23.5	52.9	23.5	100.0

Pearson's R = 0.69693 Significance = 0.0009

Table 11.15 - Imagination

HO15	Count / Row % / Col % / Total %	H115 3.	H115 4.	Row Total
	1.	1 100.0 12.5 5.9	0 0.0 0.0 0.0	1 5.9
	2.	1 33.3 12.5 5.9	2 66.7 22.2 11.8	3 17.6
	3.	5 50.0 62.5 29.4	5 50.0 55.6 29.4	10 58.8
	4.	1 33.3 12.5 5.9	2 66.7 22.2 11.8	3 17.6
	Column Total	8 47.1	9 52.9	17 100.0

Pearson's R = 0.16465 Significance = 0.2639

Table 11.16 - Organization

H016

Count / Row % / Col % / Total %	H116 4.	Row Total
1.	1 100.0 5.9 5.9	1 5.9
2.	1 100.0 5.9 5.9	1 5.9
3.	3 100.0 17.6 17.6	3 17.6
4.	12 100.0 70.6 70.6	12 70.6
Column Total	17 100.0	17 100.0

Statistics cannot be computed

Table 11.17 - Wisdom

HO17	Count / Row % / Col % / Total %	H117 3.	H117 4.	Row Total
	3.	0 0.0 0.0 0.0	3 100.0 20.0 17.6	3 17.6
	4.	2 14.3 100.0 11.8	12 85.7 80.0 70.6	14 82.4
	Column Total	2 11.8	15 88.2	17 100.0

Pearson's R = 0.16903 Significance = 0.2583

Table 11.18 - Idea Finding

HO18 \ H118	2.	3.	4.	Row Total
1.	0 0.0 0.0 0.0	1 100.0 16.7 5.9	0 0.0 0.0 0.0	1 5.9
2.	2 66.7 100.0 11.8	1 33.3 16.7 5.9	0 0.0 0.0 0.0	3 17.6
3.	0 0.0 0.0 0.0	2 33.3 33.3 11.8	4 66.7 44.4 23.5	6 35.3
4.	0 0.0 0.0 0.0	2 28.6 33.3 11.8	5 71.4 55.6 29.4	7 41.2
Column Total	2 11.8	6 35.3	9 52.9	17 100.0

Pearson's R = 0.58431 Significance = 0.0069

Table 11.19 - Problem Solving

H019	H119		
Count / Row % / Col % / Total %	3.	4.	Row Total
2.	0	1	1
	0.0	100.0	5.9
	0.0	6.7	
	0.0	5.9	
3.	1	3	4
	25.0	75.0	23.5
	50.0	20.0	
	5.9	17.6	
4.	1	11	12
	8.3	91.7	70.6
	50.0	73.3	
	5.9	64.7	
Column Total	2	15	17
	11.8	88.2	100.0

Pearson's R = 0.09129 Significance = 0.3638

Table 11.20 - Evaluation

H020 \ H120	1.	3.	4.	Row Total
2.	0	0	1	1
	0.0	0.0	100.0	6.3
	0.0	0.0	7.7	
	0.0	0.0	6.3	
3.	0	0	4	4
	0.0	0.0	100.0	25.0
	0.0	0.0	30.8	
	0.0	0.0	25.0	
4.	1	2	8	11
	9.1	18.2	72.7	68.8
	100.0	100.0	61.5	
	6.3	12.5	50.0	
Column Total	1	2	13	16
	6.3	12.5	81.3	100.0

Pearson's R = 0.25453 Significance = 0.1707

Table 11.21 - Raising Questions

HO21 \ HI21 (Count / Row % / Col % / Total %)	2.	3.	4.	Row Total
1.	0 0.0 0.0 0.0	2 100.0 25.0 12.5	0 0.0 0.0 0.0	2 12.5
2.	1 50.0 100.0 6.3	1 50.0 12.5 6.3	0 0.0 0.0 0.0	2 12.5
3.	0 0.0 0.0 0.0	3 75.0 37.5 18.8	1 25.0 14.3 6.3	4 25.0
4.	0 0.0 0.0 0.0	2 25.0 25.0 12.5	6 75.0 85.7 37.5	8 50.0
Column Total	1 6.3	8 50.0	7 43.8	16 100.0

Pearson's R = 0.61865 Significance = 0.0053

Table 11.22 - Initiating Defining

HO22	Count / Row % / Col % / Total %	HI22 3.	HI22 4.	Row Total
	1.	3 100.0 75.0 18.8	0 0.0 0.0 0.0	3 18.8
	2.	0 0.0 0.0 0.0	3 100.0 25.0 18.8	3 18.8
	3.	1 14.3 25.0 6.3	6 85.7 50.0 37.5	7 43.8
	4.	0 0.0 0.0 0.0	3 100.0 25.0 18.8	3 18.8
	Column Total	4 25.0	12 75.0	16 100.0

Pearson's R = 0.65465 Significance = 0.0030

Table 11.23 - Meditation

H023	Count / Row % / Col % / Total %	H123 1.	2.	3.	4.	Row Total
	1.	1 50.0 100.0 6.3	1 50.0 100.0 6.3	0 0.0 0.0 0.0	0 0.0 0.0 0.0	2 12.5
	2.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	1 100.0 20.0 6.3	0 0.0 0.0 0.0	1 6.3
	3.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	4 50.0 80.0 25.0	4 50.0 44.4 25.0	8 50.0
	4.	0 0.0 0.0 0.0	0 0.0 0.0 0.0	0 0.0 0.0 0.0	5 100.0 55.6 31.3	5 31.3
	Column	1	1	5	9	16
	Total	6.3	6.3	31.3	56.3	100.0

Pearson's R = 0.85765 Significance = 0.000

Table 11.24 - Persuasion

HO24	Count / Row % / Col % / Total %	H124 2.	3.	4.	Row Total
	1.	1	0	0	1
		100.0	0.0	0.0	6.3
		50.0	0.0	0.0	
		6.3	0.0	0.0	
	2.	0	4	0	4
		0.0	100.0	0.0	25.0
		0.0	44.4	0.0	
		0.0	25.0	0.0	
	3.	1	2	3	6
		16.7	33.3	50.0	37.5
		50.0	22.2	60.0	
		6.3	12.5	18.8	
	4.	0	3	2	5
		0.0	60.0	40.0	31.3
		0.0	33.3	40.0	
		0.0	18.8	12.5	
	Column Total	2	9	5	16
		12.5	56.3	31.3	100.0

Pearson's R = 0.45885 Significance = 0.0369

Table 11.25 - Memory

HO25	HI25		
Count / Row % / Col % / Total %	3.	4.	Row Total
2.	1 100.0 16.7 5.9	0 0.0 0.0 0.0	1 5.9
3.	3 75.0 50.0 17.6	1 25.0 9.1 5.9	4 23.5
4.	2 16.7 33.3 11.8	10 83.3 90.9 58.8	12 70.6
Column Total	6 35.3	11 64.7	17 100.0

Pearson's R = 0.60315 Significance = 0.0052

Physical Exercise Chi-square Test for Significance on Priority and Frequency: All Principals and All Students

Frequency of exercise was charted in the investigator's instrument. Participants were asked to rate themselves using these criteria: Never, Seldom, Moderately, and Regularly. Because only one participant rated never, never will not be utilized to calculate results.

Evaluation among the exercise groups (seldom vs moderately vs regularly) was found to be significant, relative to frequency of use, at the .05 level of significance for all principals. No other thinking strategies were significant. It should be noted that decision making was close to significance (.058). Principals who rated themselves "seldom" for exercise gave decision making a significantly higher mean rank than those principals who rated themselves "regularly". Similarly, principals who rated themselves "seldom" gave evaluation a significantly higher mean rank than those who rated themselves "moderately". This information can be found in Table 12.

Relative to frequency of use, university students demonstrated a significant difference for leadership, imagination, and organization at the .05 level of significance. No other thinking strategies were found to have significant differences. Students who rated themselves

Table 12.1 - Conceptualization

H01
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	7	41	31
Mean Ranks	0.00	37.29	43.06	36.56

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	1.522	0.467	1.719	0.423

The mean ranks were computed by adding the ratings given by each participant in each exercise catagory and divided by the number of participants in that exercise catagory.

Table 12.2 - Perception

HO2
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	8	41	31
Mean Ranks	0.00	32.06	40.50	42.68

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
80	1.327	0.515	2.105	0.349

Table 12.3 - Analysis

H03
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	8	41	30
Mean Ranks	0.00	34.44	42.72	37.77

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	1.330	0.514	1.484	0.476

Table 12.4 - Synthesis

H04
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	8	41	31
Mean Ranks	0.00	36.50	42.54	38.84

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
80	0.710	0.701	0.788	0.674

Table 12.5 - Interpersonal Interaction

H05
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	8	41	30
Mean Ranks	0.00	33.00	40.50	41.18

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	0.844	0.656	1.724	0.422

Table 12.6 - Planning

H06
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	8	41	31
Mean Ranks	0.00	53.00	40.49	37.29

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
80	2.906	0.234	3.655	0.161

Table 12.7 - Leadership

H07
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	8	41	30
Mean Ranks	0.00	39.38	37.29	43.87

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	1.428	0.490	2.688	0.261

Table 12.8 - Reading

H08
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	8	41	30
Mean Ranks	0.00	38.81	42.72	36.60

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	1.256	0.534	1.884	0.390

Table 12.9 - Observation

HO9
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	8	41	30
Mean Ranks	0.00	48.00	40.29	37.47

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	1.344	0.511	2.759	0.252

Table 12.10 - Listening

H010
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	8	41	29
Mean Ranks	0.00	38.13	40.15	38.97

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
78	0.079	0.961	0.322	0.851

Table 12.11 - Classification

H011
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	8	41	30
Mean Ranks	0.00	43.81	43.55	34.13

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	3.162	0.206	3.568	0.168

Table 12.12 - Logical Relationships

H012
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	8	41	30
Mean Ranks	0.00	34.31	43.09	37.30

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	1.648	0.439	1.874	0.392

Table 12.13 - Decision Making

H013
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	8	41	30
Mean Ranks	0.00	43.00	42.05	36.40

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	1.202	0.548	5.702	0.058

Table 12.14 - Advocacy

H014
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	7	41	31
Mean Ranks	0.00	33.71	43.32	37.03

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	1.900	0.387	2.094	0.351

Table 12.15 - Imagination

H015
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	7	41	31
Mean Ranks	0.00	43.79	41.96	36.55

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	1.192	0.551	1.320	0.517

Table 12.16 - Organization

H016
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	7	41	31
Mean Ranks	0.00	39.86	40.07	39.94

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	0.001	1.000	0.001	0.999

Table 12.17 - Wisdom

H017
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	7	41	30
Mean Ranks	0.00	46.14	37.49	40.70

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
78	1.009	0.604	1.555	0.459

Table 12.18 - Idea Finding

H018
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	7	41	31
Mean Ranks	0.00	34.71	38.57	43.08

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	1.088	0.580	1.215	0.545

Table 12.19 - Problem Solving

H019
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	7	41	30
Mean Ranks	0.00	35.86	38.76	41.37

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
78	0.429	0.807	0.656	0.720

Table 12.20 - Evaluation

HO20
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	8	41	31
Mean Ranks	0.00	57.94	37.54	39.92

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
80	5.191	0.075	6.411	0.041

Table 12.21 - Raising Questions

H021
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	8	41	31
Mean Ranks	0.00	32.63	41.82	40.79

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
80	1.055	0.590	1.181	0.554

Table 12.22 - Initiating, Defining, Reorganizing Structure

H022
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	8	41	31
Mean Ranks	0.00	43.44	37.21	44.10

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
80	1.694	0.429	1.870	0.393

Table 12.23 - Meditation

H023
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	8	41	31
Mean Ranks	0.00	38.88	39.61	42.10

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
80	0.246	0.884	0.272	0.873

Table 12.24 - Persuasion

HO24
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	8	41	31
Mean Ranks	0.00	36.00	37.20	46.03

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
80	2.886	0.236	3.214	0.201

Table 12.25 - Memory

H025
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	8	42	31
Mean Ranks	0.00	42.31	42.86	38.15

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
81	0.743	0.690	1.052	0.591

"regularly" gave leadership and imagination significantly higher mean ranks than those students who rated themselves "moderately". Similarly, students who rated themselves "regularly" gave organization a significantly higher mean rank than those students who rated themselves "seldom". Relative to importance ratings and physical exercise, no thinking strategies were significant at the .05 level of significance for students. This information is delineated in Table 13.

Chi-square Comparison of Length of Administrative Service: All Principals

When the four categories of administrative service were reviewed, frequency of use and importance ratings showed no significant difference ($p < .05$) among years of service. This information is delineated in Tables 14 and 15.

Rank Order of Means on Each Group for Frequency of Use and Importance Rating

The sample was dissected into five groups (high school principals, elementary principals, university students, all principals, and all subjects). Means were calculated and rank ordered for frequency of use and importance ratings. When reviewing the five highest rated

Table 13.1 - Conceptualization

H11
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	8	42	31
Mean Ranks	0.00	33.06	41.11	42.90

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
81	1.114	0.573	1.516	0.469

The mean ranks were computed by adding the ratings given by each participant in each exercise catagory and divided by the number of participants in that exercise category.

Table 13.2 - Perception

H12
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	8	42	31
Mean Ranks	0.00	32.75	40.93	43.23

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
81	1.262	0.532	2.050	0.359

Table 13.3 - Analysis

H13
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	8	42	31
Mean Ranks	0.00	28.63	45.06	38.69

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
81	3.762	0.152	4.673	0.097

Table 13.4 - Synthesis

H14
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	8	42	31
Mean Ranks	0.00	28.06	40.75	44.68

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
81	3.181	0.204	3.830	0.147

Table 13.5 - Interpersonal Interaction

H15
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	8	42	31
Mean Ranks	0.00	34.88	39.10	45.16

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
81	1.787	0.409	3.563	0.168

Table 13.6 - Planning

H16
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	8	42	31
Mean Ranks	0.00	41.44	41.68	39.97

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
81	0.097	0.952	0.277	0.871

Table 13.7 - Leadership

H17
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	8	41	30
Mean Ranks	0.00	44.00	38.22	41.37

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	0.596	0.742	2.183	0.336

Table 13.8 - Reading

H18
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	8	41	30
Mean Ranks	0.00	34.50	40.63	40.60

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	0.511	0.774	0.753	0.686

Table 13.9 - Observation

H19
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	8	41	30
Mean Ranks	0.00	47.19	37.33	41.73

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	1.511	0.470	2.357	0.308

Table 13.10 - Listening

H110
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	8	41	30
Mean Ranks	0.00	42.19	37.27	43.15

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	1.219	0.544	2.773	0.250

Table 13.11 - Classification

H111
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	8	41	30
Mean Ranks	0.00	41.50	39.39	40.43

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	0.074	0.964	0.091	0.955

Table 13.12 - Logical Relationships

H112
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	8	41	30
Mean Ranks	0.00	33.75	40.05	41.60

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	0.739	0.691	0.915	0.633

Table 13.13 - Decision Making

H113
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	8	41	30
Mean Ranks	0.00	41.00	40.04	39.68

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	0.021	0.990	0.284	0.868

Table 13.14 - Advocacy

H114
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	7	41	31
Mean Ranks	0.00	33.93	41.11	39.90

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	0.586	0.746	0.698	0.705

Table 13.15 - Imagination

H115
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	7	41	31
Mean Ranks	0.00	45.14	40.44	38.26

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	0.545	0.761	0.641	0.726

Table 13.16 - Organization

H116
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	7	41	31
Mean Ranks	0.00	39.93	38.71	41.73

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	0.305	0.858	0.848	0.654

Table 13.17 - Wisdom

H117
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	7	41	31
Mean Ranks	0.00	38.50	41.76	38.02

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	0.502	0.778	0.909	0.635

Table 13.18 - Idea Finding

H118
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	7	41	31
Mean Ranks	0.00	42.36	37.20	43.18

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	1.281	0.527	1.531	0.465

Table 13.19 - Problem Solving

H119
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	7	41	30
Mean Ranks	0.00	41.57	39.22	39.40

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
78	0.065	0.968	0.139	0.933

Table 13.20 - Evaluation

H120
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	8	42	31
Mean Ranks	0.00	44.88	38.90	42.84

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
81	0.739	0.691	1.086	0.581

Table 13.21 - Raising Questions

H121
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	8	42	31
Mean Ranks	0.00	38.63	40.19	42.71

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
81	0.295	0.863	0.350	0.840

Table 13.22 - Initiating, Defining, Reorganizing Structure

H122
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	8	42	31
Mean Ranks	0.00	54.88	39.18	39.89

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
81	3.104	0.212	3.680	0.159

Table 13.23 - Meditation

H123
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	8	42	31
Mean Ranks	0.00	34.19	39.85	44.32

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
81	1.390	0.499	1.616	0.446

Table 13.24 - Persuasion

H124
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	8	42	31
Mean Ranks	0.00	41.06	38.58	44.26

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
81	1.038	0.595	1.261	0.532

Table 13.25 - Memory

H125
by PE PHYSICAL EXERCISE

	NEVER	SELDOM	MODERATE	REGULARLY
PE	1	2	3	4
Number	0	8	42	31
Mean Ranks	0.00	30.88	43.00	40.90

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
81	1.786	0.409	2.297	0.317

Table 14.1 - Conceptualization

HO1
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	19	42	16	2
Mean Ranks	41.37	37.43	43.66	51.75

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	1.525	0.676	1.722	0.632

Table 14.2 - Perception

HO2
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	19	42	17	2
Mean Ranks	41.87	41.48	37.35	33.75

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
80	0.621	0.892	0.985	0.805

Table 14.3 - Analysis

HO3
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	19	41	17	2
Mean Ranks	41.13	37.12	45.44	42.00

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	1.662	0.645	1.855	0.603

Table 14.4 - Synthesis

H04
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	19	42	17	2
Mean Ranks	41.26	37.52	43.76	68.00

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
80	3.846	0.279	4.268	0.234

Table 14.5 - Interpersonal Interaction

HO5
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	19	41	17	2
Mean Ranks	42.08	37.16	43.59	48.00

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	1.443	0.695	2.949	0.400

Table 14.6 - Planning

H06
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	19	42	17	2
Mean Ranks	39.37	41.45	37.12	60.00

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
80	1.884	0.597	2.370	0.499

Table 14.9 - Observation

H09
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	19	42	16	2
Mean Ranks	45.97	35.89	42.69	48.00

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	3.095	0.377	6.351	0.096

Table 14.7 - Leadership

HO7
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	19	42	16	2
Mean Ranks	34.34	40.54	44.19	49.00

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	2.018	0.569	3.798	0.284

Table 14.8 - Reading

H08
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	19	42	16	2
Mean Ranks	37.79	39.12	43.38	52.50

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	1.178	0.758	1.767	0.622

Table 14.10 - Listening

HO10
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	19	42	15	2
Mean Ranks	40.95	38.36	40.40	43.00

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
78	0.256	0.968	1.043	0.791

Table 14.11 - Classification

H011
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	19	42	16	2
Mean Ranks	40.68	37.65	43.03	58.50

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	2.034	0.565	2.296	0.513

Table 14.12 - Logical Relationships

H012
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	19	42	16	2
Mean Ranks	38.32	39.55	41.16	56.25

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	1.162	0.762	1.321	0.724

Table 14.13 - Decision Making

H013
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	19	42	16	2
Mean Ranks	38.89	39.21	43.00	43.00

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	0.401	0.940	1.902	0.593

Table 14.14 - Advocacy

H014
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	18	42	17	2
Mean Ranks	45.11	37.04	43.29	28.25

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	2.468	0.481	2.720	0.437

Table 14.15 - Imagination

H015
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	18	42	17	2
Mean Ranks	42.31	39.46	39.68	33.25

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	0.381	0.944	0.422	0.936

Table 14.16 - Organization

H016
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	18	42	17	2
Mean Ranks	32.86	43.58	36.71	57.00

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	4.213	0.239	5.380	0.146

Table 14.17 - Wisdom

H017
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	18	41	17	2
Mean Ranks	36.25	40.85	38.26	51.50

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
78	1.128	0.770	1.739	0.628

Table 14.18 - Idea Finding

H018
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	18	42	17	2
Mean Ranks	41.61	36.39	44.79	60.50

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	3.464	0.325	3.866	0.276

Table 14.19 - Problem Solving

H019
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	18	41	17	2
Mean Ranks	39.33	39.65	40.76	27.25

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
78	0.640	0.887	0.979	0.806

Table 14.20 - Evaluation

HO20
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	18	42	18	2
Mean Ranks	43.06	40.54	35.42	62.50

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
80	2.872	0.412	3.547	0.315

Table 14.21 - Raising Questions

H021
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	18	42	18	2
Mean Ranks	37.89	41.29	39.61	55.50

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
80	1.135	0.769	1.270	0.736

Table 14.22 - Initiating, Defining, Reorganizing Structure

H022
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	18	42	18	2
Mean Ranks	42.92	40.01	41.56	19.50

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
80	1.884	0.597	2.080	0.556

Table 14.23 - Meditation

H023
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	18	42	18	2
Mean Ranks	37.97	39.37	43.83	57.00

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
80	1.691	0.639	1.874	0.599

Table 14.24 - Persuasion

H024
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	18	42	18	2
Mean Ranks	41.44	39.10	44.11	29.00

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
80	1.108	0.775	1.233	0.745

Table 14.25 - Memory

H025
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	19	42	18	2
Mean Ranks	42.97	36.87	47.00	55.00

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
81	3.308	0.347	4.681	0.197

Table 15.1 - Conceptualization

H11
by AS

ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	19	42	18	2
Mean Ranks	35.95	41.26	46.08	37.75

Cases	Chi-Square	Significance	Corrected for ties Chi-Square	Corrected for ties Significance
81	1.760	0.624	2.394	0.495

Table 15.2 - Perception

H12
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	19	42	18	2
Mean Ranks	39.45	41.87	39.33	52.50

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
81	0.708	0.871	1.151	0.765

Table 15.3 - Analysis

H13
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	19	42	18	2
Mean Ranks	34.89	40.65	45.97	61.50

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
81	3.611	0.307	4.485	0.214

Table 15.4 - Synthesis

H14
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	19	42	18	2
Mean Ranks	40.34	39.77	44.17	44.50

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
81	0.499	0.919	0.601	0.896

Table 15.5 - Interpersonal Interaction

H15
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	19	42	18	2
Mean Ranks	41.29	40.54	43.00	30.00

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
81	0.587	0.900	1.169	0.760

Table 15.6 - Planning

H16
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	19	42	18	2
Mean Ranks	35.84	41.68	44.25	46.50

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
81	1.401	0.705	3.979	0.264

Table 15.7 - Leadership

H17
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	19	42	16	2
Mean Ranks	39.84	40.24	39.06	44.00

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	0.093	0.993	0.340	0.952

Table 15.8 - Reading

H18
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	19	42	16	2
Mean Ranks	38.68	38.55	43.75	53.00

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	1.300	0.729	1.914	0.590

Table 15.9 - Observation

H19
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	19	42	16	2
Mean Ranks	41.87	38.60	39.97	52.00

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	0.830	0.842	1.295	0.730

Table 15.10 - Listening

H110
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	19	42	16	2
Mean Ranks	40.92	40.25	37.38	47.00

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	0.431	0.934	0.981	0.806

Table 15.11 - Classification

H111
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	19	42	16	2
Mean Ranks	42.79	38.27	39.53	53.50

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	1.217	0.749	1.507	0.681

Table 15.12 - Logical Relationships

H112
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	19	42	16	2
Mean Ranks	42.00	37.71	42.53	48.75

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	1.046	0.790	1.294	0.731

Table 15.13 - Decision Making

H113
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	19	42	16	2
Mean Ranks	38.92	40.06	41.00	41.00

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	0.076	0.995	1.033	0.793

Table 15.14 - Advocacy

H114
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	18	42	17	2
Mean Ranks	44.72	39.56	38.03	23.50

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	1.937	0.586	2.305	0.512

Table 15.15 - Imagination

H115
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	18	42	17	2
Mean Ranks	46.22	38.25	36.85	47.50

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	2.101	0.552	2.471	0.480

Table 15.16 - Organization

H116
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	18	42	17	2
Mean Ranks	36.83	39.80	43.21	45.50

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	0.793	0.851	2.200	0.532

Table 15.17 - Wisdom

H117
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	18	42	17	2
Mean Ranks	40.94	38.05	42.71	49.50

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	0.914	0.822	1.655	0.647

Table 15.18 - Idea Finding

H118
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	18	42	17	2
Mean Ranks	43.17	36.48	44.38	48.25

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
79	2.211	0.530	2.643	0.450

Table 15.19 - Problem Solving

H119
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	18	41	17	2
Mean Ranks	40.67	38.46	39.88	47.00

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
78	0.357	0.949	0.763	0.858

Table 15.20 - Evaluation

H120
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	19	42	18	2
Mean Ranks	41.55	41.36	38.08	54.50

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
81	0.955	0.812	1.403	0.705

Table 15.21 - Raising Questions

H121
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	19	42	18	2
Mean Ranks	40.21	40.35	40.14	70.00

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
81	3.117	0.374	3.696	0.296

Table 15.22 - Initiating, Defining, Reorganizing Structure

H122
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	19	42	18	2
Mean Ranks	50.79	36.54	40.50	46.25

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
81	4.910	0.179	5.822	0.121

Table 15.23 - Meditation

H123
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	19	42	18	2
Mean Ranks	42.29	43.10	31.97	66.00

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
81	5.299	0.151	6.161	0.104

Table 15.24 - Persuasion

H124
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	19	42	18	2
Mean Ranks	42.37	40.49	40.47	43.50

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
81	0.116	0.990	0.141	0.987

Table 15.25 - Memory

H125
by AS ADMINISTRATIVE SERVICE

	1 - 10	11 - 20	21 - 30	OVER 30
AS	1	2	3	4
Number	19	42	18	2
Mean Ranks	49.13	37.64	38.25	59.00

			Corrected for ties	
Cases	Chi-Square	Significance	Chi-Square	Significance
81	4.542	0.209	5.842	0.120

thinking strategies in each group, frequency of use category, it was discovered that decision making, listening, and interpersonal interaction were listed in the highest five thinking strategies by all groups.

When the same analytical observation was applied to importance mean ranks, it was revealed that all five groups rated decision making, leadership, planning, and organization among the five highest rated thinking strategies. It should be noted that decision making was the only thinking strategy found in the highest five mean ranks for frequency of use and importance in each group. See Tables 16 and 17 for statistical results.

When the lowest rated mean ranks, relative to frequency of use, in each group were reviewed, it was revealed that idea finding and initiating, defining, and reorganizing structure were listed in the lowest five mean ranks in all groups.

Similarly, classification, raising questions, and meditation were the lowest rated thinking strategies relative to mean ranks for importance.

Table 16

Rank Order of Item Numbers

	How Often			How Important			How Often		How Important	
	HS	EL	TWU	HS	EL	TWU	Prin-cipals	All Subjects	Prin-cipals	All Subjects
1	13	10	16	13	13	7	13	10	13	13
2	10	13	10	7	7	16	10	13	7	7
3	7	9	5	6	6	13	9	5	6	16
4	5	17	6	19	16	6	7	9	16	6
5	9	5	13	16	10	19	5	7	10	10
6	19	7	25	17	5	10	17	17	19	19
7	8	19	9	10	19	5	19	8	5	5
8	2	25	8	20	2	17	8	2	17	17
9	17	8	2	8	17	20	2	19	2	9
10	16	2	7	9	9	9	25	25	9	20
11	6	20	17	5	1	8	6	16	8	8
12	25	6	19	2	8	3	16	6	20	2
13	20	16	4	24	25	4	20	20	1	1
14	23	1	3	25	20	15	1	4	25	25
15	21	4	15	22	3	25	4	1	3	3
16	3	14	12	3	4	2	14	3	24	4
17	12	24	21	1	24	1	24	12	4	24
18	11	21	1	4	12	18	21	21	22	15
19	14	12	24	15	18	24	12	24	18	18
20	24	3	20	18	22	12	3	14	15	22
21	4	23	11	23	15	22	23	15	12	12
22	1	15	18	12	23	21	11	11	23	23
23	22	18	14	21	14	14	15	23	14	21
24	15	11	22	11	21	11	18	18	21	14
25	18	22	23	14	11	23	22	22	11	11

Top row is "best"
Bottom row is "worst"

Table 17

Mean Ranks

		How Often			How Important			How Often		How Important	
		HS	EL	TWU	HS	EL	TWU	Prin-cipals	All Sub-jects	Prin-cipals	All Sub-jects
Conceptualization	1	2.903	3.063	2.978	3.452	3.600	3.356	3.000	2.992	3.543	3.476
Perception	2	3.613	3.571	3.511	3.677	3.680	3.356	3.588	3.560	3.679	3.563
Analysis	3	3.000	2.776	3.136	3.452	3.380	3.422	2.861	2.959	3.407	3.413
Synthesis	4	2.903	2.939	3.200	3.355	3.320	3.400	2.925	3.024	3.333	3.357
Interpersonal Interaction	5	3.800	3.694	3.689	3.677	3.780	3.756	3.734	3.718	3.741	3.746
Planning	6	3.548	3.347	3.622	3.935	3.820	3.822	3.425	3.496	3.864	3.849
Leadership	7	3.839	3.688	3.500	3.935	3.875	3.933	3.747	3.659	3.899	3.911
Reading	8	3.613	3.583	3.511	3.710	3.542	3.556	3.595	3.565	3.608	3.589
Observation	9	3.710	3.813	3.511	3.677	3.667	3.578	3.772	3.677	3.671	3.637
Listening	10	3.871	3.936	3.689	3.806	3.792	3.778	3.910	3.829	3.797	3.790
Classification	11	2.935	2.583	2.844	3.097	2.979	2.889	2.722	2.766	3.025	2.976
Logical Relationships	12	2.968	2.792	3.044	3.258	3.167	3.178	2.861	2.927	3.203	3.194
Decision Making	13	3.935	3.896	3.578	4.000	3.958	3.822	3.911	3.790	3.975	3.919
Advocacy	14	2.933	2.878	2.767	3.067	3.041	2.907	2.899	2.852	3.051	3.000
Imagination	15	2.800	2.653	3.047	3.333	3.122	3.395	2.709	2.828	3.203	3.270
Organization	16	3.567	3.306	3.698	3.900	3.816	3.860	3.405	3.508	3.848	3.852
Wisdom	17	3.586	3.694	3.442	3.833	3.673	3.698	3.654	3.579	3.734	3.721
Idea Finding	18	2.733	2.592	2.791	3.267	3.163	3.302	2.646	2.697	3.203	3.238
Problem Solving	19	3.638	3.625	3.310	3.900	3.688	3.791	3.628	3.517	3.769	3.777
Evaluation	20	3.355	3.347	2.977	3.774	3.500	3.682	3.350	3.220	3.605	3.632
Raising Questions	21	3.000	2.796	3.000	3.097	2.980	3.068	2.875	2.919	3.025	3.040
Initiating Defining	22	2.871	2.245	2.581	3.452	3.140	3.116	2.488	2.520	3.259	3.210
Meditation	23	3.000	2.735	2.488	3.258	3.100	2.818	2.838	2.715	3.160	3.040
Persuasion	24	2.903	2.857	2.977	3.484	3.280	3.250	2.875	2.911	3.358	3.320
Memory	25	3.355	3.600	3.512	3.452	3.500	3.364	3.506	3.508	3.481	3.440

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

On the basis of the findings reported in Chapter IV the following conclusions are stated:

1. Principals utilize observation, listening, decision making, and evaluation more frequently than students of educational administration courses perceived their utilization of these same thinking strategies (see Table 5).

Table 5 shows 79.7% of the principals rating observation with a 4 for frequency of use, whereas only 64.4% of the students rated frequency of observation at 4. For listening 91.0% of the principals rated it a 4 for frequency of use whereas 75.6% of the students rated listening a 4; for decision making 92.4% of the principals rated it a 4 for frequency of use whereas only 73.3% of the students rated decision making at 4. Finally, evaluation was rated a 4 for frequency of use by 45.0% of the principals while only 37.2% of the students rated evaluation at 4.

2. Principals perceive conceptualization, perception, decision making, and meditation are more important

than students of educational administration courses perceive the importance of these same thinking strategies (see Table 6).

Table 6 shows 61.7% of the principals rating conceptualization with a 4 for importance whereas 40.0% of students of educational administration courses rated it with a 4. For perception 71.6% of the principals rated it a 4 for importance whereas 44.4% of the students rated perception at 4. For decision making 97.5% of the principals rated it a 4 for importance while 84.4% of the students rated decision making a 4. Finally, 38.8% of the principals rated meditation a 4 for importance while 38.6% of the students rated meditation a 4.

3. Principals weigh the importance of the following thinking strategies more heavily than they do the frequent utilization of these same thinking strategies: conceptualization, analysis, synthesis, planning, idea finding, initiating, defining, and reorganizing structure, meditation, and persuasion (see Table 3).

Table 3 shows 62.0% of the principals gave conceptualization a rating of 4 for importance whereas only 32.9% of the principals gave a rating of 4 for frequency of use. For analysis 48.1% of the principals gave analysis a rating of 4 for importance while 26.6% of the principals

gave a rating of 4 to frequency of use. For synthesis 48.4% of the principals gave synthesis a rating of 4 whereas only 32.9% of the principals gave synthesis a rating of 4 for frequency of use. For planning 86.3% of the principals gave planning a rating of 4 for importance while 51.3% of the principals gave planning a rating of 4 for frequency of use. For idea finding, 36.7% of the principals rated idea finding a 4 for importance whereas 17.7% of the principals rated idea finding a 4 for frequency of use. For initiating and defining structure, 43.8% of the principals rated importance a 4 while only 17.5% of the principals rated initiating and defining structure a 4 for frequency of use. For meditation 38.8% of the principals rated meditation a 4 whereas only 26.3% of the principals rated meditation a 4 for frequency of use. Finally, 50.0% of the principals rated persuasion a 4 for importance while 26.3% of the principals rated persuasion a 4 for frequency of use.

4. University students weigh the importance of the following thinking strategies more heavily than they do the frequent utilization of these same thinking strategies: conceptualization, synthesis, leadership, logical relationships, idea finding, problem solving, and evaluation (see Table 4).

Table 4 shows that 40.0% of university students of educational administration courses rated conceptualization a 4 for importance whereas only 35.6% of the students rated conceptualization a 4 for frequency of use. For leadership 93.2% of the students rated leadership a 4 for importance while 68.6% rated leadership a 4 for frequency os use. For logical relationships 42.2% of the students rated logical relationships a 4 for importance whereas only 40.2% of the students rated logical relationships a 4 for frequency of use. For idea finding, 51.2% of the students rated idea finding a 4 for importance while only 20.9% of the students rated frequency of use a 4. For problem solving 81.0% of the principals gave problem solving a 4 for importance whereas only 57.1% of the students gave problem solving a 4 for frequency of use. Finally, 72.1% of the students rated evaluation a 4 for importance while only 37.2% of the students gave evaluation a rating of 4 for frequency of use.

5. Principals believe decision making is more important than it is believed to be by university students (see Table 6).

6. Female principals reported that decision making and organization are the most important thinking strategies (see Table 11).

7. Female principals reported that interpersonal interaction and listening are the most frequently utilized strategies (see Table 11).

8. Exercise has no significant effect on the reported perceptions of importance or frequency of utilization of thinking strategies by principals or students of graduate educational administration courses; however, the following distinctions were revealed:

a. Principals who exercise seldom perceive themselves to utilize decision making more frequently than principals who exercise regularly (see Table 12).

b. Principals who exercise seldom reported utilization of evaluation more frequently than principals who exercise moderately (see Table 12).

c. Students who exercise regularly report higher ratings for frequency of both leadership and imagination than the ratings of leadership and imagination by graduate students who exercise moderately (see Table 13).

d. Students who exercise regularly believe organization should be utilized more frequently than is believed by students who exercise seldom (see Table 13).

9. Years of service does not significantly affect the principal's perception of importance or frequency of utilization of thinking strategies (see Table 14).

10. Principals and university students in educational administrative courses concur that classification, raising questions, and meditation are the least important thinking strategies (see Tables 16 and 17).

11. Principals and university students of educational administrative courses concur that idea finding and initiating, defining, and reorganizing structure are the least utilized thinking strategies (see Tables 16 and 17).

12. Decision making, listening, and interpersonal interaction are the most frequently utilized thinking strategies, according to responses by all participants (see Tables 16 and 17).

13. Decision making, leadership, planning, and organization are the most important thinking strategies, according to responses by all participants (see Tables 16 and 17).

In summary, the investigator believes school administrators relegate themselves to the role of reacting instead of taking initiative. For example, school administrators react to concerns and problems of students, parents, supervisors, communities, and board members.

This investigator believes the study and quest for mastery of the 25 thinking strategies delineated in this study will facilitate the school administrator's being

more effective and successful. Faily concurs when he states "The era of planning into which we are now entering will demand far greater capacities to conceive, conceptualize, negotiate, and compromise on the part of the administration" (Faily, 1980, p. 29). In this dissertation study, the principals tended to respond more conservatively than the graduate students. The years of experience as administrators probably influenced principals to be more cautious.

Recommendations

Because decision making, leadership, planning, listening, organization, and interpersonal interaction were declared paramount to effective school administration by the respondents in this study, in-service developers and university educators should plan accordingly. For example, principals and students of educational administration courses should be exposed to Force Field Analysis, the Delphi Model (Peake, 1982), interpersonal skills discussed by Aspy and Roebuck (1977), Guilford's (1977) "Structure of Intellect," McFarland's proposed book, The Thinking Administrator (Reference Note 1), and other relevant ideas about thinking. Also, there should be a concerted effort in educational research to ascertain effective methodologies that will facilitate the mastery of critical

thinking strategies already identified. The underlying theme in in-service training and educational administration courses should be to enhance one's thinking abilities and to provide critical thinking processes as models. Guilford's comment lends credibility to this theme when he states "it should not be doubted for a moment that intellectual powers of those living today can be expanded . . ." (p. 1).

Recommendations for Further Research

A pilot study of thirty principals throughout the state of Texas suggested ratings of the thinking strategies would be high (see Appendix C). Also, the investigator believes the lack of knowledge relative to thinking strategies has a positive correlation with lower ratings. It would be interesting to ascertain if an experimental group receiving training in the utilization of the 25 thinking strategies (a three-hour university course) rated thinking strategies significantly lower or higher than a control group on these same thinking strategies.

APPENDIX A

SCHOOL ADMINISTRATORS' THINKING STRATEGY SURVEY

SURVEY OF THINKING STRATEGIES

Twenty-five thinking strategies in school administration have been identified. Please rate each of the twenty-five thinking strategies on each of the two scales below.

Each of the 25 thinking strategies has been defined on the basis of the school principal's thinking about school administration.

On the left side of each definition, please rate your perception of the importance of the particular thinking strategy in the principal's leadership responsibilities. Please rate the strategy according to one of the following scores:

0	1	2	3	4
NOT IMPORTANT	MINIMALLY IMPORTANT	MODERATELY IMPORTANT	IMPORTANT	VERY IMPORTANT

On the right side of each definition, please rate the frequency with which you use the particular thinking strategy, using the following scale:

0	1	2	3	4
NEVER	A FEW TIMES A YEAR	EVERY MONTH	EVERY WEEK	EVERY DAY

You should have these two scales in clear view as you respond to this survey.

SURVEY OF THINKING STRATEGIES

HOW IMPORTANT 0-4		HOW OFTEN 0-4
1. _____	CONCEPTUALIZATION is the development of clear images of ideas, plans, attributes, systems of organization, or forecasts of potential products.	_____
2. _____	PERCEPTION is discernment, detection, awareness, identification, or realization through the basic senses. It is the alert consciousness of reality and of connections.	_____
3. _____	ANALYSIS is the outlining, charting, or diagnosing of complex phenomena, dividing them into their basic elements, and probing the inter-relationships of the elements.	_____
4. _____	SYNTHESIS is the planned combination of elements and parts so as to produce a coherent, integrated product.	_____
5. _____	INTERPERSONAL INTERACTION is the dynamic relationship of two or more people, including the influence of each person on each of the others.	_____
6. _____	PLANNING is the systematic development of an organization or arrangement for production or achievement. It is the design and definition of relationships. It is effective preparation for thinking and learning.	_____

HOW IMPORTANT 0-4		HOW OFTEN 0-4
7. _____	LEADERSHIP is the process of organizing a group of people to work together effectively to produce desired results and achievement.	_____
8. _____	READING is apprehending and understanding the meaning of written, published, or printed information. It is the gaining of knowledge and comprehension from written or printed words.	_____
9. _____	OBSERVATION is gaining knowledge and information from watching people, action, and phenomena.	_____
10. _____	LISTENING is the active reception of ideas and information from the oral language of others.	_____
11. _____	CLASSIFICATION is the organization of information into discrete sets, groups, or classes according to definite criteria.	_____
12. _____	LOGICAL RELATIONSHIPS are connections and implications between or among ideas, processes, personnel, or phenomena derived on the basis of systematic, deliberative reasoning, following fundamental rules of logic.	_____
13. _____	DECISION MAKING is the settling or determination of what is to be done, the resolution of a conflict, agreement on action, or determination to make a stand. Decision making brings a conclusion or settlement of a matter.	_____

HOW IMPORTANT 0-4		HOW OFTEN 0-4
14._____	ADVOCACY is the support or sustaining of a person or process. Literally advocacy means "called toward", taking the side of a person or a cause.	_____
15._____	IMAGINATION is the projection of new and creative ideas for action, the innovative design of an original plan for action.	_____
16._____	ORGANIZATION is the systematic planning for the utilization of personnel, resources, and processes for the fulfillment of objectives.	_____
17._____	WISDOM is the intelligent application of learning, the ability to discern essential relationships, the capacity to judge correctly concerning action and choices among alternatives.	_____
18._____	IDEA FINDING is the search for and discovery of ideas which might be relevant to research or to solving a problem. An idea is a concept, a proposed invention, or a projected thought that might be related to a solution, a decision, or a means towards achievement.	_____
19._____	PROBLEM SOLVING is the process of resolving difficulty or reconciling conflict through thinking of ways to overcome, avert, or correct the difficulty or conflict.	_____

HOW IMPORTANT 0-4		HOW OFTEN 0-4
20._____	EVALUATION is the process of making perceptive comparisons as foundations for decisions, choices or judgments. It involves objective, concise, realistic, clear analysis of the subject and all its implications and ramifications.	_____
21._____	RAISING QUESTIONS is introducing ideas or problems or questions as a basis for investigation, research, or inquiry, reflecting inferences that lead to analysis as a basis for discovery or problem solving.	_____
22._____	INITIATING, DEFINING, AND REORGANIZING STRUCTURE is taking the initiative to conceptualize what an organization or program can become and building or revising a structure and clarifying its meaning and purpose to make it effective.	_____
23._____	MEDITATION is close, concentrated, continuous reflective focus on a question. Meditation requires profound attention to the subject or area being studied.	_____
24._____	PERSUASION is the process of convincing others to make a commitment to a program or a course of action.	_____
25._____	MEMORY is the storage and retention of selected facts, ideas processes, and perceptions, and their retrieval and recall from mental storage when needed for the administrator's thinking.	_____

APPENDIX B

DEMOGRAPHIC DATA SHEET

DEMOGRAPHIC DATA SHEET

I. Your Sex

_____ Male

_____ Female

II. Your Age

_____ 20-30 years

_____ 30-40 years

_____ 40-50 years

_____ 50-60 years

_____ Over 60

III. Title

_____ High School Principal

_____ High School Assistant

_____ Middle School Principal

_____ Middle School Assistant

_____ Elementary School Principal

_____ Elementary School Assistant

_____ Texas Woman's University Student

IV. Years of Administrative Service

_____ 1-10 years

_____ 10-20 years

_____ 20-30 years

_____ Over 30

V. Degree

_____ Masters

_____ Masters Administrator Certificate

_____ Doctorate in Administration

_____ Doctorate in other than Administration

VI. Physical Exercise

_____ Never

_____ Seldom

_____ Moderately

_____ Regularly

APPENDIX C

PILOT STUDY

STUDENTS

		How Important					How Often				
		0	1	2	3	4	0	1	2	3	4
1.	Conceptualization				4	22		1	2	8	15
2.	Perception				3	24				6	21
3.	Analysis			1	5	20		2	3	9	12
4.	Synthesis				6	20		1	2	11	13
5.	Interpersonal				4	22				5	22
6.	Planning				2	25		1		6	19
7.	Leadership				5	22			2	9	16
8.	Reading				6	21		1		5	21
9.	Observation				10	17				14	18
10.	Listening				2	20			1	2	24
11.	Classification			6	8	13		1	5	16	6
12.	Logical Relationships			1	9	16			3	13	11
13.	Decision Making				3	23		1		6	20
14.	Advocacy			1	7	19			1	14	11
15.	Imagination			3	8	17			2	10	15
16.	Organization				3	20		2	1	3	20
17.	Wisdom				5	22			1	4	21
18.	Idea Finding			2	10	14			3	13	10
19.	Problem Solving			1	2	23			2	4	21
20.	Evaluation				7	21			3	8	16
21.	Raising Questions			2	13	13		1	2	15	14
22.	Initiating Defining				12	16		1	3	14	9
23.	Meditation			3	13	12		2	5	13	8
24.	Persuasion				20	8		2	4	17	4
25.	Memory				7	19			3	6	18

ADMINISTRATORS

		How Important					How Often				
		0	1	2	3	4	0	1	2	3	4
1.	Conceptualization		1		8	12		1	3	8	9
2.	Perception				4	17				2	19
3.	Analysis			2	10	9		2	5	8	6
4.	Synthesis				8	14		1	2	10	8
5.	Interpersonal				2	20					21
6.	Planning				3	18		3	1	1	16
7.	Leadership			1		20		1	2	1	17
8.	Reading				2	19				5	16
9.	Observation				2	19			1	1	19
10.	Listening				1	20			1	1	18
11.	Classification	1		4	9	6	2	1	5	11	3
12.	Logical Relationships				13	7		1	3	8	8
13.	Decision Making					21				2	20
14.	Advocacy		1	4	5	11		4	3	4	10
15.	Imagination		1	1	12	7		2	8	4	6
16.	Organization			1	1	20		3		2	16
17.	Wisdom				2	20			1	6	19
18.	Idea Finding			2	6	13		2	7	3	11
19.	Problem Solving					21				4	18
20.	Evaluation				2	19		1		8	12
21.	Raising Questions		1		8	12		2	3	7	14
22.	Initiating Defining			1	6	14	1	5	2	7	5
23.	Meditation		1	2	6	12		4	7	4	6
24.	Persuasion				4	17		2	3	5	11
25.	Memory			2	4	15			1	5	15

APPENDIX D

GUIDE FOR INTERPRETING TABLES

Guide for Interpreting Tables

The following tables are provided to facilitate clarity. Each table is composed of three elements, rows, columns and cells. Rows have data aligned horozontally. Columns have data aligned vertically. Cells from top to bottom are comprised of the following four items: 1) number of subjects, 2) number of subjects in that row, 3) number of subjects in that column, 4) number of subjects in total sample. The three sample tables were extracted from actual tables utilized in the study.

Table 3.2

Perception

HO2 Ratings-> ↓	HI2 1	2	3	4	Row Total	
1	1 33.3 100.0 1.3	0 0.0 0.0 0.0	2 66.7 9.5 2.5	0 0.0 0.0 0.0	3 3.8	No. %
2	.0 0.0 0.0 0.0	1 25.0 100.0 1.3	3 75.0 14.3 3.8	0 0.0 0.0 0.0	4 5.0	No. %
3	0 0.0 0.0 0.0	0 0.0 0.0 0.0	6 37.5 28.6 7.5	10 62.5 17.5 12.5	16 20.0	No. %
4	0 0.0 0.0 0.0	0 0.0 0.0 0.0	10 17.5 47.6 12.5	47 82.5 82.5 58.8	57 71.3	No. %
Column Total	1 1.3	1 1.3	21 26.3	57 71.3	80 100	No. %

HI2 = How Important, thinking strategy 2.
HO2 = How Often, thinking strategy 2.
Example; Row 2 Column 3.
I Three principals rated How Often a 2 and How Important a 3
II Seventy-five percent of the principals rating How Often a 2 rated How Important a 3.
III Fourteen point three percent of the principals rating How Important a 3 rated How Often a 2.
IV Three point eight percent of all principals rated How Important a 3 and How Often a 2.

Table 5.1

Conceptualization

HO1 Ratings ↓	1	2	Row Total	
1	6 66.7 7.6 4.8	3 33.3 6.7 2.4	9 7.3	No. %
2	14 56.0 17.7 11.3	11 44.0 24.4 8.9	25 20.2	No. %
3	33 68.8 41.8 26.6	15 31.3 33.3 12.1	48 38.7	No. %
4	26 61.9 32.9 21.0	16 38.1 35.6 12.9	42 33.9	No. %
Column Total	79 63.7	45 36.3	124 100	No. %

HO1 = How Often--number one thinking strategy.
Example (cell one for Principals)
I Six is the number of principals giving How Often a rating of 1.
II Sixty-six point seven is the percent of principals giving How Often a rating of one.
III Seven point six percent of the principals gave thinking; strategy one a rating of one.
IV Four point eight percent of the principals and students combined (sample) rated thinking strategy one a score of one.

Table 9.1

Conceptualization

Ratings ->	HI1 1	2	3	4	Row Total	
Group	0	4	9	18	31	No.
	0.0	12.9	29.0	58.1	24.6	%
High School	0.0	66.7	17.6	26.5		
	0.0	3.2	7.1	14.3		
	0	2	16	32	50	No.
	0.0	4.0	32.0	64.0	39.7	%
Elementary	0.0	33.3	31.4	47.1		
	0.0	1.6	12.7	25.4		
	1	0	26	18	45	No.
	2.2	0.0	57.8	40.0	35.7	%
T.W.U.	100.0	0.0	51.0	26.5		
	0.8	0.0	20.6	14.3		
Column	1	6	51	68	126	No.
Total	0.8	4.8	40.5	54.0	100	%

HI1 = How Important; thinking strategy 1.
HO1 = How Often; thinking strategy 1.
Example; High School cell 3.
I Nine high school principals rated thinking strategy 1 a 3.
II Twenty-nine percent of the high school principals rated thinking strategy one a 2.
III Seventeen point six percent of the participants rating thinking strategy 1 a 3 were principals.
IV Seven point one percent of all three groups (sample) rated thinking strategy 1 a 3.

APPENDIX E

LETTER TO SCHOOL PRINCIPALS

AGENCY APPROVAL

dallas independent school district

Robert T Hill Middle School

Linus Wright
General Superintendent

February 1, 1983

Dear Colleague:

I need your help. Enclosed you will find a survey instrument that will be used in my dissertation. I have identified twenty-five administrative thinking strategies. I am requesting that you rate each "thinking strategy" as to its importance and frequency of use.

Your cooperation and prompt response are immensely appreciated.

Sincerely,

Dissertation/Theses signature page is here.

To protect individuals we have covered their signatures.

dallas independent school district

Linus Wright
General Superintendent

January 3, 1983

George Woodrow, Jr.
Assistant Principal
Robert T. Hill Middle School
505 Easton Road
Dallas, Texas 75218

Dear Mr. Woodrow:

I am pleased to inform you that the Research Committee of the Dallas Independent School District has approved your proposal entitled "Importance and Frequency of Use of Administrative Thinking Strategies". I will coordinate your study.

Best of luck in this endeavor.

Sincerely,

Dissertation/Theses signature page is here.

To protect individuals we have covered their signatures.

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