



A qualitative examination of critical questioners and the critical questioning process
by Wendy Victoria Hamilton

A thesis submitted in partial fulfillment of the requirements for the degree of Doctor of Education
Montana State University

© Copyright by Wendy Victoria Hamilton (1991)

Abstract:

This study was designed to investigate the characteristics of critical questioners in academic group settings. The study examined the definition of critical questioners, the conditions necessary for raising critical questions, the thought patterns of critical questioners, the personal and environmental factors influencing critical questioning, and the differences between critical and noncritical questioners. A critical questioner is defined as someone who pragmatically and intuitively looks for opportunities to pursue and test ideas, arguments, comments, and observations, for soundness, clarity, validity, and logic. Thirty Montana State University faculty were identified by their peers as critical questioners through a modified Delphi process. These faculty were interviewed and surveyed regarding critical questioning characteristics. Data showed that a passion for learning, a willingness to critically question, an ability to lead people in new directions of thought, a receptivity to information and ideas, and a confident, creative, open mind were among the characteristics of critical questioners. When an environment is conducive to questioning, critical questioners initiate, facilitate, and coordinate critical questioning by involving group members, raising questions, bringing issues into context, clarifying information, and examining all available perspectives. Interviewees also identified their frustrations with noncritical questioners. Noncritical questioners lacked intellectual curiosity, lacked communication skills, did not value the, and operated with ulterior motives. The researcher concluded that the inability of some people to critically question creates a communication gap between critical and noncritical questioners. An inability to critically question hampers people's control over their lives. An initial theory of critical questioning emerged from the study which says that in order for critical questioning in a group setting to be effective four variables must be present: a) the opportunity must exist for an issue to be critically questioned, b) one or more individuals must possess the necessary resources or capacity to critically question, c) there must be a supportive group atmosphere, and d) the outcome of the process must shed new light on the issue being discussed.

A QUALITATIVE EXAMINATION OF CRITICAL QUESTIONERS
AND THE CRITICAL QUESTIONING PROCESS

by

Wendy Victoria Hamilton

A thesis submitted in partial fulfillment
of the requirements for the degree

of

Doctor of Education

MONTANA STATE UNIVERSITY
Bozeman, Montana

December, 1991

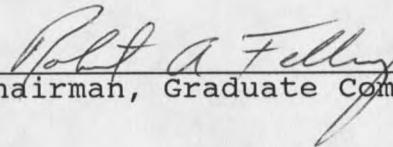
D378
H181

APPROVAL

of a thesis submitted by
Wendy Victoria Hamilton

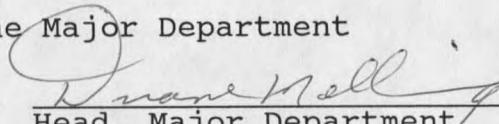
This thesis has been read by each member of the thesis committee and has been found to be satisfactory regarding requirements, content, English usage, format, citations, bibliographic style, and consistency and is ready for submission to the College of Graduate Studies.

December 5, 1991
Date


Chairman, Graduate Committee

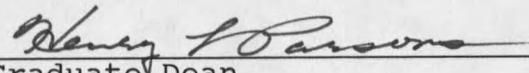
Approved for the Major Department

December 5, 1991
Date


Head, Major Department

Approved for the College of Graduate Studies

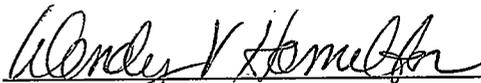
12/21/91
Date


Graduate Dean

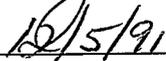
STATEMENT OF PERMISSION TO USE

In presenting this thesis in partial fulfillment of the requirements for a doctoral degree at Montana State University, I agree that the Library shall make it available to borrowers under rules of the Library. I further agree that copying of this thesis is allowable only for scholarly purposes, consistent with "fair use" as prescribed in the U.S. Copyright Law. Requests for extensive copying or reproduction of this thesis should be referred to University Microfilms International, 300 North Zeeb Road, Ann Arbor, Michigan 48106, to whom I have granted "the exclusive right to reproduce and distribute copies of the dissertation in and from microfilm and the right to reproduce and distribute by abstract in any format."

Signature



Date



ACKNOWLEDGMENTS

I would like to acknowledge the outstanding advice and assistance received from each member of my doctoral committee. With gratitude and appreciation I recognize Dr. Robert Fellenz, Chairman, for his outstanding encouragement and expertise in adult education research; Dr. Gary Conti for his guidance in data gathering and analysis; Dr. Margaretha Wessel for her stimulating ideas and enthusiasm for the research; Dr. Richard Haines for his appreciation and support of my program goals; Dr. Priscilla Fenton, for her enthusiastic consent to join my committee during the defense phase; and to Dr. Thomas Carroll, Graduate Representative, for his generous commitment of time and thought.

Thanks are extended to internship supervisor, Ken Weaver for providing resources, valued guidance, and the opportunity to revisit the purpose of my study many times. To Mary Burgess, who cared for my children at every request. To Lynn Paul, Tom Gibson, Ann Johnson, and many other graduate students too numerous to mention, who encouraged me with interested questions and valued critique.

Finally, I wish to extend deepest appreciation to my loving husband, Lee, for his unconditional support and encouragement in my growth as an individual; also to my sons, John and Lucas, for their patient tolerance of the process.

TABLE OF CONTENTS

	Page
1. INTRODUCTION	1
Background of the Problem	2
Statement of the Problem	4
Purpose of the Study	5
Research Questions	6
Significance of the Study	7
Scope of the Study	8
Definitions	9
Limitations of the Study	11
2. REVIEW OF THE LITERATURE	12
Summary	33
3. DESIGN OF THE STUDY	35
Selection of the Sample for the Study	35
Collection of the Data	39
Compilation of Data	42
Summary	43
4. FINDINGS OF THE STUDY	44
Findings Related to Research Questions	44
Definition of a Critical Questioner	45
Definition of a Critical Questioner (Interview Question 1.1)	45
Prerequisites for Critical Questioning	53
Impressions by Peers (Interview Question 2.1)	54
Characteristics of Settings (Interview Question 2.2)	58
Critical Questioning Thought Process	63
Contributions Toward Issue Resolution (Interview Question 3.1)	63
Thought Process (Interview Question 3.2)	69
Personal Influences	75
Behavior (Interview Question 4.1)	76
Level of Self-Confidence (Interview Question 4.2)	79
Friendship (Interview Question 4.3)	82
Past Events (Interview Question 4.4)	84
Mentoring (Interview Question 4.5)	87
Reading (Interview Question 4.6)	88
Subject Matter (Interview Question 4.7)	93

TABLE OF CONTENTS - Continued

	Page
Characteristics of Critical Questioners . . .	98
Noncritical Questioners	
(Interview Question 5.1)	98
Frustrations of Critical Questioners	
(Interview Question 5.2)	104
Environmental Influences	109
Environmental Influences on Critical	
Questioning (Interview Question 6.1) . .	110
Summary	118
5. FINDINGS AND CONCLUSIONS	120
Definition of a Critical Questioner	123
Findings	123
Conclusions	124
Prerequisites of Critical Questioners	127
Findings	127
Conclusions	129
Thought Process and Steps Used by Critical	
Questioners	130
Findings	130
Conclusions	131
Variables Influencing One's Ability to Question	133
Findings	133
Conclusions	135
Characteristics of Critical Questioners	136
Findings	136
Conclusion	137
Environmental Influences of Critical Questioners	138
Findings	138
Conclusions	139
Recommendations Related to Theory	141
Recommendations Related to Practice	142
Recommendations for Further Research	144
REFERENCES	147
APPENDICES	154
Appendix A	155
Faculty Letter	156
Appendix B	157
Contact Sheet and Interview Form	158
Appendix C	163
Printed Survey	164

LIST OF TABLES

Table		Page
1	Description of Sample	38
2	Rank Ordering of Characteristics of Critical Questioners.	51
3	Comparison Among Environmental Variables Influencing Interviewees' Desire to Critically Question.	116

ABSTRACT

This study was designed to investigate the characteristics of critical questioners in academic group settings. The study examined the definition of critical questioners, the conditions necessary for raising critical questions, the thought patterns of critical questioners, the personal and environmental factors influencing critical questioning, and the differences between critical and noncritical questioners. A critical questioner is defined as someone who pragmatically and intuitively looks for opportunities to pursue and test ideas, arguments, comments, and observations, for soundness, clarity, validity, and logic. Thirty Montana State University faculty were identified by their peers as critical questioners through a modified Delphi process. These faculty were interviewed and surveyed regarding critical questioning characteristics. Data showed that a passion for learning, a willingness to critically question, an ability to lead people in new directions of thought, a receptivity to information and ideas, and a confident, creative, open mind were among the characteristics of critical questioners. When an environment is conducive to questioning, critical questioners initiate, facilitate, and coordinate critical questioning by involving group members, raising questions, bringing issues into context, clarifying information, and examining all available perspectives. Interviewees also identified their frustrations with noncritical questioners. Noncritical questioners lacked intellectual curiosity, lacked communication skills, did not value the , and operated with ulterior motives. The researcher concluded that the inability of some people to critically question creates a communication gap between critical and noncritical questioners. An inability to critically question hampers people's control over their lives. An initial theory of critical questioning emerged from the study which says that in order for critical questioning in a group setting to be effective four variables must be present: a) the opportunity must exist for an issue to be critically questioned, b) one or more individuals must possess the necessary resources or capacity to critically question, c) there must be a supportive group atmosphere, and d) the outcome of the process must shed new light on the issue being discussed.

CHAPTER 1

INTRODUCTION

Critical questioning is part of the process of critical thought or critical thinking. Critical thinking is "reasonable reflective thinking that is concerned with what to do or believe" (Ennis, 1987, p. 10). The critical questioner is someone who questions ideas, arguments, comments, and observations for sound and substantiated logic. Those who have studied critical thinking have commented on the important role that questioning plays in critical thought (Brookfield, 1987; Paul, 1990).

Questioning constitutes a large part of the learning and decisionmaking processes. Often, in group settings, there are one or more individuals who take the leadership in finding, exploring, and incorporating important points of a group issue. Many times these important points are not obvious or recognizable to the majority of group members. In group settings, these individuals have the ability to lead groups in issue resolution with their pointed, objective, exploratory questions (i.e., critical questions). Developing a foundation for defining and exploring characteristics and processes of the critical questioner creates a platform to understand some of the conscious efforts of critical questioners in group issue resolution. An understanding of critical questioning can provide a useful set of tools to emulate and teach others how to become critical questioners.

Background of the Problem

Critical questioners bring forward for examination what others have tended to accept. Critical questioners question what their peers have taken for granted. When people question, they are looking for what might be and not looking for what is. The ability to question critically is an action that leads "people toward enlightenment and emancipation from domination or exploitation by others economically, politically, sexually, intellectually, or spiritually" (Newmann, 1985, p. 54). Questioners examine situations and decide if there is value in spending time considering the issues; while many people make decisions for "efficiency", critical questioners make decisions based on effectiveness criteria such as what is fair; what is equitable; what is of value? Self-interest does not seem to be a large consideration of critical questioners. Critical questioners judge issues on what's fair and just. Their actions are primarily based on high moral standards. They seem more concerned with the quality of the solution than the actual solution itself.

Because of the rapid changes in American society and the proliferation of new knowledge taking place today, individuals have a sustained need to develop their capacity for critical questioning. People are often asked to make decisions concerning new and complex social issues where facts are tangled among irrelevant arguments and data is unclear. The ability to question critically is needed to provide an

accurate basis for decisionmaking (Skinner, 1976). Effective decisionmaking presupposes sound judgement, but all decisions are not automatically based on sound judgement. Critical questioning can help to provide an avenue for sound judgement to prevail. Human beings can agree with any number of things without knowing how, why, when, where, or what. It is quite possible "to make a decision for irrational reasons; because those around us have decided; because we are rewarded for making a decision; because we are afraid not to make a decision; or because we have ego-identified ourselves, our image, or our personality with someone else's decisionmaking criteria" (Paul, 1987, pp. 374-375).

Individuals become critical questioners and sound decision makers to the extent that their beliefs are well thought out, that beliefs are grounded in sound reasoning and evidence, that individuals recognize and critique their own biases, and to the extent that people are not moved by faulty reasoning, fears, and irrational motives (Paul, 1987, p. 375). The critical questioner examines, acts or behaves, and thinks in ways that characterize a particular kind of rational, informed, inquiring person.

The role and importance of critical thinking in the context of the educational environment is a growing area of study today. Many authors are testing and writing about ways to teach and incorporate critical thinking designs in the classroom (Bloom, et al, 1956; Ennis, 1987; Hunkins, 1972;

McPeck, 1981; Ruggiero, 1988; Smith, 1990). One segment of the educational environment where both critical thinking and the component of critical inquiry are being practiced is the university group committee setting. Within the university setting, committee structures are frequently used to examine important issues and employ decisionmaking skills. Committees are often charged with issues or problems that require some form of action such as resolution, policy change, rethought, or guidance and direction (Wason & Johnson-Laird, 1968).

Statement of the Problem

The ability to question critically is an accepted aspect of the critical thinking process. (Brookfield, 1987; Ennis, 1987; Paul, 1987). However, even though critical questioning comprises a large part of the critical thinking process, there is a noticeable lack of descriptive information in the literature on how to encourage critical questioning or how to teach others to do it. Since there is no clear idea of why or how the critical person thinks, it is difficult to model the process or teach it. Some aspects of the critical questioner are accepted and understood. However, there is no composite set of characteristics available for the educator to study and review. Is there an underlying pattern to critical questioning? To date, no research has sought to identify the dispositions common to critical questioners. Studies have not addressed the reasons why some people are active or habitual

critical questioners while others are either not or seem to be only at infrequent moments.

One way to examine critical questioning is to look at it in component parts. Hunkins (1972) dissects the ability to question into three levels: a knowledge level, an understanding level, and a doing level. The first level is an awareness of the process; the second is the ability to comprehend the process; the last connotes being able to employ the process. A central problem to critical questioning is discovering how people move from level two to level three to become critical questioners.

Purpose of the Study

The purpose of this study was to identify a group of critical questioners and to interview them in order to form a conceptual picture of the critical questioner. Many questions came to mind when developing a framework from which to examine the critical questioner. For example, what are the influential factors that cause people to ask critical questions? What is it about a group setting that brings issues and critical questioning together? What is it in a group setting that promotes or impedes the critical examination of an issue? How does one recognize a critical questioner? Is there a relationship between life experiences and one's abilities to critically question? What contextual conditions need to exist to encourage critical questioning?

Critical questioning involves knowing when to question, what sorts of questions to ask, and having the willingness to do so. However, current literature does not provide the reader with a clear idea of why people critically question or how the critical questioner thinks about issues. A better understanding of the critical questioner's criteria for questioning can lead to a better understanding of the questioning process.

Research Questions

This study specifically examined the following questions:

1. What is the definition of a critical questioner?
2. Is there an underlying list of conditions that is a prerequisite for critical questioning?
3. Is there an underlying thought process from which critical questions evolve?
4. Are there events in a person's life that may influence one's development into a critical questioner?
5. What are the differences between critical questioners and noncritical questioners in university group settings with regard to critical questioning?
6. Does the environment influence a person's willingness to critically question?

The ability to use critical questioning can challenge the individual personally, socially, and intellectually. The critical questioner is often an admired and desired member of a professional group, who is often recognized for insightfulness and clear thinking. Yet the term critical is

often misunderstood and taken to mean lacking social skills and being prejudiced, close-minded, overly academic, negative, or nit-picky (Paul, 1984, p. 6). Another problem with critical questioning is that some people may think they are critical questioners, when, in fact, they lack the basic premise of understanding about what constitutes a critical questioning frame of mind. These people often think it is the other person who needs training in how to question critically (Paul, 1984, p. 6). This study was designed to identify who critical questioners are, to determine why people ask critical questions, to assess common characteristics among critical questioners, and to examine processes used by critical questioners to ask critical questions to gain a clearer understanding of who critical questioners are and how others might emulate the process.

Significance of the Study

This research broadens the understanding of the critical questioner. The qualitative nature of this study permitted gathering a contextually rich set of descriptive data. The research brings together a previously unavailable body of information about critical questioners. Research findings identify the distinguishing characteristics of a group of critical questioners. With a foundation of knowledge regarding who a critical questioner is together with the actions, influences, characteristics, and mind set of a critical

questioner, individuals can assess their own critical inquiry strengths and work to develop their weak or missing areas. Educational institutions, that want to develop critical questioning in their students, can become more cognizant of the types of faculty who can role model critical questioning for students. Committee chairs within organizations might want to use more selective criteria when choosing committee members if the duties of the committee include critical decisionmaking responsibilities. Organizations such as the Extension Service can develop staff training programs to encourage the improvement of critical thinking by their staffs, especially since the job of an Extension specialist or agent largely involves helping clientele weigh alternatives and facilitate change. Finally, if more people knew about and understood the characteristics of a critically inquiring mind, people might be willing to see themselves and their social situations in a new way. They could change conditions they find repressive or distasteful (Plihal, 1989, p. 44).

not in reference section!

Scope of the Study

This study looked at what it means to be a critical questioner. The very term "critical" often creates a negative image of going against the grain, of being mean-spirited, of arguing, or being defiant. However, to be critical can also have the positive connotation of seeking greater understanding, searching for new answers, and exploring a

wider body of alternatives. In short, critical inquiry is objectively weighing and judging arguments through questioning. This study examined this positive endeavor to dissect the characteristics of a sample of critical questioners and to assess the dispositions necessary to performing critical questioning functions.

The research sample consisted of Montana State University faculty who were identified as critical questioners by their peers. A modified Delphi process was used to identify the sample. Data collection was done through an interview format and a quantitative self-assessment instrument. Data were compiled and analyzed with a dBase sorting program. Frequencies, means, and standard deviations of statistical data were computed.

Definitions

Five terms were used throughout the study. They are a) critical, b) question, c) critical questioning (or inquiry), d) a critical questioner, and e) critical thinking. The following discussions present the researcher's definitions of these terms.

Being critical means a self-conscious reflection and skillful judgement as to or merit. Being critical causes a person to weigh all available information equally with the goal of finding a reasonable answer.

A central element to thinking critically is the ability to question, to investigate through examination and critique. Questioning is a technique for information gathering and clarification. Critical questions focus attention on important information and are often designed to generate new information.

Critical questioning (or inquiry) is a specific form of questioning that seeks to uncover more than facts. It seeks to understand assumptions, examine alternatives, discard irrelevant data, and search for logic. Critical questioning is a method of information processing with the goal of seeing clear reasoned information.

A critical question is a question that is instantly recognized by the group as providing a missing link or valuable piece of information needed to solve or further specify an issue. But until that moment of questioning, the information has gone on unnoticed or has not been missed.

A critical questioner questions ideas, arguments, comments, and observations for sound and substantiated logic. A critical questioner processes information, seeks a clear statement of the thesis or question, seeks reasoning, tries to become well-informed, or tries to remain relevant to the points at hand.

Critical thinking includes "the mental processes, strategies, and representations people use to solve problems, make decisions, and learn new concepts" (Sternberg, 1985).

Limitations of the Study

1. Faculty identified themselves and other faculty as critical questioners based on definitions provided. The definition proved useful however, faculty may not have had a very wide circle of acquaintances. This may have caused some faculty to nominate only their immediate peers, those they see and interact with frequently.
2. This study contained more men than women. Twenty-seven of the interviewees were men; five were women. It is unclear whether a majority of females responding to the Delphi survey nominated women with men nominating men. However, women faculty are under represented at MSU not only in the ranks of faculty (women represent 21.9% of tenured and tenure track faculty) but in many of the highly visible decisionmaking committees across campus such as faculty council and dean's council. These decisionmaking arenas are examples of places where strong critical questioners might be observed.
3. By nature, qualitative interviewing may provide a data memory bias due to the inability of interviewees to provide certain types of information from previous events.

CHAPTER 2

REVIEW OF THE LITERATURE

Critical questioning is a primary function of the critical thinking process (Ennis, 1987, p.19). Critical questioning allows people to effectively examine ingrained assumptions, explore alternatives, and assess the context of issues (Brookfield, 1987, p. 93). In recent years most of the attention given to critical questioning has focused on the merits of questioning in the classroom and the methods teachers use to encourage it (Hunkins 1972; Meyers, 1986). The principles of critical questioning outside of the classroom have not been widely examined. In fact, critical questioning as a body of literature is very limited. In the most recent and one of the most important books on critical thinking, Critical Thinking: What Every Person Needs to Survive in a Rapidly Changing Society, no definition of critical questioning is provided (Paul, 1990) even though the topics of critical writing, reading, person, thinking, listening and society are all defined and even though questioning in the context of critical thinking is discussed. [Throughout all the literature about and related to critical thinking and questioning, there are no articulated, explicit theories of critical questioning that can be used to guide the exploration of the critical questioning process.]

Operationalizing the concept of critical questioning is difficult. No instruments specifically designed to measure

critical questioning are available. Many critical thinking instruments attempt to test indirectly for critical questioning by asking for participants' responses to a variety of inquiry statements (Kolb, 1985; Stewart, 1977; Watson and Glaser, 1980).

Paul (1984) developed a theory of critical thinking that relates to this study of critical questioning. He theorizes differences in critical thinking in terms of strong and weak thinkers and describes characteristics that can be applied to each category including questioning functions. His theory of critical thinking implies elements of critical questioning; however, Paul does not mention the questioning operation directly in the theory. He does nonetheless discuss questioning as an important element of critical thinking in much of his writing (1990). Paul's (1987) theory of critical thinking helps bridge the knowledge gap between several taxonomies or hierarchies of thinking and hypothesizing how critical questioning minds may differ or be similar.

Weak critical thinkers are those who think critically only with respect to monological or one-dimensional issues and attack multilogical issues with a pronounced monological bias (Paul, 1987, p. 376). Monological thinking is thinking that is conducted exclusively within one point of view or frame of reference (Paul, 1990, p. 561).

Strong sense critical thinkers a) deeply question their framework of thought, b) reconstruct sympathetically and imaginatively the strongest versions of points of view and frameworks of

thought opposed to their own, and c) reason dialectically (multilogically) in such a way as to determine when their own point of view is at its weakest and when an opposing point of view is at its strongest. (Paul, 1987, p. 377)

Paul theorizes that not all these characteristics are contained within all people and thus establishes a continuum of critical thinking much like a Likert scale from weak to high. It seems reasonable that the same kind of measure could be applied to a continuum of critical questioning. The idea of strong critical questioning has been discussed using different terminology in various ways by other leading critical thinking scholars (Brookfield, 1987; Ennis, 1962; Glaser, 1941; Lipman, 1987; Passmore, 1967; Siegel, 1980). However, no empirical research has been done on this topic.

Lipman (1987) briefly discusses scientific inquiry as being composed of clusters of skills including description, evaluation, verification, falsification, and observation. However, he is reluctant to reduce these skills further. Lipman feels that this reduction would "not make for effective pedagogy in education" (p. 158).

scientific
method.

Ennis (1987) discusses questioning with regard to a clarifying ability -- "asking appropriate clarifying questions is an important aspect of critical thinking" (p. 19). Ennis includes questioning as an important component in his list of critical thinking abilities but does not recognize or discuss the characteristics of effective critical questioning in detail except to provide examples of critical questions (pgs.

12, 19). His work, while informative, leaves the student of critical questioning at a loss for specific instructions on the steps to develop into a critical questioner.

Brookfield (1987), the only author who employs the term "critical questioner", describes critical questioning as a specific form of questioning designed to prompt reflective analysis (p. 93). He discusses three characteristics of a critical questioner: a) the ability to frame insightful questions that are readily understood by others, b) the ability to explore highly personal issues in a sensitive way, and c) the ability to ask intimating questions in a nonthreatening manner. Yet, Brookfield stops there and concludes by making some brief comments about how difficult it is to develop into a critical questioner.

Another problem that hinders accurate assessment of what critical questioning is is the controversy over right brain-left brain theory (Brookfield, 1987, p. 126). Long (1983) summarizes the controversy as follows:

Researchers believe that the left hemisphere of the brain operates on words and clearly defined symbols such as chemical and mathematical signs. It is described as being active, calculating, reasoning, and predominately sequential and analytic in its functioning. The right hemisphere of the brain operates on pictures, is spatially oriented, perceives patterns as a whole, and operates in an intuitive, emotional, and receptive mode. (P.73)

Brookfield (1987) goes on to say that "such preliminary conjectures regarding the physical location of certain cognitive functions are fascinating yet unproven" (p. 126).

Brookfield goes on to say that "if these conjectures do turn out to be empirically based, they will revolutionize our understanding of learning styles and creativity" (p. 126). Empirical results recognizing right brain contributions to thinking will also do much to expand our understanding of questioning functions.

There are a number of taxonomies used in education (Bloom, 1956; Brookfield, 1987; Ennis, 1987; Sanders, 1966; Kaiser, 1979; Skinner, 1976; Smith, 1969; Hyman, 1979) which provide some insights into the generalized process of questioning. However, they do not isolate clearly what events take place that cause the critically inquiring person to question. The analogy of putting a model airplane together can be useful in understanding the events that may lead to critical questioning. Each kit may have the same basic parts and follow the same basic procedures, but without initial experience in assembly and practice in completing models, the hobbyist may become frustrated and give-up trying to put the kit together; they may be successful up to some intermediary level; or, they may eventually develop the skills over time to complete the model, due primarily to persistence. The same idea holds true when analyzing how someone critically questions. There is not a clear idea of how to begin critically questioning and of how to determine if one has done it correctly. The literature seems to characterize critical questioning, and questioning in general as a hit or miss

process. Thus, it is difficult to attempt the process, model it, or teach it.) *

1 One taxonomy that is referred to frequently in the critical thinking and questioning literature is Bloom's (1956) taxonomy. Bloom's taxonomy identifies the synthesis level of thought as being one possible point in the thought process where critical questioning may begin and problem solving (i.e., finding a solution but not necessarily the optimum solution) may end. Inherently embedded in synthesis is the process of working with pieces, parts, or elements and of arranging and putting them together in structures or patterns not clearly seen before (Skinner, 1976). To apply synthesis to the inquiry process, questions must be raised about the original arrangement or apparent lack of relationships among parts.

2. Brookfield (1987) suggests an informal taxonomy consisting of several categorical divisions of critical thinking related to questioning including identifying assumptions, assessing context, exploring alternatives, and conditional acceptance. To this list can be added meeting individual or group goals, being pre-occupied with new combinations of information, submitting ideas to criticism or reaction avenues (Hunkins, 1972), and mastering the language (Pareto, 1975).

Based on this researcher's examination of various taxonomies of critical thinking (within which critical

questioning is a part) and the foundations of thinking that frame critical thought, two prominent schools of thinking emerge: the philosophical and the psychological perspectives. Each of these perspectives provide a core of thinking and reasoning skills that incorporate questioning indirectly. The list of clarification skills proposed by philosophers includes identifying issues, analyzing major components, judging credibility, and defining important terms, thus incorporating clarification, judgement, and inference in the process.

Psychologists, on the other hand, examine critical thinking in the context of problem solving and include questioning as a part of identifying the essential elements and terms of the problem, connecting information, and evaluating the success of solutions. Psychologists tend to identify relationships, connect and use information, and evaluate its success, reflecting less importance on the skill of questioning and more importance on problem solving.

Paul (1987) takes issue with cognitive psychologists, who have led the study of critical thinking for the last 20 years; Paul (1987) claims that most cognitive psychologists have treated the critical thought process as an isolated subject separate from real world needs and events (p. 375). Isolating critical inquiry from the surrounding influential environment and teaching students how to think and question critically (assuming critical inquiry can be taught like math or science) has been the topic of numerous articles; three of the most

prominent ones have been written by Alder (1989), Beyer (1985), and Browne (1986). However, the inability to understand the thought processes of the critically inquiring mind has prohibited the development of one standard method of instruction. ✓✓

As expressed above, there are a number of terms or phrases throughout the studies about critical thinking that imply critical questioning. The focus is primarily on questioning as a method to think critically. Questioning is treated as an assumed component of critical thinking. Therefore, little information is available regarding individuals who practice critical questioning skills with the exception of Paul's (1990) descriptions of multilogical and monological thinking. There is also a lack of literary discussion about the characteristics of critical questioners and little recognition as to why an understanding of these characteristics might be important. The lack of understanding about the inherent characteristics of questioning and about the people who employ critical questioning demands a closer look at critical inquiry as an important skill. ✓

Questioning, in general, is central to the learning, growth, development, and health of a democratic nation. Open nondistortive communication is a central concept in a free society. Certainly, in world of global politics, commerce, and telecommunications, the concept of a critical thinker seems realistic. For the critical questioner, "through discourse and

argumentation, people decide on the validity of claims and resolve matters on their own merits, rather than on the basis of suppression, coercion, or pressure" (Plihal, 1989, p. 41). Without questioning there is not information processing. Questioning is a key element of the learning and exploration process. It is the questioning process that focuses a person's attention on a topic, enables new ideas to be considered, provides a stage for debate, and determines if a conclusion is justified or not (Hunkins, 1976, p. 2).

+ People tend to reason quickly when there is information to be gained or it appears to be easily accessible. Critical questioning is a careful, slow, and highly selective process. To be critical is often "to block inferences, by moving to a more neutral, more objective level of inquiry (Adler, 1987, p. 249). Critical questioning frequently diminishes one's capacity to offer explanations. When individuals critically question they may not necessarily come up with a better point of view, but rather several alternative views of approximately equal value. When people critically question they tend to step back from the forward looking inferential path to reflect, analyze, and doubt. Biases are scrutinized, and implicit assumptions are brought forward. The price of greater objectivity is time, effort, information, and conflict with other cognitive aims (Adler, 1987, p. 249).

An issue intertwined in the careful, slow, and highly selective process of critical questioning is the issue of

efficiency (the ability to get the job done with a minimum of time and effort involved) versus effectiveness (the ability to accomplish the task producing the intended outcome). The critical questioner is effective. That is, the critical questioner's efforts are focused on the quality of outcomes and actions. The critical questioner studies all the available alternatives before making a decision or deciding on a plan of action. The critical questioner is effective because alternatives are weighed, biases are scrutinized, and implicit assumptions are brought forward.

The efficient individual does not ask if something should be done. Instead, questions are concerned with only how well things are going. Efficiency is measured by the ratio of resources to output produced. By not questioning the activity or the issue and by only working to resolving it or getting rid of it, an efficient plan of action is being followed. Critical questioners cannot be concerned with efficiency. Effectiveness drives the questioning process (Pfeffer & Salancik, 1978, p. 13).

The ability to resolve questions is important, but not all questions require the same depth of probing or examination. Paul (1984) postulates a fundamental difference between the kinds of questions one faces in technical domains and those in the logically messy 'real world' (Paul, 1984, p. 5). Questions of a technical nature typically require some kind of system for idea processing. Questions in the real

world are often solved in irrational ways (Paul, 1984, p. 5). One common use of technical questioning in group or committee settings is to determine what has been learned. Often what has been learned are isolated bits of knowledge from which we make broad conclusions. Critical questions of a technical nature includes precision, accuracy, clarity, and close connection to the matters to be resolved (Sanders, 1966). Critical questions of a technical nature can serve to a) focus attention, b) provide a means for determining relevant from irrelevant information, c) point up major relationships among information, d) create new insights, and e) assess results (Rothkopf, 1970, p. 325).

According to Plihal (1989), researchers seem to agree that the ability to question critically is a matter of degree and that critical questioning is a skill or composite of skills which can be developed (p. 39). No one completely lacks the skills to make critical assessments, and, yet, no one fully possesses an optimum level of skills such that critical inquiry dominates every aspect of their lives (Paul, 1984, p. 7). And, no one, as yet, is quite sure what the total package of composite skills are that characterize the optimum critical questioner.

Another aspect of critical inquiry is the question of how the environment affects the desire to critically question. In the critical thinking literature, the classroom environment issue has been debated for years. Should critical thinking be

taught within the total teaching environment or should it be taught as a separate subject (Browne, 1987; Sternberg, 1987; Walters, 1986). Arguments are convincing on each side of the issue. Proponents of separate courses on critical thinking argue that most people cannot achieve critical thinking skills without specific instruction. Educators who believe that critical thinking should be incorporated into the classroom and not taught separately feel that if students are taught critical thinking skills within the normal school environment, they can practice these skills as they learn them. Either way the classroom environment must be conducive to specific classroom behaviors and instructors need to be consistent with their teaching throughout the students' school career (Browne, 1987).

A well-documented discussion on the influence of environment on critical questioning is the Bay of Pigs fiasco and the "groupthink" mindset. The groupthink mindset completely opposes the drive to critically question. Groupthink is a term coined by Irving Janis (1971) to refer to the mode of thinking that people engage in when concurrence-seeking becomes so dominant in a cohesive ingroup that it tends to override realistic appraisal of alternative courses or ideas (p. 157). Groupthink is characterized by a variety of actions including imposing prejudices, idiosyncratic behavior, social pressures, groupy feelings, group loyalty, concurrence

thinking that dominates appraisal of alternatives, and soft line criticism.

During the crucial stages of the Bay of Pigs maneuvers, critical inquiry was not fostered and was eventually considered unacceptable by the key group of U.S. officials managing the crisis. Decisions were made without involving critical questioning to any large degree and consequently decisions were made that were not in the best interest of the nation. Those who would normally question did not (Janis, 1971). Janis's research on groupthink examined critical questioners in group settings making decisions that were vital to the health and safety of millions of people. Janis researched several events and concluded that the "advantages of having decisions made by groups was often lost because of powerful psychological pressures that arose when group members worked closely together, shared the same set of values, and above all, faced a crisis situation that put everyone under intense stress" (Janis, 1971, p. 158).

Janis has found eight main symptoms that lead to groupthink. They are as follows: a) Invulnerability--groups tend to take extraordinary risks and ignore clear warnings danger, b) Rationale--groups tend to collectively construct rationalizations in order to discount warnings, c) Morality--groups tend to ignore ethical and moral consequences of their decisions, d) Stereotyping--groups tend to stereotype their opponents as too stupid or weak to stand up to group action,

e) Pressure--group pressure applied to individuals who momentarily express doubt in group decisions, f) Self-censorship--group members keep to themselves any misgivings about group decisions, g) Unanimity-group members share an illusion of unanimity within the group concerning almost all judgements expressed by members in favor of the majority view, and h) Mindguards--individuals appoint themselves as mindguards to protect fellow members from adverse information that might break the complacency they share about decisions. When group members feel invulnerable, group members tend to share an illusion that they cannot be touched by anything that happens as a consequence of their actions. Consequently they become over optimistic, tend to take extra ordinary risks, and fail to respond to otherwise clear warnings of danger.

The Kennedy ingroup, which uncritically accepted the Central Intelligence Agency's disastrous Bay of Pigs plan, operated on the false assumption that they could keep secret the fact that the United States was responsible for the invasion of Cuba. Even after the news of the plan began to leak out, their belief remained unshaken. They failed even to consider the danger that awaited them: a worldwide revulsion against the U.S. (Janis, 1971, p. 158)

Groupthink members not only ignore warnings but they also collectively construct rationalizations in order to discount warnings. In the fall of 1964 before the bombing of North Vietnam began, some of the policymakers predicted that 6 weeks of air strikes would induce the North Vietnamese to seek peace talks. When someone asked, "What if the North Vietnamese don't seek to talk peace?" the answer was always that surely another

4 weeks would certainly do the trick. Later, after each setback the ingroup agreed that by investing just a little more effort (by stepping up the bombing) their course of action would prove right in the end.

"Victims of groupthink believe unquestioningly in the inherent morality of their ingroup" (Janis, 1971, p. 159). This belief inclines members to ignore ethical or moral consequences of their decisions. Evidence of this symptom usually becomes apparent in a negative way by things being left unsaid in group meetings. For example, Arthur Schlesinger presented his strong objections regarding Bay of Pigs actions in a memorandum to President Kennedy and Secretary of State Rusk but suppressed them when he attended meetings of the Kennedy team.

Victims of groupthink hold stereotyped views of the opposition and build their actions around the belief that their views are accurate. Opposition leaders are often characterized as being so evil that genuine attempts at negotiating appear futile; opposition leaders are too weak or stupid to deal effectively with whatever ingroup attempts are made to defeat their purposes no matter how risky the attempts are. Kennedy's groupthinkers believed that Premier Fidel Castro's air force was so ineffectual that obsolete B-26s could be knocked out completely in a surprise attack before the invasion began. History recorded the sequence of events taking place differently.

✓ "Victims of groupthink apply direct pressure to any individual members who momentarily express doubts about any of the group's shared illusions or who question the validity of the arguments supporting a policy alternative favored by the majority" (Janis, 1971, p. 160). President Kennedy probably was more active than anyone in raising doubts during Bay of Pigs meetings, yet he seemed to encourage the group's docile uncritical acceptance of a favored viewpoint. At a crucial meeting, when he was calling on each member to give his vote for or against the plan, Kennedy did not call on Arthur Schlesinger, the one man who was known by the President to have serious misgivings about attacking Cuba.

Groupthink members avoid deviating from what appears to be group consensus. They keep silent about their misgivings and often minimize to themselves the importance of their doubts. Arthur Schlesinger was not shy about presenting his strong objections to the Bay of Pigs plan in memorandums to the President, but he was keenly aware of his tendency to suppress objections at White House meetings. Schlesinger wrote in A Thousand Days, "I can only explain my failure to do more than raise a few timid questions by reporting that one's impulse to blow the whistle on this nonsense was simply undone by the circumstances of the discussion" (Irving, 1971, p. 46).

Victims of groupthink share an illusion of unanimity concerning judgements expressed by the group majority. This symptom is augmented partially by the previous symptom of

self-censorship because of the false assumption made that any individual who remains silent is automatically in favor of what others are saying. When a group of persons who respect each other's opinions arrives at a unanimous view, each member is likely to feel that the belief must be true.

This reliance on consensual validation within the group tends to replace individual critical thinking and reality testing. In contemplating a course of action such as the invasion of Cuba, it is painful for the members to confront disagreements within their group...Such disagreements are likely to arouse anxieties about making a serious error. Once the sense of unanimity is shattered, the members no longer can feel complacently confident...Each man must then face the annoying realization that there are troublesome uncertainties and he must diligently seek out the best information he can get in order to decide for himself exactly how serious the risks might be. This is one of the unpleasant consequences of being in a group of hardheaded, critical thinkers. (Janis, 1971, p. 161)

Mindguards are group members who unofficially appoint themselves as protectors of the popular viewpoint. At a White House party, Attorney General Robert F. Kennedy took Schlesinger aside and asked him why he was opposed to the Bay of Pigs invasion. Kennedy listened coldly and said, "You may be right or you may be wrong, but the President has made up his mind. Don't push it any further. Now is the time for everyone to help him all they can" (Irving, 1971, p. 74)

When a group's decisionmaking is affected by most or all of the symptoms described above, "a detailed study of their deliberations is likely to reveal a number of immediate consequences. These consequences are, in effect, products of poor decisionmaking practices and a reluctance to critically

question because they lead to inadequate solutions to the problems" (Janis, 1971, p. 162). These consequences include:

- a) The group may tend to limit its discussions to a few courses of action instead of analyzing all ideas that might be worthy of consideration,
- b) The group may fail to reexamine actions initially recommended after they learn of risks and drawbacks they had not considered originally,
- c) The group may spend little or no time assessing why alternatives will not work; they tend not to assess why alternatives are ruled out, or reconsider alternatives once they are ruled out by the majority or at least one or two key group members,
- d) Little effort is exerted in seeking accurate information, precise data, estimates of potential losses, or predictions of outcomes,
- e) Individual group members are swayed by their own points of view and the views of group members they are emotionally affiliated with. They tend to ignore facts and information that do not support popular points of view or are not held by respected group members, and
- f) The group may tend to spend little time deliberating the pros and cons of chosen plans or working with contingency plans to cope with foreseeable setbacks that could endanger the overall success of their chosen course of action. (Janis, 1971, p. 162)

Janis (1972) makes several recommendations to encourage critical questioning and avoid groupthink in group settings. Janis recommends that a critical evaluator be present to encourage the group to give high priority to objections and doubts. Opening inquiry and impartial probing should be encouraged by group organizers. A second group should be

assigned to look at the same issues and both groups should compare decisions and reasonings. Group members should be encouraged to discuss their opinions with nongroup members. Outside experts should be invited into the group to discuss and challenge viewpoints. Finally, at least one group member should be assigned the role of devil's advocate (Janis, 1972, p. 164). Janis's recommendations create the necessary environment for critical questioning to take place.

The groupthink mindset clearly identifies a variety of mental actions that prohibit critical thinking and more accurately, block critical questioning. Critical questioning is the major action that is described as missing in groupthink. This is ironic because one might assume that some of our nation's best thinkers and questioners hold many of our government's top positions. For example, it would be expected that Kennedy's team of advisors who consulted with him on the Bay of Pigs fiasco would be among the top critical questioners in the government. However, the conditions of groupthink (as described by Janis) clouded the environment and left some of the brilliant analysts in government embarrassed years later at having been a part of the consensus building decisions that led to a major international fiasco.

Another interested scholar of group action is Habermas (1971). Habermas focuses on the group and the application of critical questioning. Habermas and Janis seem to be addressing many of the same issues with regard to the importance of

critically questioning in group settings. Habermas, however, describes the critical questioning environment saying the ideal inquiry environment is one in which four universal pragmatics or experience-based phenomenon should exist:

- a) Comprehensibility--all verbiage must be understood by all participants.
- b) Factuality--all available and mutually recognized information must support the of the argument.
- c) Sincerity--all parties must show good faith through their discourse and actions.
- d) Justifiability--all parties must recognize the discussion as appropriate and legitimate and relative to a commonly accepted value system. (Habermas, 1971)

The limitation of Habermas's framework is its implication that these four universal pragmatics can be achieved to their fullest degree at the same time which is usually not the case. In most real group decisionmaking situations, one or more of Habermas's and Janis's conditions are not present; in these cases critical questioning is dependent upon the individual's critical questioning desire and efforts.

Instead of focusing on the effects of the group environment as Habermas and Janis do, Paul (1990) looks at the individual in relation to the concept of the critical person. He writes about critical people as those whose beliefs and actions are grounded in good reason and evidence, who recognize and critique irrational motives, and who have cultivated a passion for clarity, accuracy, and fair-

mindedness (Paul, 1987, p. 375). These actions incorporate many of the actions that are defined by critical questioning. Paul uses three terms consistently in his descriptions of the critical thinker: "global", "holistic", and "multilogical". These terms express Paul's concern that the critical questioner has a sense of vision for what can be and not simply for what has been or is happening.

Using Paul's terminology of strong critical thinkers and applying it to critical questioning, one can ask if all strong critical questioners possess the same skills and abilities to resolve problems? Do they all use the same thought paths? Brookfield (1987), Paul (1987), Sternberg (1985), and others have developed lists of microskills that may be mental components of the strong critical questioner. Paul (1987) ✓ relates these microskills to questioning abilities and states that many of these skills must become an integrated part of the overall critical thinking process (p. 378).

Critical questioning demands focused thinking, a global perspective, and a willingness to overlook individual biases and beliefs. Paul (1987) states "it is hard to go very far into the core concept of the critical person without recognizing the centrality of multilogical thinking...open mindedness may be proper, but it is not the 'natural' disposition of the human mind" (p. 7). Recognizing that the steps to identifying solutions may not be a sequentially ordered experience common to any two people (Mintzberg, 1978;

Plihal, 1989), there may still be commonalities between those who ask critical questions and the processes they use to generate them.

Summary

Critical questioning is examined infrequently as a separate topic in the literature. When found in the literature, critical questioning is examined as a component of critical thinking. Consequently, there is no theoretical base for critical questioning. Only within Paul's (1987) discussions of strong and weak thinkers can a theoretical foundation for critical questioning be hypothesized.

There are various opinions about what critical questioning is. However, no authors tend to view critical questioning in quite the same way. Because no theories of critical questioning exist, various taxonomies of critical thinking are examined with an eye for relationships and incorporation of critical questioning concepts.

Questioning is discussed in the context of two major frameworks developed by Janis (1972) and Habermas (1971). Janis examines the consequences of what happens in the absence of critical questioning. Habermas describes a framework within which critical questioning individual can flourish.

Various interpretations of what it means to be a critical questioner are offered. The student of critical questioning soon learns that there is no common agreement among scholars

as to what constitutes critical questioning or the actions leading to its employment.

In Chapter Three the research methodology is presented. The reader is provided with a clear picture of the group settings within which the critical questioner was defined for purposes of this research.

CHAPTER 3

DESIGN OF THE STUDY

The purpose of this study was to expand knowledge about who critical questioners are and how they go about asking critical questions in group settings. A case study format was used to examine a particular event; i.e., questioning in group settings on a university campus.

Selection of the Sample for the Study

The study was carried out at Montana State University (MSU). MSU is a four-year, public, comprehensive, land grant university with undergraduate and graduate programs in liberal arts, basic sciences, the professional areas, agriculture, architecture, business, nursing, education, and engineering. There are approximately 1100 faculty and staff employed at MSU and nearly 10,000 students enrolled of which over 80% are Montana residents.

The group identified for the study consisted of full time and part time on-campus teaching, research, and extension tenured, tenure-track, or nontenure track faculty who hold the rank of adjunct, assistant, associate, or full professor at Montana State University. All MSU teaching, extension, and research faculty (783) who were registered with the university post office in February 1991 were sent a letter asking them to identify, through a modified Delphi process, those faculty they felt met the definition and criteria of a critical

questioner (Appendix A). The Delphi process requires several rounds of information gathering and issue examination. The modified version used for this study only involved completing a first round of information gathering and issue clarification.

For purposes of the study the letter defined a strong critical questioner and faculty, listed descriptive actions of strong critical questioners, and established the setting (university group setting) in which identification of individuals was to be made. The letter requested that the addressee list faculty by name who most closely fit all the definitions provided in the letter. Faculty could nominate as many individuals as they liked including themselves. One hundred and thirty-four faculty returned the form. Since confidentiality was a factor in this research, a majority of the completed forms were returned anonymously so no record is available regarding the number of female and male faculty who nominated themselves or faculty peers. Two hundred and seventy-four names were submitted. One hundred and ninety-seven of those names were men (72%); seventy-seven names were women (28%). Thirty-two names received three to eight nominations by faculty. Of these 32, 2 declined to be interviewed due to conflicts in work schedules although 1 of those 2 completed the quantitative portion of the interview. Thirty faculty were interviewed for the study. The list of critical questioners were not prioritized in any manner beyond

the capabilities of the Delphi process; i.e., placing names in most often identified sequence.

Descriptive data for the sample of 32 appears in Table 1. The sample consisted of faculty from seven of the nine MSU university colleges and from one program unit. The Colleges of Extended Studies and Graduate Studies were not represented. The program unit represented was Women's Athletics. Nineteen different fields were represented out of 46 different fields offered at the university. Five women and 25 men were interviewed. The two faculty who declined personal interviews were men.

The limited number of faculty interviewed precluded the evaluation of a large number of variables. Therefore, the description of the interviewees (Table 1) is designed to provide a general representation of the breadth of coverage of university faculty. All interviewees had a terminal degree. and, since education tends to have a leveling effect, faculty rank, age, and other descriptors were expected to have a zero effect (Hamilton, 1991).

Selected faculty were contacted by phone, given an explanation about the nature and purpose of the study, ensured confidentiality, and were asked to participate. Upon agreement to be interviewed, a time was set to visit the faculty member at his or her office.

Every faculty member contacted was willing to be interviewed with the exception of the two who had to decline

Table 1. Description of Sample

Descriptors	Frequency
Sex:	
Male	27
Female	5
Campus Units:	
College:	
Agriculture	2
Art and Architecture	3
Business	2
Education, Health and Human Development	3
Letters and Science	18
Nursing	3
Program Units	
Women's Athletics	1
Departments:	
Agricultural Economics	1
Architecture	2
Art	1
Biology	1
Business	2
Chemistry	1
Civil and Agricultural Engineering	1
Computer Science	1
Earth Science	1
Engineering	1
English	1
History	3
Microbiology	1
Nursing	3
Nutrition, PE and Movement Science	3
Physics	2
Plant and Soil Science	5
Political Science	1
Sociology	1

due to work schedules. Most faculty contacted were enthusiastic about the interview. Many asked to be retold how they were identified and seemed genuinely pleased that they were recognized for their critical questioning abilities. In the participants' minds being a critical questioner and being recognized as such only helped to confirm to them that their role as a critiquer of thought was an important one and valued. One interviewee asked the researcher to write a letter for her personnel file stating how she had been selected and for what she was being recognized.

Collection of the Data

The data for this investigation were collected through one-on-one in-depth interviews and a printed survey form. The researcher personally conducted all the interviews. Both the interview questionnaire (Appendix B) and the printed survey (Appendix C) were designed by the researcher. Thirty faculty were interviewed, and 31 faculty completed the printed survey items.

The purpose of the research, a review of the relevant literature, and the researcher's knowledge of critical questioning determined the content of the interviews; there were 14 open-ended questions and 26 printed survey items. The research questions were designed so that findings of initial questions provided context for successive questions.

Therefore, as findings on each question were compiled, a more complete picture of a critical questioner evolved.

In order to be consistent, the wording of questions had to be such that they would be interpreted by all interviewees in the same way. To overcome this hurdle, the following tools were incorporated into the structure of the interview:

- a) inductive inquiry--two or more questions were asked along a common theme seeking a particular thread of thought.
- b) simulation--each interviewee was presented with the same scenario and asked to respond to the situation.
- c) historical examples--interviewees were asked to recall moments of critical questioning in group settings and asked to describe the situation, analyze the processes used, and report their rationale and motivations involved in the event.
- d) component method--a series of action phrases were developed and related to specific components of questioning. Interviewees were asked to respond to the frequency with which they performed each action.

Before conducting the interviews with the identified sample, a reliability check was done on the printed survey with 13 MSU faculty. These faculty were asked to complete the form. Ten days later they were asked to complete the same form again. A comparison of responses was checked. Nearly all first round responses (99%) were identical to second round responses given by the 13 faculty.

Following the reliability check, three pilot interviews were done. Two were prior to making a few final modifications to the interview questions, and one followed the modifications. This was done in order to test the interview questions for clarity and the interview procedures for coherence and length. The three pilot interviews were completed within a 60 minute time frame established for the interviews, and all three of the interviewees remained involved and enthusiastic throughout the pilot interview. A 60 minute time frame was established for the interviews to avoid interviewee fatigue. Based on the success and recommendations of the first two pilot interviews and upon the final testing of the third pilot interview, the interview questions and printed survey were adopted for use with the identified research sample.

Interviews were tape recorded. This was accompanied by note taking by the researcher. The tape recordings provided exactness in responses required when compiling the data. Tape recordings assisted in avoiding interview bias. Both the note taking and the recordings also served to provide an audit trail for the research.

Interviews were designed to be 60 minutes in length. However, some interviewees appreciated the opportunity to be interviewed and extended the interview period. Consequently interviews ranged from 35 to 120 minutes.

Compilation of Data

Upon completion of the interviews, the oral responses were coded under key words and entered into a dBase file. The key words were selected from the literature, influenced by the collected data, and comments made by interviewees who were asked to examine the list. After a key word list was developed, 10 interviewees were randomly selected from the original 30. These 10 interviewees were asked to examine the list of key words and make comments about the descriptive accuracy of the words. Specifically, they were asked if they felt the key words were representative of critical questioning topics and characteristics they recalled discussing in the interview. The 10 interviewees were nearly all in agreement with the exception of a few modifications. Those modifications were incorporated into the key word list.

After the key word list was developed and checked for accuracy, the interviewee comments were organized under the key word headings for purposes of summarizing the data. Next, five individuals from the interviewee pool were randomly selected and asked to read over the typed comments gathered from their interviews. All five individuals agreed that the typed comments were accurate of their individual interview conversations.

Frequency counts, means, and standard deviations were computed for the 26 item printed survey responses. Data

gathered from interviewees were compared to characteristics identified from the printed survey. Through this triangulation procedure responses from interviewees were checked for consistency and accuracy.

Summary

This study utilized a descriptive, case study design. The sample consisted of 32 university teaching, research and extension faculty identified by their peers to be critical questioners. The case study design not only captured critical questioning in action during the interview but also served to provide a vivid picture of its importance to those who practiced it.

CHAPTER 4

FINDINGS OF THE STUDY

Developing a composite description of a critical questioner involved examining six aspects of the critical questioner and the questioning process: a) defining a critical questioner, b) describing the conditions critical questioners prefer, c) identifying thought processes and steps used by critical questioners, d) examining variables influencing one's ability to critically question, e) discovering perceived differences between critical questioners and noncritical questioners, and f) identifying environmental influences on critical questioners. A series of fourteen interview questions were designed to examine these aspects.

Findings Related to Research Questions

This study was a naturalistic research project which used both qualitative and quantitative data. The qualitative data reflected many common attributes described by the interviewees about their critical questioning patterns. Over 700 quotes and comments were entered and sorted in a dBase software program. Most quotations presented in the findings are presented verbatim; some statements were modified for clarity. A quantitative aspect of the study evolved from the identification of 26 descriptors found in the literature that were believed to influence or be important to the

questioning process. The quantitative data was used to provide additional confirmation of participants' verbal comments.

Definition of a Critical Questioner

Research Question 1. What is the definition of a critical questioner?

Interview Question:

- 1.1 Please respond to the researcher's definition of a critical questioner. Do you agree with the definition; would you change it in any way?

The definition of a critical questioner represented a foundation for this research. No definition was available in the literature so there was no "common knowledge" regarding who critical questioners are.

Definition of a Critical Questioner (Interview Question 1.1)

In order to discuss the characteristics of a critical questioner a common understanding of a critical questioner had to be agreed upon. Those interviewed were presented with the following definition of critical questioning: Someone who questions ideas, arguments, comments and observations for sound and substantiated logic. Interviewees were asked to examine and respond to this definition. They were asked if they agreed with the definition. If they did not, they

were asked why not and how they would change it. The definition was used for two purposes in this study. First, it was used to help faculty identify and comment on their perceptions of critical questioners. The interviews began with this as the first question. The second purpose was to initiate dialogue and create a common ground of meaning between the researcher and the interviewee regarding critical questioning. Interviewees were asked to respond to the definition both at the beginning and at the conclusion of the interview. The reason for giving interviewees a chance to respond a second time to the definition was to see if additional thoughts or comments came to mind.

Most interviewees had one or more suggestions to offer as a means to strengthen the definition and make it more encompassing. Three main themes emerged from the data. Interviewees recommended that the definition be holistic, express a validity component, and capture the "critical moment".

Eight interviewees suggested that to become more holistic, the definition include an affective component. The affective component refers to emotional and intuitive aspects of thinking. As one interviewee stated, "The affective component is involved in the process but is not so clearly observable." It must be conceded that the definition used for this study is rational and logical and does not

allow affective actions to be represented. The following additional interviewee comments also address this issue.

The definition is rational and logical. It's analytical in that sense, but it doesn't allow for the unaccountable insights which are a function of the imagination.

This definition doesn't allow for spiritual, emotional, or intuitive reactions.

There's an intuitive aspect to it. My definition of intuition is the sum of everything we know.

Logical thinking may be a characteristic of critical questioners. However it may be more than logic. There may be a left brain function that takes place, but there may be affective actions too, which are right brain.

Critical questioning may not be governed by logic, and it may be somewhat intuitive.

Critical questioning may be somewhat intuitive. What is missing is the feeling part. The definition needs to be more holistic. There is a whole other area of doing or being that we tend to leave until after work.

I'd make it more of a holistic definition by including alternative forms of belief systems.

As is evidenced by these comments, a significant number of respondents clearly recognized the existence of an affective component. The affective component is a recognized and important aspect of adult learning and critical thinking. However, because it is an emotional response component, it is an accepted yet difficult variable to measure.

The second component addressed by interviewees was the issue of validity. Nine interviewees wanted to include reference to measures of validity in the definition. This

means going beyond confirming the existence of sound and substantiated logic to questioning the fundamental foundation upon which a questioner bases arguments. This approach to looking at the assumptions underlying an argument is based on seeking fact and eliminating any element of bias toward the issue. The comments expressed below focus on this issue examining the tenets upon which arguments are based:

You don't question the argument. You question the validity of what this observation or idea is and you do it through logical deduction. The scientific method of inquiry has a lot to do with critical questioning.

A critical questioner is one who questions to test for validity. Someone who is willing to entertain alternatives, look at things differently, look at options and test for validity.

Besides presenting a logical argument, the evidence must be questioned. The evidence has to make sense in terms of what actually happened out there.

It seems to me that part of the reason for asking questions is not only to address the logic from wherever it begins to whatever conclusions it brings, but it also means examining the fundamental foundation from which the logic is derived. What are the assumptions you started with?

A critical questioner is one who doesn't take things at face value and one who isn't deterred by exceptions.

I can provide you with a substantially logical argument to get you almost anywhere you want to go. But where did those arguments start. Critical questioning is getting at where those arguments started.

I look at the creative component. Looking at what we know and where the arguments are and what's false between the cracks.

Critical questioners who are university faculty are usually familiar and sensitive to validity issues. Comments such as those made above point out that arguments are often characterized by random errors or unsystematic reasoning, observer bias (interpretation based on what the subject "thinks" or "wants to" see rather than what's really happening), or subject bias (operating with ulterior motives such as to please a boss). Undoubtedly, individuals can easily become convinced that their own arguments are accurate. However, as discussed later in this chapter, critical questioners are very skeptical of accepting issues at face value without questioning their validity.

Finally, three interviewees recommended recognizing the critical moment or that point in time when critical questioning serves the best interests of the group and the issues facing the group. Critical questioners stated a number of times in the context of several interview questions that the role of a critical questioner has many facets. Timing of critical questions seems to play a role in issue exploration and resolution. When interviewees were asked about their mental preparation process to ask critical questions (for additional discussion of this topic see Research Question #3), one aspect of their response was that they waited until the opportune time to ask a question. If

an issue is about to be resolved without considering all the options related to the issue, then a critical questioner may feel obligated to encourage the group to address those neglected options (a timing issue). The critical questioner might be considered a facilitator of information. If the group has decided to force a premature decision to an issue and has opted not to spend time seeking all available evidence then the role of the critical questioner has not been fulfilled. As one interviewee stated:

One must try to determine substantiation for what is occurring but also ask the right questions at the right time; trying to seek substantiation but also trying to facilitate further discussion. When I think of the critical moment, I think of critical questioning.

Quantitative data collected indicated that although critical questioners identified waiting until the opportune time to ask a question was important, it was not as important as some other aspects of the questioning process (Table 2). Critical questioners rated the use of timing as something that 21 interviewees always or usually did; 8 did sometimes, and 2 occasionally or never did. It is curious that the importance of a critical moment appeared to be of major concern within the definition of a critical questioner but rather low in the list of priorities presented interviewees later in the interview.

The input offered by interviewees was useful in improving the definition of a critical questioner for future research and examination of critical questioning. The

Table 2. Rank Ordering of Characteristics of Critical Questioners

Characteristics	Always	Usually	Sometimes	Occasionally	Never	Missing Value	Mean	S.D.
1. Try to be fair-minded	14	16	1	-	-	-	1.581	.564
2. Regard solutions as conditional	16	9	5	1	-	-	1.633	.765
3. Listen for opposing points of view	16	10	5	-	-	-	1.645	.755
4. Explore alternatives	11	17	2	1	-	-	1.700	.596
5. Look for ideas that have not been considered	13	13	3	2	-	-	1.806	.873
6. Assess the context of the problem or issue	11	15	2	2	1	-	1.833	.834
7. Identify assumptions	10	16	5	-	-	-	1.839	.688
8. Listen for cause and effect relationships	12	13	5	1	-	-	1.839	.820
9. Try to identify the problem or issue as quickly as possible	12	13	5	1	-	-	1.839	.820
10. Question cause and effect relationship	13	9	7	1	-	1	1.867	.900
11. Look for ways to recombine information	7	17	4	1	2	-	1.966	.731
12. Question your own ideas	9	14	8	-	-	-	1.968	.752
13. Submit ideas for reaction	9	13	8	1	-	-	2.032	.836
14. Look at the "bigger" picture	9	16	4	2	-	-	2.032	1.016

Table 2. Rank Ordering of Characteristics of Critical Questioners--Continued

Characteristics	Always	Usually	Sometimes	Occasionally	Never	Missing Value	Mean	S.D.
15. Send discussions in new directions if needed	5	20	4	1	1	-	2.033	.669
16. Support groups members in their views	4	21	6	-	-	-	2.065	.574
17. Employ an accurate use of language	6	17	8	-	-	-	2.065	.680
18. Question your own train of thought	8	13	7	3	-	-	2.161	.934
19. Try to meet the group's goals for the problem or issue	2	22	6	1	-	-	2.194	.601
20. Wait till opportune time to ask a question	6	15	8	2	-	-	2.194	.833
21. Choose your words cautiously	6	12	12	1	-	-	2.200	.761
22. Use tact	8	9	12	1	1	-	2.290	1.006
23. Make a point of complimenting others	7	9	11	4	-	-	2.387	.989
24. Try to meet your goals for the problem or issue	5	7	14	5	-	-	2.613	.955
25. Take charge of the discussion	1	9	16	5	-	-	2.806	.749
26. Play the role of devil's advocate	1	9	12	6	2	1	2.967	.964

definition and not as a tangible variable or thing. Treating the definition as a process permits critical questioning to be examined as a mental set of actions that do not exist until they are needed. Critical questioning then becomes an activity examined to understand how the process works and not an activity examined to predict if it will work.

Prerequisites for Critical Questioning

Research Question 2. Is there an underlying list of conditions that are a prerequisite for critical questioning?

Interview Questions:

- 2.1. Why do you think faculty view you as a critical questioner?
- 2.2. Describe the general characteristics of settings where you find yourself most apt to question critically.

The research also sought to explore if there is a set of underlying conditions prerequisite for critical questioning to occur. Does the individual need to be in a certain frame of mind; when do others perceive you as a critical questioner; when do you perceive yourself as a critical questioner? These aspects are difficult to measure and difficult to assess; however interviewees were quite vocal about the conditions that influenced them to critically question.

Impressions by Peers
(Interview Question 2.1)

Interviewees were selected for the study through a written peer response process by those who work with them. The participants were asked why they thought their faculty peers had identified them as critical questioners in order to identify what this group of critical questioners believed were their most apparent activities that reflected a critical questioning operating style. The statements below are typical of the responses:

My role as a department head creates visibility for me. A function of my job is to help my whole department see relationships. Being in a leadership position, I am noticed more. Plus I am curious about a lot of things. Other faculty don't really know much about what others are doing. Only through committee exposure do other faculty identify each other as critical questioners.

I've served on faculty council for a number of years. People know me from that forum. It's a fairly public setting.

I'm interested in ideas, and I suppose that has come from discussions I've had with others.

I may be recognized as a critical questioner because I've caused trouble. I've been involved with groups and committees that dealt with some very important university-wide issues.,

I've been on a lot of university committees and outreach programs.

I work and teach in a rather controversial subject area. You can become respected if you handle yourself objectively.

I've been involved in some very public settings in the university community. My role in these settings is usually to ask the tough questions.

I speak up a lot at faculty meetings.

These statements all reflect being visible and dealing with issues of concern to a wide audience in a diplomatic fashion. However, the last three statements offer the most specific and concrete reasoning for why the interviewees were selected: a) because interviewees dealt objectively and successively with controversial topics. For example, interviewees described the controversial topics as the ones least likely to be resolved adequately. They felt other committee members were more concerned about peripheral issues indirectly related to the controversial topic that directly effected them. Critical questioners help to keep others on track addressing the controversial issues matter-of-factly. Interviewees were identified as b) being able to ask the tough questions in public arenas, and c) speak up whenever the issues merited it. These responses reflect an open frame of mind that encompasses many aspects of the data collected.

Two of these three traits are confirmed by the questionnaire data in Table 2 (being objective and asking tough questions). Several of the actions listed in Table 2 are reflective of being objective. The first eight items, which are ranked as being most important to the critical questioners interviewed are concern objectivity in discussion of difficult issues.

Being able to ask tough questions is a little harder to identify in Table 2. But if being tough means not easily shaken or disrupted from a train of thought, then several variables imply trying to capture the most pertinent issues. Some examples pulled from Table 2 include listening for and questioning opposing points of view and cause and effect relationships.

The third aspect of critical questioning mentioned above, speaking up when the issue merits it, is reflected in Table 2 under the Item #15 - Send discussions in new directions, if needed. Twenty-five of the 31 participants who completed the questionnaire indicated that they always or usually tried to employ this action when necessary. It appears that critical questioners listen rather intently to issues, try to keep issues focused and work at incorporating all available facts into issue discussions.

Additional interviewee statements regarding the issue of identification by peers recognized specific actions that distinguished critical questioners from other people and helped to identify their role as being different from noncritical questioners. A sampling of statements that pointed out these actions are presented below. The underlined phrases describe those additional actions representative of critical questioners.

I'm an advocate of critical thinking across the curriculum. I use a lot of it in the classroom. As a researcher I spend a great deal of time being a critical questioner.

