



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

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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

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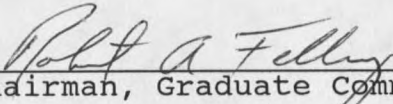
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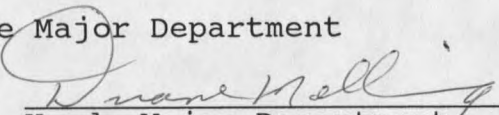
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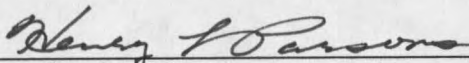
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ABSTRACT

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).

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.

scientific
method.

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. 158¹).

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	Some- times	Occa- sional- ly	Never	Miss- ing 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.

I'm willing to question things that are going on. I'm willing to ask questions about things I want to see changed and I have the confidence to do so.

I'm interested in an open mindedness, looking at situations and problems from different points of view; it's easy to disregard another person's point of view. I look for answers and different angles. I use creativity.

I'll listen to anything. That doesn't mean I'll believe everything. I wait and listen before I respond. I may be waiting to see which way the wind is blowing.

I'm the sort of person who likes to have things add up. If things don't make sense, that bothers me. Unless I can understand the reasons why things are so then I always try to pick them apart and find out why. I'm analytical by nature, and I like to have the scales balance.

I set up my own ideas and then try to criticize them. I tend to work in the creative mode and play "what if" games with myself.

I have fairly good personal skills. People see my questions as not necessarily hostile or threatening. They see me as capable of listening long enough to understand what's going on before raising a question.

I like to know what the basis of facts are. I rate critical questioning as a very important part of the job.

The thing that's missing is that somebody is trying to lead others in a new direction. The reason I think I was identified as a critical questioner is because I've tried to lead people in new directions.

The above set of quotes are representative of a number of critical questioning dispositions. These dispositions are analogous to having a critical questioning frame of mind and taking the role of a critical questioner seriously. These dispositions are also often characteristic of the critical

thinker since critical questioning is a component of critical thinking.

A basic assumption underlying this study was that a critical questioning frame of mind does exist. The findings support that assumption. Dispositions reflecting this frame of mind include a) a willingness to critically question, b) being receptive to information, and ideas, c) able to lead people in new directions of thought, d) a sense of confidence, e) being openminded, f) being creative and g) a willingness to listen carefully.

Without a set of established criteria or dispositions about who a critically questioner is, it is difficult to assign a number of characteristics to those individuals. While these dispositions may not be inclusive of all critical questioning dispositions, they were described by interviewees as being the most important. What is significant about this set of descriptors is that there has not been any one place in the literature where a comprehensive picture of the critical questioner has been drawn. Once individuals understand the dispositions of the critical questioner, they can begin to assess their abilities to function in the same manner.

Characteristics of Settings (Interview Question 2.2)

Responses from interviewees pointed out that this group of critical questioners was constantly thinking of and

exploring ways to deal with issues and prepare for discussions. A questioning frame of mind was present in almost every activity they pursued. The interviewees were asked to describe the characteristics of settings where they were most apt to critically question. These responses were necessary to piece together a composite picture of the critical questioner.

The following comments describe interviewee responses to the question regarding characteristics of settings. Some of the comments are indicative of the fact that critical questioners can become annoyed with themselves at times because they are unable to release themselves from the questioning process. Thus, one of the characteristics of a critical questioner is the constant drive to question the issues regularly.

It has infiltrated my entire life. I always am listening carefully and speaking only when necessary. I can't tolerate things that are done without questioning. Actions may take place because they are not questioned and if they were questioned, we may not have had to do them in the first place.

I do almost nothing without a purpose. I ask myself first, "Why am I about to do this thing?"

I love to recreate outdoors. I do very intense questioning at the same time that I recreate due to the nature of my recreation.

My social interaction consists of theater, decisionmaking and challenging sports.

In my free time I do relaxing things like design computer software and play bridge.

I think critically all the time. It drives my wife crazy. The setting makes no difference.

I do it everywhere. I just do it. A person can use questioning skills in almost any context. If you don't ask, you can't change things.

I constantly operate with an open mind. Whatever happens to be the most important issue at the time is what's occupying my mind. I cruise in neutral with all these ideas flying around. Then as I think about them, I try to hook them to an appropriate issue.

I think best while I'm driving and jogging. I can't turn my thinking off. You are who you are, and you can't separate things out.

The majority of critical questioners took issue with the concept that critical questioning was environment specific; they stated that they question everywhere and that the setting did not make the difference. They said that they can never seem to turn their questioning off. Some noted that family complained of their continued probing. Others found that even in their recreational pursuits, critical questioning played a major role.

In addition, it was mentioned by interviewees a number of times that the professional setting was only one of many settings where critical questioning abounds. Interviewees commented a number of times that they would not be working on a university campus if critical questioning was not an important aspect of the job. Interviewees felt that critical questioning plays a vital role in processing that environment, but it was not the setting itself that imposes a critical questioning opportunity; instead, it is the drive

within the individual. In fact, it was stated by one interviewee that the university setting may sometimes inhibit critical questioning simply because of the people in power positions. Most interviewees also mentioned that their role as a teacher and researcher was significant in terms of encouraging their desire to question. Many felt that the nature, the setting, and the characteristics of their job required them to be critical questioners.

The following comments highlight the seriousness with which interviewees take their professional roles as critical questioners. These comments are reflective of the university setting.

I am most apt to critically question when my welfare or the welfare of the department is at stake. I am particularly concerned with the areas of rights and relationships.

I do a lot of thinking outside where I work. It's a hands-on approach to questioning.

You have to be a critical questioner in policy resolution and policy setting and in the lab. Critical questioning is the nature of the job. It becomes an approach to your whole life; then it becomes a part of your personality.

These critical questioners are not insensitive to their environments. In fact, they may feel a stronger sense of commitment to issues reflected in their environment than most other group members due to their interest and abilities to think and question critically.

Interviewees suggested the emotional environment and

group ownership of problems were among the triggers that encouraged them to employ their questioning strategies regardless of the setting.

I feel angry in settings where we are moving in an illogical direction. I take a lot of ownership to having my name on something. The "something" needs to be well thought out.

I use my critical questioning abilities when there are serious issues to discuss based on my belief that the issues are important. I ask myself if the individuals involved care about the issues and if they want to get someplace with them. Using criticism to break down issues is a cruel method. I prefer to build up group confidence through questioning and problem solving.

Whatever is being explored has to be worth the effort. Critical questioners are not concerned with time. If the question is truly a key, pursue it until a satisfactory conclusion is reached. Critical questioners are not bounded by time. They are very focused. Sometimes they can be tough to be around.

I prefer to ask critical questions in small groups and informal settings where the subjects are familiar. I like to come prepared and know the purpose for questioning.

These responses suggest a framework for critical questioning. Critical questioners defined at least some of the characteristics of a critical questioning setting to include a) a purpose for being there, b) a sense that the issues merit critical examination, c) a need to be open-minded, d) freedom from time pressures, and e) an inquisitive attitude. With these characteristics, a framework can be established in which critical questioning is likely to take place regardless of the setting.

Critical Questioning Thought Process

Research Question 3. Is there an underlining thought process from which critical questions evolve?

Interview Questions:

- 3.1. What are your critical questioning contributions when resolving issues in a group setting.
- 3.2. Describe the thought process you use when asking critical questions.

Since each person interviewed had at least one thing in common (i.e., they were identified by their peers as a critical questioner), it was thought that all or most of this sample would have a common set of characteristic actions typical of being a critical questioner. In reviewing the interview data it was found that these respondents used consistent and common critical questioning actions to bring resolution to issues in group settings. The examples in the following two sections support this.

Contributions Toward Issue Resolution (Interview Question 3.1)

Interviewees were asked to discuss their contributions toward issue resolution in group settings. Critical questioners see themselves for the most part as being helpful and concerned about the interests of the group. This is contrary to a common misconception that the word critical

implies a cantankerous, uncooperative, or cocky individual. The following epitomize the thoughts of the 30 interviewees regarding group interactions.

Critical questioners are most valued when the group reaches a road block. Why can't we go forward? Why are we stuck? Where are we? Can we integrate previous information? How can we look back at the problem from a new direction? These are all skills of the critical questioner. Once you can help the group to revisit the issue from new perspectives, the group can begin to move forward again. Clarification is a process that solidifies, clarifies, and modifies information.

People generally like to live in the reality that is inclusive of their past experiences. You have to decide why people want to do XYZ. Are they tied to a past experience? Is it just a repetition of the past? If so, how can I help them examine the issues in the context of today and tomorrow?

I use questioning as an opportunity to surface issues. I tend to challenge the issues and variables rather than relying on simple authority assumptions to resolve thinking.

I can best help a group by sticking to the agenda and trying to get some answers on the table.

From interview responses and the above statements from interviewees, the following list was compiled to summarize the contributions these critical questioners felt they made to group issue resolution in questioning environments. According to the interviewees, critical questioners worked at the following major issue resolution actions: a) involving group members, b) raising questions, c) bringing issues into context, d) clarifying, and e) examining all perspectives.

Using the descriptive headings above, the statistical data, collected at the conclusion of each interview (see Table 2), was employed to further refine the specific actions and roles critical questioners employ for issue resolution in groups. Under each heading are the actions that critical questioners identified as most relevant to their critical questioning contributions in group settings. The numbers in parentheses indicate the priority given to each of the twenty-six actions.

a) Involving Group Members

- try to be fair-minded (1)
- support group members in their views (15)
- try to meet the group's goals for the problem or issues (19)
- use tact (22)
- make a point of complimenting others (23)
- take charge of the discussion (25)

Interviewees felt overwhelmingly that being fairminded was in the best interest of the group and issue resolution. However, they felt less inclined as a group to be obligated to support group members in member views. Furthermore, 24 interviewees agreed that they always or usually tried to come to some resolution that would meet the group's goals. Six interviewees felt that sometimes they worked toward meeting group goals and one interviewee stated that only occasionally did meeting group goals seem to be an important contribution made during the critical questioning process.

There was less importance attached to the use of tact, taking charge of the discussion, or complimenting group members. In fact, taking charge of discussion was among the

three items that did not receive a positive response by interviewees on the printed questionnaire. The use of tact and complimenting others were rated as the last two actions taken into consideration among those actions receiving a positive response. These actions indicated that critical questioners were not concerned with how each group member was feeling but were more concerned with the issues being discussed.

b) Raising Questions

- look for ideas that have not been considered (5)
- question their own ideas(12)
- wait till the opportune time to ask questions (20)

A major component of critical questioning is examining issues for new information, so it is understandable that twenty-six of the respondents stated that they always or usually look for ideas that have not been considered. A slightly smaller number of respondents (23) felt that questioning their own ideas was another avenue of gaining more insight into issues. Finally, just over two-thirds of interviewees (21) felt that waiting until the opportune time to question was an important contribution to the group questioning process and eventually, issue resolution. The selection and timing of questions are the essence of critical questioning. These three actions are reflective of actions that can be generalized to all types of critical questioning.

c) Bringing Issues into Context

- Assess the context of the problem or issue (6).

A third category involved in the questioning process of interviewees was "bringing issues into context." Critical questioners felt that examining issues out of context, or out of the set or circumstances from which an issue evolves, prohibits decision makers from weighing all the facts and assessing an issue fairly.

Interviewees were largely in agreement that assessing the context from which an issue arises was a high priority. Twenty-six respondents stated that they always or usually assess the context. Two interviewees stated that they sometimes do, and three interviewees indicated that they occasionally do.

d) Clarifying

- identify assumptions (7)
- listen for cause and effect relationships (8)
- identify problems or issues as quickly as possible (9)
- question cause and effect relationships (10)
- look for ways to recombine information (11)
- employ an accurate use of language (17)
- choose your words cautiously (21)

Clarification of issues was another part of the thought process that critical questioners used in working through critical questioning issues in group settings. These actions emerged as essential to the process of recognizing and coming to agreement on the issues before the group. The first 6 actions listed above are employed always or usually by 22 to 26 of the interviewees, with 4 to 8 interviewees employing the processes at least sometimes. These clarifying actions are similar to some of the same actions

identified throughout the critical thinking literature. However, these steps clearly relate to questioning actions.

The issue of using words cautiously was less important. (Eighteen interviewees felt cautious use of words was always or usually a contribution they made to groups.) Twelve interviewees felt that cautious use of words was a consideration sometimes and one never felt inclined to be concerned about word choice.

e) Examining All Perspectives

- regard solutions as conditional (2)
- listen for opposing points of view (3)
- explore alternatives (4)
- submit ideas for reaction (13)
- look at the 'bigger' picture (14)
- send discussions in new directions, if needed (15)
- question your own train of thought (12)
- play the role of devils's advocate (26)

The majority of interviewees agreed that regarding solutions as conditional, listening for opposing points of view, exploring alternatives, looking at the "bigger" picture, and sending discussions in new directions if needed were action steps employed in a critical questioning group setting. Twenty-five interviewees always or usually regarded solutions as conditional; 26 interviewees always or usually listen for opposing points of view; 28 interviewees explore alternatives as part of their mental critical questioning process; and 25 interviewees responded that looking at the "bigger" picture and sending discussions in new directions if needed were steps they always or usually used in critical questioning. Slightly fewer respondents, 22, felt it

necessary to always or usually submit their own ideas to others for reaction. Twenty-one respondents always or usually questioned their own train of thought. Finally, interviewees rejected the notion of "playing role of devil's advocate" in the questioning process. Most interviewees preferred a straight forward approach to deciphering the issues and felt that playing the role of devil's advocate focused more attention on the current issues before the group and were not conducive to bringing new information forward.

When someone is not critically questioning, they often jump at the opportunity to push an opinion or solution, not holding viewpoints in the conditional state. One of the biggest errors of noncritical questioners is the failure to explore and assess the consequences of alternative actions. This is one of the actions for which critical questioners are admired.

Thought Process (Interview Question 3.2)

Participants were asked if they could describe the thought process they used when asking critical questions. Most interviewees were able to delineate a thought process or set of steps that they used. Twenty-eight interviewees reported various strategies they used to engage in critical questioning in a group setting. Twenty-four of these respondents initially answered that they were not aware of

or did not use a set of steps as they approached a critical questioning opportunity. However, after answering that they did not employ a predetermined or set thought process, respondents proceeded to describe the steps or process they used. In other words, 24 of the interviewees were previously unaware of or had not thought about, any mental steps employed until they were asked the question. Two respondents answered that they just "jumped right in" and stated the following:

I get into a deep thought mode and questions just seem to come. I'm pretty good at putting myself in other peoples' shoes and thinking about how they might feel about an issue that is affecting them. I trust what pops into my head and I've learned to just go with that. There may be a kernel of an idea that pops into my head, a part of right brain thinking, perhaps, and then the left brain has to articulate it. I work a lot in my head to communicate ideas.

I do quite a bit of talking in committees. There isn't much of a thought process because I don't usually wait very long to jump in. I enjoy connecting ideas and like to get right at it.

Individuals used questioning to identify reasons, direct their search, synthesize information, evaluate conclusions, provide additional information, and guide others in discovering new insights as explored in the following interviewee statements.

I need to know what my adversary wants from the discussion. I try to see both sides of the issue and then I try to synthesize the pieces looking for possible solution paths.

I try to look at the reasons for both parties' viewpoints. Then I try to evaluate what the consequences of each decision might be. There may

be no middle ground to settle in and I try to help all parties see the best strategy for resolution.

I have the habit of thinking logically about the problem. First you have to identify the problem, compile your data, and then look for available assumptions. It's a holistic process.

One difference between asking critical questions and asking noncritical questions may be the degree to which the questioner seeks accuracy, and decides an issue merits special attention or action. Participants spoke to the issue of :

The final objective is to get at the . Sometimes it's a mutual objective--what shall we do next to seek that ? Other times it seems only important to me.

I first tend to think of the consequences and try to visualize what the implications of the idea or statement are. I need to have things add up. There needs to be a wholeness or reason why things are true. There is a ring of about everything. The hard part is finding it.

Critical questions focus attention on important information and are designed to generate new information. The role of a critical questioner can span from being purely self-serving to purely contributing however, the goal is seeking.

The critical questioner asks pointed question.

Critical questioning involves knowing when to question, what sorts of questions to ask, and having the inclination to do so. Critical questioning brings forth for examination what others have accepted or ignored. A critical questioner queries for what ought to be, rather than what is.

I have a flexible process that is appropriate to the context. First, I try to understand the root of the issue, then question if what we're doing is

what we should be doing, and finally, I always try to add a little humor.

I ask questions that may tend to seem obvious to some and silly to others. But I am always pursuing a point. I don't care if I look like a fool. The questioning process is by far more important to me.

I consciously think about the questions I want to ask. I define the problem in relation to the concerns I have. I examine the situation carefully, I look at who my audience is, and I am careful to be sure that my timing is right.

Critical questioners examine a situation and decide if there is value in spending time considering the issues. Too many people make decisions for efficiency; critical questioners make decisions for effectiveness; what is fair; what is equitable; what is of value?

Interviewees identified various strategies they used to uncover information in a group problem solving environment. Their responses can be categorized in the following strategy lists. Statements listed under each strategy are examples of actions taken by interviewees.

INITIATE:

a) Initiate Actions

- Come prepared.
- Ask questions to open up discussion.
- Decide whether I want to determine the outcome of the problem or if I want the group to determine the outcome.
- Assess why the issue matters.

b) Demonstrate Trust

- Become known as someone others can talk to and trust.

c) Seek ""

- Look for the strongest rational or evidence possible in each issue.

- d) Offer Humor
 - Inject humor when appropriate.
- e) Employ Energy
 - Engage a lot of energy in problem solving.
 - Write things down.
- f) Listen
 - Listen to every word.

FACILITATE:

- a) Examine Issues
 - Find out what adversaries want.
 - Decipher both sides of the issue.
 - Assess the consequences of each potential solution.
 - Find a third approach (win/win solution).
 - Put myself in the other person's shoes.
 - Take on issues others won't address.
- b) Manage Conflict
 - Accept as valid all points of view.
 - Remove personal feelings and personalities.
 - Ask what the justifications are for each point of view.
 - Keep people from becoming too adversarial.

COORDINATE:

- a) Use Checks and Balances
 - Monitor information as it is presented.
 - Look for communication threads or relationships.
 - Connect ideas.
 - Use a mental matrix and find places to hook information.
 - Compare issues to the big picture.
 - Formulate information presented into questions or statements.
- b) Consider Total Issue
 - Offer critical questions if key points are being overlooked.
 - Ask myself what's being overlooked.
 - Ask follow-up questions to narrow the range of answers.

The following statements from interviewees are presented below to illustrate the context from which some of the strategies were pulled.

I tend to be a listener for a period of time then I attempt to focus on what I think is the important point or points. I usually offer critical questions if key points are being overlooked and if I think others see things very differently or are getting far afield from what the key points are.

I can generate some critical questions after putting myself in another person's shoes. I can feel my mind like a search light looking for key points. Meetings are pretty intense and take a lot of energy. It's not at all like reading a newspaper.

I operate on the basis that there are at least two conflicting points of view. I try to find the third point of view that is agreeable and find a way to pull everyone together. You have to really listen, more than just cognitively. You need to be a person that others can trust and talk to.

I pose questions to evaluate the process. It's my responsibility to be prepared.

I compare issues to the big picture instead of isolated little facts. I write down a lot of notes if it's a piece of the foundation I don't want to forget.

I start writing down things and formulate information into questions or statements. I try to find a communication thread looking for relationships and trying to find out how all these things are related.

I tend to take on issues that others won't address. I don't know why others won't address those issues; maybe it's that they just don't care or they don't want to buck the system or question the administration. I'm willing to take on anyone in the right context.

Thus critical questioning is a conscious effort that requires attention and constant mindful deliberation. If one is to succeed in the role of a critical questioner, it seems important that the critical questioner spend a great percentage of time and energy weighing the value of issues, facilitating actions, and offering meaningful insights.

Personal Influences

Research Question 4. Are there events in a person's life that may influence their development into a critical questioner?

Interview Questions:

- 4.1. Is critical questioning a learned behavior or does it just come naturally?
- 4.2. What is your level of self-confidence?
- 4.3. Do you consider your friends to be critical questioners?
- 4.4. What events in your past may have influenced or helped you to become a critical questioner?
- 4.5 Have you had any mentors who have influenced your ability to critically question?
- 4.6. What kinds of material do you read in your free time?
- 4.7. What role does knowledge of subject matter play in your critical questioning process?

Are there events in people's lives that influence their development into critical questioners? It is possible that there are influences that help shape an individual into a critical questioner? In an effort to look at such influences, six factors were examined: a) behavior, b) self-confidence, c) friendship, d) past events, e) mentoring, f)

pleasure reading, and g) subject matter). Each variable is identified and discussed below.

Behavior (Interview Question 4.1)

It is frequently said that good thinkers are born, not made. However, those interviewed believed their critical questioning skills were nurtured rather than determined by genetic composition. Of the 28 responses to this question only three believed that they were born with the ability to question critically and would have developed into critical questioners regardless of their learning environment; 5 felt it was a combination of genetics and learning. However, 19 interviewees credited their skills to a learning environment. One respondent was undecided on this issue and two interviewees were not asked the question due to a lack of time.

The question of nature versus nurture goes far beyond the extent of this study and is a question that psychologists and others have struggled with for years. However, there was value in raising this question to critical questioners because their answers provided insights into how critical questioners think and the characteristics they believed are representative of their demonstrated skill. Interviewees who stated that critical questioning was a learned skill felt that motivation, practice, focus, relationships with mentors, development of a questioning

habit, encouragement, and the capacity to reason abstractly were important factors in becoming a critical questioner. In addition, interviewees who felt particularly strong about the ability to learn critical questioning skills also recognized that some degree of capacity to learn must exist to enable critical questioning to occur.

The degree to which a person thinks through questions may be influenced quite heavily by example and practice. Interviewees indicated that a person can improve their critical questioning abilities through desire, mentoring, and interests.

I have a strong personal drive. Generally I think you can learn to think critically, but it seems some people catch on faster than others.

There is nothing genetic about it. Practice, practice, practice helps to develop it.

It is a learned behavior. Some people have a more focused intellect. And, it can be unlearned if you don't practice it. Your mind will slough it off.

Almost everything is a learned behavior. Things can influence your thinking like your family, schools, and the educational system.

As far as I'm concerned I've learned the skills of questioning and I've learned them by watching mentors. In fact, I'm always looking for new mentors.

It might come naturally for a few people but in my case, it was definitely learned. It's become a habit. I got into the habit of questioning and digging into things as a student and once you get into that habit it prevails in every aspect of your life. If you start with a moral issue like abortion, it's very natural to go all the way back to the real fundamental issues; things that you believe in and you then work your way through that

issue and come up with a decision on which side you're on rather than reacting to just the emotional aspect of the issue. What I'm saying is that if you start to become a critical questioner in one phase of your life, you become a critical questioner in all phases of your life.

I think you learn it. I was socialized and educated to do it.

Developing critical questioning has a lot to do with the home environment and parents that just naturally encourage you to ask questions.

You have to be in environments where you have some role models or training. I don't think it just drops in.

However, some of those interviewed in this study did not agree that critical questioning skills are learned. Three of the respondents felt strongly that some people, who possess the skills of a critical questioner, may have inherited a genetic link that is tied to skill. These three interviewees also felt that this genetic process of critical questioning may be tied to a theory on left brain-right brain functions because, "maybe critical questioners are left brain people. It may be more natural for them to think critically."

Of the five interviewees who felt that critical questioning was a combination of genetics and encouragement, the following comments summarize their thoughts.

It's just like athletics. You can train for it. But there must be some kind of innate ability that makes one person achieve over another.

It's a combination of learning and natural tendencies. But one needs to encourage questioning in order for it to develop.

It has components of both. It's something that people can learn with a little intelligence to go along with it.

Another perspective on the issue was aired by one interviewee who was intrigued by the question of whether it is a learned behavior or whether it comes naturally but would not take a conclusive stand on either side of the issue. This interviewee felt strongly that without the encouragement of peers, superiors, family and friends, the desire to question critically can be removed or destroyed. "Critical questioning may be something you are born with or you learn to develop. However, we can reward people for it or we can discourage people from doing it."

Level of Self-Confidence (Interview Question 4.2)

Self-confidence can be defined as a realistic assurance in one's own abilities. People with high levels of self-confidence believe in their ability to get things done; they believe they have the power or judgement to solve problems or get desired goals accomplished. They are willing to take risks and are not afraid of making mistakes. An individual's self-confidence is largely influenced by past experiences, beliefs, attitudes, capacity to comprehend, and peer support.

Of the 30 interviewees, 22 were asked to rate their level of self-confidence in professional group settings on a 10-point scale. A high level of self-confidence was one

disposition that appeared necessary for critical questioning to take place. Using 10 as high and 1 as low, all but one of the interviewees rated themselves in the top 40% of the scale with a 7 or greater score. Eighteen of the twenty-two rated themselves in the top 20%. Six were not asked the question due to lack of time. Two declined to rate themselves.

The following quotes are indicative of comments made by the interviewees in this study when asked to rate their level of self-confidence in professional group meeting settings.

In working with people I feel fairly confident. I know why I'm there and I waste little time getting to the task at hand. In other words, I do my homework before coming to the meeting. I get very frustrated with people who come to meetings unprepared.

Depending on the area of expertise, yes, I do have a very high level of self-confidence. When it comes to reasoning and logic, probably I feel most comfortable. The principle of fair appropriation is uppermost in me. I examine the rules carefully and proceed to question when I feel the rules aren't being fairly applied.

I used to be terribly shy. But in high school and again in college, I had some terrific instructors who taught learning through questioning. Somehow along the way questioning became more important and interesting than being afraid of the world.

My level of self-confidence is about as high as it can get. I'm pretty comfortable in any situation.

Recalling that each of the interviewees in this study was identified through a peer selection process, there appears to be a connection between being identified as a

critical questioner in a group setting (i.e. recognized by their peers as a critical questioner) and level of self-confidence. Eighty-six percent of interviewees rated themselves as having a self-confidence level of eight or higher.

Without a high level of self-confidence a person attempting to question critically may not be able to concentrate and focus on the critical issue(s) on the table. They may be consumed more with other concerns which interfere with the issue resolution process such as an interest in the opinions of peers regarding himself or the fact that her boss is sitting in the room. Statements made by interviewees about other people who they felt could not question critically reflected this observation.

It's easy to spot someone else who doesn't have a high level of self-confidence. They tend to pay more attention to what others think. They seemed more concerned with making a good impression than critically thinking.

I've seen it a hundred times, peers bowing to authority because they don't possess the confidence to decide on what they believe and stand up for their opinion.

There's a team player mentality out there that seems to preclude any recognition that the individual could be right and that the team is wrong. People with a lack of self-confidence don't do well at following their instincts about an issue.

People with a lack of self-confidence seem to be always waiting for someone else to ask 'their' question. I guess you could say that they have more concern for what others may think than their belief in an issue.

The implication of these relationships is that there is a tie between self-confidence and critical questioning. Below is a summary list of self-confidence issues that interviewees feel inhibit critical questioning:

- concern for what others would think,
- the desire to be popular,
- a tendency to be predisposed to agree with authority,
- a "team player" mentality,
- people don't trust their "instincts" enough,
- questions they would have asked have been asked by others.

These comments reflect insecurities about a lack of information and role in group settings. One interviewee stated the issue best:

Critical questioners have more common sense than others although critical questioners are an uncommon commodity. Critical questioners draw on past experiences, theoretical constructs, and a wide variety of concepts, and depend on their high self-confidence to fuel their effort.

Friendship (Interview Question 4.3)

Examining who critical questioners choose to associate with provided reveals another of the composite characteristics of critical questioners. When asked if they consider their friends to be critical questioners a majority (20) of those interviewed felt their friends were critical questioners. Eight respondents stated that they would consider some of their friends critical questioners. Only two interviewees said they did not consider their friends critical questioners. Several interviewees responded that their friends were few in number. One

interviewee commented that friends with a sense of humor were important to him:

My two or three friends are critical questioners. They are also very humorous people. People who are humorous must have experienced the whole spectrum of emotion from hurt to humor and must be able to focus on the humor. I think people possessing a humorous personality must be very deep.

When discussing friendships, those interviewed reflected that critical questioners do look for other critical questioners to who relate.

The people I respect and like are critical questioners. About the people the rest of the world would call my friends, I'd say it varies.

Absolutely, my friends are critical questioners. You look for that kind of stimulation; that's why they become your friends. You can question anything. I like to associate with people who are up-to-date on what's going on.

Some of my friends are critical questioners. I enjoy a diversity of friends. I enjoy friends who think very differently and have very different interests.

Yes, I have two friends and they are critical thinkers.

The people I get along best with are critical questioners. In academia we think of arguments in a very positive way to discover "truth". In America, we tend to think of argument as two people getting red in the face, screaming at one another and taking things very personally.

The people who are most engaging to me are the people who I can ask challenging questions of and who can offer the same kind of challenge back to me.

I am very selective about who my friends are. They are highly motivated and highly educated.

In order to be a critical questioner a person needs to have a fairly high degree of independence. Critical questioners, by nature, are not influenced greatly by others and are able to pull away from individuals and deal with issues. There must be a separateness between issues and emotional attachments. The more this separateness exists, the freer the critical questioner is to examine issues on an impartial basis. Perhaps this is one reason why this group of critical questioners appears to have few, close friendships.

Past Events (Interview Question 4.4)

Childhood events and experiences have a strong influence on how one acts and thinks as an adult. This research investigated triggering events by posing the question about the events in their past may have influenced or helped them to become a critical questioners. There seems to be no simple formula for instilling in a child the characteristics of a critical questioner. Nevertheless, each interviewee was able to describe some person or event that helped shape their ability and desire to become a critical questioner.

These research results indicate that learning to question critically is not an accident or the consequence of being exposed to other critical questioners on a hit or miss basis. It is a consequence of readiness to learn and

interaction with critical people who share common interests, who befriend and nurture the other person's interests, and who others can respect in a critical thinking environment. When an interest is aroused, the individual strives to join the company of people involved in the same activity; that individual reads books or watches movies on the topic, and begins to see oneself as "the kind of person" who engages in that activity. Others learn from people they see themselves as being like, and then they learn to think in some of the same ways as those people.

Several interviewees confirmed that an interest in the topic, a respect for the individual, a readiness to learn, and repeated exposure were important factors in developing critical questioning. Surprisingly, only a limited variety of people were recognized as influencers. Perhaps this has to do with the common profession of the interviewees. The two main categories of influential people were teachers and parents. Their list included teachers (10), parents (5), and lawyers (1). Of those who identified their parents, four specifically identified their fathers and two identified their mothers.

The statements below reflect the influencers identified by the critical questioners interviewed.

My father questioned a lot of things especially around political issues. I went with him to many political conventions and heard him debate the issues with the best.

There was a strong influence toward critical questioning from a few of my teachers. They would question the obvious and actually create a tension of ideas. It was a great way to learn.

Early university experience, more than anything else got me started questioning critically. The things I learned from a couple of professors seems to have influenced my whole way of operating. I was taught that to remember something you had to understand it and if I didn't understand it I didn't remember it.

In the service I had respect for my superior officers. I admired them because they were analytical and capable of penetrating to the heart of an issue. I see that activity as desirable and try to emulate it.

I've spent a tremendous amount of time with lawyers. As a group, lawyers ask the best questions, by far.

I had a junior high school teacher who challenged us to defend our positions. Because of her I was drawn to the sciences as a career and enjoy being challenged by the questioning process.

I blossomed in graduate school. I learned through a sociology professor that there is nothing you can do in sociology except teach it and question it. That's what I do today.

You have to be ready to learn and to become involved in the learning process. The nuances of learning are very subtle. You can get lost very easily. You have to be ready to learn and into thinking enough to find your own difficulties.

Some interviewees referred to unique life events or traits they learned from others and credited those events or traits as helping them to develop critical questioning skills. Preceding each quotation is the identified trait or event that was brought out by the interviewees.

Life or death event--When I had heart surgery, it didn't change my skills as a critical questioner

but it did change what I thought were the critical questions. Life is not a dress rehearsal.

Concentration--Your mind has to develop a high enough degree of concentration to be involved enough to learn from others' examples.

Assimilation--No one ever learns from someone else without assimilating and choosing what information to take into their own minds and making the connection in their own minds.

Taking things for granted--Education taught me to never take things for granted. It opened me up to so many things and if you open yourself up you have to start asking questions about absolutely everything. You don't leave things unanswered.

Communication skills--I'm probably more insensitive than most people. It keeps me from being too committed to an one idea so I am free to question all ideas.

Precision--Precision in expression is important. You have to say what you mean so others will understand it.

Mentoring (Interview Question 4.5)

Mentors can offer individuals new ways of thinking. Perhaps more from their examples than anything else, they can serve as mirrors to reflect to their protege's different ways to view ideas.

Of the 30 interviewees, 24 stated that they had or have one or more mentors in their lives that have influenced them in their critical questioning efforts. Three interviewees stated that they had not had mentors in a formal sense but that they have looked up to several people. Interviewees also cited a strenuous advanced degree program as a major influence similar to mentoring because of the significant

role graduate faculty played in the program. The following comments reflect both kinds of influence.

My mentors were tremendous role models for me. I've worked under some incredible scholarly people. They forced me to reflect on the tough questions that made a difference.

I had a particularly good Ph.D program that involved professors who were diametrically opposed in their viewpoints. That opposition didn't hurt my efforts to develop critical questioning skills in any way.

I haven't had mentors per se, but those who I have looked up to have instilled in me the self-confidence to be a critical questioner.

When you work with people who have the kind of intellectual skills that you aspire to you learn from them.

Individuals have made a big impact on me. A friend of mine made me realize that the answers aren't important; the questions are. You can't even begin to explore an answer until you've framed the question. The purpose of education is to help people frame questions, not answers.

Mentoring, along with historical influences, and the discussions of nature versus nurturing behavior appear to be intertwined. As the picture of a critical questioner becomes clearer, the thread of external influences seems strengthened.

Reading (Interview Question 4.6)

Is an interest in reading a prerequisite disposition to critical questioning? One's understanding of an issue or problem is severely limited by the amount of information available. Those with a questioning attitude seem to

recognize the fallibility of one's own opinions, the probability of bias in those opinions, and the danger of weighing evidence according to personal preferences. As one interviewee stated a critical questioner can find reading material one valued source of information that can help divert attention from personal biases and common opinion.

Interviewees were asked about the categories of pleasure reading do they do off-the-job in order to investigate if reading played a role in critical questioners' attempts at fostering continued critical thought outside of the workplace. Reading was pursued through off-the-job materials because it was assumed that on-the-job responses would focus predominately on professional material and no additional clues about the characteristics of the critical questioner could be gathered. The interview question was phrased so that responses were open-ended, permitting the interviewee to provide the categories of reading material.

Of those interviewed, 7 (23%) out of 30 listed mysteries as their preferred pleasure reading choice. Professional reading 6 (20%) was mentioned as the second highest form of off-the-job pleasure reading, and humor 4 (13%) was the third most widely stated form of off-the-job pleasure reading material.

Salient comments from interviewees about the importance of reading in their questioning process are expressed below.

These comments speak to the types of pleasure reading material preferred and may imply the role reading plays in the lives of critical questioners. All respondents indicated an interest in pleasure reading. However, comments about the amount of time available to read were prevalent:

a) Mysteries are an enjoyable part of my pleasure reading agenda. One of the things I like about mysteries is that you can ask questions of the mystery or the author or ask questions that the sleuth is suppose to be asking. It is active participation in a normally passive activity. It keeps my mind energized.

b) I enjoy reading about art and ideas and spiritual matters. Reading in a variety of topic areas like these keeps my thinking balanced and in perspective.

c) I read a lot of novels as well as technical literature and persuasive information. I debate the issues in my mind playing the devil's advocate. The funny thing is that I've found myself repeating and using some of those arguments in my discussions in groups.

d) I do lots of job-related reading. But for pleasure I'd rather ski than read a book. It's during those hours of recreation that my mind works best to consider and reconsider issues that have been puzzling me. Categories of pleasure reading include many short pieces in the areas of psychology, and humorous short stories.

e) I read all the time, everything I can get my hands on...newspapers, current events magazines, etc. I crave knowing about what's happening in the world and why.

f) I do almost zero pleasure reading. I like women's mystery writers. I do an awful lot of article reading just to keep up.

g) I favor a learning improvement environment with my reading. Learning, for me is implicit in the reading process.

✓ h) I read mystery novels as a favorite pastime activity. But the one thing about reading that really bugs me is that people use highlighters in their books. I hate picking up a book and finding that someone else has marred it all up with a highlighter. I'm convinced that highlighting is a substitute for reading and thinking about what one has read.

i) With pleasure reading I try to get something out of everything I read.

The data was indicative of at least three things.

First, these critical questioners do read for pleasure.

Twenty-eight of the thirty respondents stated that they read a great deal, reading, being a valued skill. However, one interviewee stated, "I don't read much because I do a lot of writing." A second interviewee spoke to the fact that he did a lot of professional reading but that off the job he prefers physical recreation to reading. This recreation time gives his mind a chance to freely process information and ponder concepts in new ways.

A second fact related to reading was that seven interviewees preferred mysteries as their first choice in pleasure reading. As stated earlier in this research, the definition of a critical questioner is someone who questions ideas, arguments, comments, and observations for sound and substantiated logic. Most, if not all of the pleasure reading categories mentioned by interviewees can encourage questioning. Topics such as philosophy and religion certainly can each pose their own lines of questions to the critical mind. From the first page to the last, mysteries test one's ability to solve a puzzle and tax a wide variety

of critical questioning skills. To critically question is to enjoy raising questions and suspending one's own judgements. A person finds oneself engaging in such mental acts as supposing, strategizing, inferring, and judging. Mysteries can pose problems that are not easily solved by formulas or past experience. Critical questions are required to determine the nature and dimensions of the problem. Because problem solving can rarely be approached with a set of rigid step by step procedures, mystery reading may be excellent preparation critically.

Perhaps, as a result of the setting for the study, professional reading was rated as their second form of pleasure reading. However, seven respondents stated that professional reading off the job was not their preferred reading preference.

Humor might understandably be recognized as the third significant form of reading since humor motivates, develops insight, expands thinking, and requires reactive critical reading. In pleasurable risk-free environments in which the best learning takes place, humor provides opportunities to play with ideas.

The third concern brought out in the research was that interviewees mentioned reading from 13 different categories. It was unclear if this broad span of categories would be typical of other critical questioning populations and it is unclear if this sample of critical questioners tended to

read more than other samples of critical questioners or more than the larger population of faculty. When grouping the reading categories pleasure reading (fiction and humor) and professional reading (non-fiction and job-related) carry equal importance to these critical questioners. However, one interviewee, who was the exception, indicated a preference for outdoor recreation to reading because, "it provided an atmosphere for creative thinking." The majority of interviewees complained that reading was a priority for them but that the time devoted to reading was never enough.

Subject Matter (Interview Question 4.7)

What role does the knowledge of subject matter play in one's critical questioning process? Respondents reported subject matter knowledge provided them with a sense of confidence in discussions. However, an indepth knowledge of subject was not as critical as a general awareness of the subject, even though there was a higher sense of security when the subject was well understood. A knowledge of subject matter helped interviewees to focus immediately on relevant and important issues. As a consequence they were able direct their questioning and press issues toward new frontiers of thinking.

An analysis of data found three patterns of thinking emerged. Some interviewees felt strongly that knowledge of topics was paramount to discussing issues. Other interviewees felt the ability to think logically and process

information was a higher priority than a knowledge of subject matter. Finally, some interviewees simply enjoyed inquiry and learning through their questioning regardless of their familiarity with the topics.

The following comments made by respondents are presented under the topics listed above. The quotes represent a deep appreciation for questioning as an exploratory process within the context of subject matter.

Knowledge of Subject Matter

- a) I stay off committees I don't know anything about.
- b) I need to be familiar with topic.
- c) I need to feel informed.
- d) Knowledge of subject matter is a high priority. On the other hand, if you're closely attached to a subject it may be harder to remove yourself from personal or substantive positions that one can get highly emotional about.
- e) You need to have a knowledge of the topic or a zest for it. The critical questioning process might be separate from knowledge of the topic. But a knowledge of the topic may allow you to be a better critical questioner.
- f) Yes, one needs to understand the topic. I do my homework. If I'm going to jump in I do it in an area where I know what's going on.
- g) You're a lot more efficient if you're extremely familiar with the context in which you are questioning. One of the things that's difficult is if you don't feel you can see the whole picture. One of the things that's causing you discord anyway is the fact that you aren't really comfortable that you really understand what's going on with all the interactions. If you're very familiar with the context then critical questioning is very easy.

- h) To a certain extent critical questioning is subject matter specific.
- i) All good healthy disciplines rely on critical questioners to advance them so a strong knowledge of topics is important.
- j) If I know the subject matter I have more control over the topic.
- k) Knowledge of subject matter is important. You're limited in terms of how far you can go without it. Most subjects move into moral and ethical issues.
- l) Knowledge of subject matter is important for two reasons. If you know something about the issue, it's easier to ask questions that push the issue to its frontiers. Two, you can ask questions that ask for more information. It's a cop out if you decide that you don't know enough about something and decide that that's a reason not to get involved.
- m) Knowledge of subject matter is a first step. It defines the level of questioning and tends to dictate the outcome.

Knowledge of subject matter guided thinking. Having an understanding of the discussion topics helped the critical questioner to get involved with discussions quickly, and helped the group not to get lost in tangential areas. A knowledge of the subject might have been present due to recent reading and interface with the topic, a broad education, the consequence of listening to various conversations, or being involved with past intellectual experiences. Oddly enough, in addition to a familiarity with topics, a degree of naivety about issues was also cited as advantageous at times.

Ability to Use Process Skills

- a) Yes, it plays a role; but logic is even far more important. More often than not good critical questioning comes from people who are slightly naive in certain areas; naive enough to know that it can't be done yet who are very logical.
- b) I question logical streams and use linear thinking things. I tend to group ideas and see how they work together and individually.
- c) A critical questioner needs a good grasp of the subject matter just like anyone else. The difference is they also have a huge store of information outside of the area that they can apply to the issue. They can cross traditional disciplinary boundaries.
- d) I don't know if it is a subject matter or education issue that says whether you're going to question in some way and become a recognized leader.
- e) I see critical questioning related more to process than content. In almost any area, if I listen long enough it's possible to raise some critical questions about it. I see students doing this in the classroom.
- f) The questioning process might be different from knowledge of the topic. If you have knowledge, you might question more forcefully. If you don't have knowledge you can question confidentially without getting buried in details others might be caught up in.

When critical inquiry is used in groups settings, the critical questioner uses synthesis, analysis, and evaluation skills to assess the validity of arguments and reach beyond current information. Critical questioners seem to have the advantage of being exposed to a wide variety of experiences and issues over their life time that helped them target topics and employ process skills effectively.

Passion for Learning

- a) I'm just not interested in some topics. I need to have a passion for the topic in order to be involved in a discussion about it. Very often critical questioning is wound up with the need to educate yourself as well. One of the reasons for critical questioning is to build your own background and understand what it is about that topic that's being discussed that really works.
- b) I enjoy questioning in many areas for the purpose of increasing my understanding.
- c) I learn more when I'm not as familiar with the subject matter. I can really explore and take risks looking at different situations.
- d) You need to know what you're doing and you need to be in tune with what's going on. Some people can question without too much knowledge of the subject matter because they are strongly intuitive.

Critical questioners liked to question; they liked being challenged by ideas. They welcomed the opportunity to get involved with meaningful issues. Because their interest in questioning was strong, they provided a valued service to group discussions.

Whether it is a knowledge of subject matter, an ability to use process skills or a passion for learning that drove the critical questioner, they came to meetings prepared to get involved. They took an active role in group discussion; they hunted for new information and searched for the logical, rational solutions to issues.

Characteristics of Critical Questioners

Research Question 5. What are the differences between critical questioners and noncritical questioners in a

university group setting with regard to critical questioning?

Interview Questions:

5.1 Why do you think other people do not ask critical questions in a group questioning environment?

5.2 What frustrates you about other people in a critical questioning environment?

For this research the actions and dispositions of the critical questioner were examined, analyzed, and described for purposes of emulation. However, not everyone is a critical questioner, not everyone strives to be one, and obviously, not everyone is employed by a university. Some people may deliberately avoid becoming critical questioners for reasons of position, environment, stress, or resources such as the energy, time, inclination. Nevertheless, in a group setting, those who do not participate in critical questioning can affect those who do, simply by their presence, their actions, and influence on group members.

Noncritical Questioners (Interview Question 5.1)

Although the questioning process undoubtedly varies depending on many variables, this research found that there are some major characteristics among faculty identified as critical questioners. Some of the significant characteristics of critical questioners include having a

respect for others' opinions, a tendency to be fairminded, being an advocate of critical questioning, practicing strong communication skills, tending not to react for emotional reasons, being openminded, and being interested in leading people in new directions of thought. The comments of those interviewed not only produced a large set of descriptors about critical questioners, but it also revealed a picture of the characteristics not possessed by the critical questioner. Interviewees were asked to describe the perceived differences they believe exist between critical questioners and noncritical questioners in order to identify some of those traits in people that they would least want to possess and that they would least admire in themselves.

Critical questioners in this study were asked to describe the reasons they thought others did not ask critical questions. Interviewees were exceptionally candid and verbose in response to the question as the following quotations demonstrate.

Others aren't critical questioners because they don't want to look like a fool....Also, others forget why they are there and/or they have such a strong focus on an idea that it guides them.

✓ Questioning is too demanding; it's hard; you have to be ready to change and you can't be egotistical. People aren't always logical. They don't want to question; it's simply too demanding.

We don't live our lives critically. We phase in and out. In the educational system, the whole point is critical questioning. Lots of educators aren't into critical thinking; educators don't like to get their egos hurt. Most educators don't believe in education; they simply help to work

students through the system with little thought as to why we're all here in the first place; you get the degree and you're done.

Developing thinking strategies is hard to do. There's lots of failure along the way. Without failure you aren't going to learn. We have mass education. Teaching questioning to one person takes lots of time. People don't do it cause they don't want to do it.

Noncritical questioners are asleep, uninvolved, and unmotivated.

Enormous numbers of people go through life and just take what comes. Joiners belong to organizations without knowing what their agenda is or what the organization's agenda is. They just get on the band wagon with generalities...they act only on opinions. Most people jump up and down without facts to support their beliefs. It's good that there aren't a lot of critical questioners because the world probably couldn't support them. Some people don't want to question things.

One characteristic of noncritical questioners is that they are uninterested, possibly apathetic, demoralized and maybe unknowledgeable in ways to question.

Some people may question to put up a smoke screen and to give themselves the feeling that they are doing something constructive. In other cases people are tossing the ball back and forth to find out about something.

People may not understand what's actually occurring or they've gotten lost in the process. They may be in a group or setting where they may not feel strong enough or secure enough to question.

Some people are probably afraid they're going to offend someone. I feel confident that I can ask someone a question in a way that isn't threatening. Therefore I'm not really afraid to question others. I'm doing it cause I want to get to an answer. I like to criticize the idea not the person.

A lot of people don't want to be responsible for a lot of ideas. Another thing is that they don't

have the confidence. Other people's decisions are better, or they don't feel they know enough. Group mentality also hinders thinking.

It's frustrating because lots of people don't have the critical spirit; they don't have the motivation; they're unwilling to find the fun in the setting, and they are unwilling to help themselves. I find it frustrating on behalf of the person. I find it frustrating to run against people who don't want to help themselves. It frustrates me that people are unwilling to help themselves. Critical questioning is a very personal thing. No one is going to do it for you. You have to develop a pattern of doing it yourself.

✓ It's a lot more comfortable to believe than it is to question.

Nonthinking is characteristic of many people I know.

Thus, interviewees had a lot to say about why they thought others did not critically question as noted from the comments above. A few interviewees actually imposed a tone of disgust in conversing on this topic. Others answered this question with the same matter-of-factness they delivered all interview questions.

The interviewees' comments and other research data revealed several conditions that interfered with critical questioning. Frustrations of interviewees about noncritical questioners centered on many areas: noncritical questioners were identified as being more concerned about how others viewed them than the issues at hand. They did not feel that asking questions and standing out from the group made a positive statement about their loyalty to others. They were also viewed as being concerned about looking like a fool

within their peer group. Some felt that popularity among peers stemmed from remaining silent on controversial issues. Others felt that agreement with authority was the paramount consideration in all decisionmaking. Still others felt being a team player was more important than examining issues.

Some critical questioners perceived that noncritical questioners felt their intellectual resources were better placed in other areas. For example, in this university setting, there is no campus-wide effort to employ critical questioning. Faculty argue that workloads are too large to take on an additional effort such as critical questioning. The structure of mass education often prohibits critical questioning; there is a lack of time, resources, and people to train others in critical questioning. Consequently, many people do not know how to do it.

The critical questioners observed that others are not always logical in their thinking. They had their own agendas that drove their thinking or they felt they already had the answers, regardless of the question. Sometimes people only caught glimpses of peripheral issues related to questions; they could not see the larger issues that impinged on outcomes. Others just took what was given to them without question; still others had beliefs that were not well thought out but they did not like to revisit their reasons; they felt they already knew the answers to their questions. Further questioning was not necessary.

Some noncritical questioners were viewed as lacking the critical questioning spirit. They did not live their lives critically examining everything so they could not trust their instincts enough to question. And, they felt too insecure to question. Egos got wounded in critical questioning groups. People did not like to fail and critical questioning required a degree of failure. Some people were apathetic or too demoralized to care.

Still other people were assessed by critical questioners as being too polite for the situation. Somehow, critically questioning was interpreted to be offensive, or it raised issues too sensitive for the social context. A group mentality was sensed that dissuaded anyone from speaking out on issues. Peer pressure was too strong to question. Also, they felt that if they waited long enough their questions would be answered by others. Other noncritical questioners appeared to be uncomfortable with speaking out at all and to be fearful that they did not know enough to speak out or simply did not understand the questioning process or the importance of examining issues carefully.

Thus ^{*}critical questioners could easily identify a number of reasons why others were not viewed as critical questioners in group settings. There were a large number of traits described that implied differences between critical questioners and noncritical questioners. One of the reasons

interviewees may have been so verbose with this question is because several of them admitted that at one time or another they had been disinclined to critically question. They may have either experienced some of these traits themselves or experienced other people in groups actively employing one or more traits. Because of either scenario, interviewees were able to discuss their assessment of noncritical questioning characteristics.

Frustrations of Critical Questioners
(Interview Question 5.2)

Another dimension of the comparison between critical questioners and noncritical questioners, involves frustrations the critical questioners have with other people in a group questioning environment. Information was sought to confirm the existence of dispositions that are a prerequisite to critical questioning.

Interviewees as a group reacted in a heated manner when discussing this topic. Those interviewed answered swiftly and emotionally to the question indicating that they regularly encounter people in group problem-solving situations who frustrated them for one or more reasons. Selected comments interviewees made on this topic follow. The phrases at the beginning of each quotation summarizes the thought.

- a) Lack of Truth
I find it particularly distasteful to find colleagues who don't tell the truth and faculty

who don't call them on it. I especially don't like it if I know a point is correct and others do too but they don't back me up on it.

b) Non-ego

I think we need to give people the opportunity to think critically. You need to let each person figure out what makes them happy in their lives. There are a lot of happy people out there who aren't critical questioners.

c) Other Purposes

People don't want to critically think. I used to think meetings were for exchange of ideas and critically thinking. This doesn't meet with positive feelings at all anymore. I'm breaking the rules. Critically questioning issues are not at all what these meetings are about anymore. They're not at all interested in doing what makes sense.

d) Power and Support

These people are about who can show the most power and how can we avoid any logic. They react only to their feelings about things and see who they can trick into their way of thinking.

e) Ignore Criteria

People don't pay attention to the criteria of the topic. They don't want to use critical thinking; it's too hard to do. They've learned how to avoid it. Someone always feels compelled to take a stand on any given issue without examining any criteria useful in evaluating the problem. People don't pay much attention to criteria. We've learned how to make decisions without using criteria thus not employing critical questioning skills.

f) Own Agenda

Other people tend not to see their own agenda and how it's affecting their responses and the responses of others. I get bugged by illogical people.

g) Lack Ability to See the Big Picture

What is frustrating is that there are people out there who simply don't have the ability to accept reality. They tend to focus only on a small piece. Critical questioners are people who have the big picture. There are those who don't see or care about the big picture.

- h) Process Information Slowly
 Everyone processes information at different rates. Critical questioners do things very quickly and have already sorted out how they are going to approach an issue within the first two or three minutes of being confronted with the problem.
- The frustration comes with the length of time it takes for some people to deal with the same information. Critical questioners draw upon a lot of knowledge and experience and use it to the group's advantage in solving problems.
- i) Lack of Foresight
 I have a lot of difficulty with people who don't want to get involved with something that eventually will affect them, like politics. Those people are backing away from the tough questions about their own future and they don't realize or haven't learned that those things are going to impact them.
- j) No Skills
 I have some level of frustration with people who are not real good thinkers and who are not good in their communication skills so they can't articulate their ideas very well.
- k) Meaningful Answers
 Yes, I'm definitely frustrated by people when they have all the answers. It's the way they present it. I question issues by raising other questions as opposed to providing a quick answer. Solving an issue has to be done gently or you'll put others off.
- l) Interpersonal Relationships
 I get frustrated by men ignoring the ideas of women or one person taking credit for the ideas of another person.
- m) Actions Equal Outcomes
 I can't stand people who can't think things through. For every action there is an outcome. Even doing nothing has an outcome. You have to think about the outcomes. Who will I impact today. What will I do today. People who don't ask these questions are not goal-oriented.

n) Accuracy of Information

I'm bugged by people who don't have their facts straight, who lose their focus or who have trouble sticking to the point.

The comments of those interviewed and other research data reveal dispositions critical questioners became most frustrated with when they saw them acted out by members of working committees; they are actions that critical questioners were least likely to emulate themselves. These dispositions were categorized by similarities.

a) Operating with Ulterior Motives.

- dominate discussions
- use position or power to shut off discussion
- control others
- question only as a formality

b) Not Valuing Truth

- do not have their facts straight
- are illogical
- ignore decisionmaking criteria
- provide answers without much thought about their consequences
- lie to change the thinking of others

c) Lacking Skills

- "bluff" their way through meetings
- do not draw upon knowledge and experience
- can not articulate their ideas well
- do not see the big picture of reality
- react emotionally
- do not want to think critically
- do not recognize their own agendas

d) Lacking Initiative

- back away from the tough questions
- do not have a sense of wonder
- lack intellectual curiosity
- are not goal-oriented
- may not be interested in their jobs
- do not want to get involved
- react only when a crisis arises
- unwilling to examine related issues

Statistical data collected for this research confirms that this sample of critical questioners did not prefer the above categories of actions. For example, out of the twenty-six item printed survey assessment of valued critical questioning characteristics the characteristics of being fair-minded, regarding solutions as conditional, listening for opposing viewpoints, and exploring alternatives were rated as the top five most important characteristics (see Table 2). It would make sense that this same sample of critical questioners would identify the dispositions identified in the categories above as frustrating to them in a critical questioning environment.

Environmental Influences

Research Question 6. Does the environment influence a person's willingness to critically question?

Interview Question:

6.1 Does the environment effect your willingness to question in a group setting?

The last interview category dwelt with the environment in which critical questioning takes place. Interviewees were asked to recall a recent group setting in which they took on the role of a critical questioner such as a faculty meeting, or departmental meeting. They were then asked to discuss what environmental influences affected their willingness to participate in critical questioning. Specifically

interviewees were asked if the environment influences their willingness to critically question.

Environmental Influences on Critical Questioning
(Interview Question 6.1)

Critical thinking literature that focused on classroom learning discussed the need for a conducive environment free of authority and open to idea generating and exchange. To investigate the critical questioner's perceived needs and environmental needs those interviewed were asked how the environment within a group setting influences their desire to critically question. Critical questioners preferred environments where the following people and situations were present:

- a) a group facilitator
- b) an hospitable environment
- c) a sense of fairness
- d) a common group interest
- e) group consensus building

The following commentary are direct quotes that reflect the categories of group environment needs listed above.

a) Serve as group facilitator

Serving as a group facilitator in the formal sense of taking a group over and running a meeting was not a role that interviewees preferred. In fact, critical questioners avoided that role because of its structured nature. Instead interviewees preferred someone else command that role; instead they preferred a more flexible role that could be

loosely described as an informal information processor and group facilitator.

Critical questioners often try to move the group toward issue resolution through information processing. Movement forward means trying to attain a clear picture or understanding of the issue. Sometimes moving forward means breaking a big problem into its component parts or asking questions that expose new or different perspectives on a problem.

Large groups are more intimidating, more difficult. I try to be informal yet organized when I facilitate a group. I try to help people think about what the issues are and realize that it takes time to develop a rapport within a group.

What motivates me to do critical questioning is wanting to move on with something. I get very frustrated when a group is not moving forward. I use questioning in an effort to get people to look at what might be the important pieces and make some progress.

I work to get people to tackle things in a certain time order and critical questions can help people see that those are unimportant concerns at the moment and that we need to deal with what needs to be dealt with at first.

I think I'm particularly good at helping people when they're faced with a very big problem; breaking it down into the smaller pieces that can be tackled rather than being overwhelmed by it.

I look at all questions as being good questions. But there are lots of questions that aren't being asked so I try to ask those other questions. I look at my own opinions and the opinions of others. That breeds a sense of fairness.

b) Create a hospitable environment

An hospitable environment maintains a respect for each individual's opinions and ideas. Contributed information is considered in relation to the idea and the problem at hand not the source of the idea or the immediate or apparent value of the idea. Judgement is withheld until ideas are brought into relation to the problem. The group task must be problem resolution with strong group maintenance functions such as trust and respect for each other. There must be an attitude of win-win not win-lose among all parties; not power struggles over who is right but rather a shared best solution. Unfortunately, noncritical questioners often are not aware of the importance of a hospitable environment and attend meetings coming with many unrelated agenda items that cloud the possibilities for the hospitable working environment to be present.

I use questioning to clarify. It's important to find compromise and consensus. The best solution is one where everyone's point of view is considered. There is no best way to do something. Both you and your enemy need to achieve things. Many of those who are not critical questioners are those I would associate with seeking power and the desire to become an administrator.

I shut down when I'm being attacked and the issues are ignored. If there is a negative presence, I shut down. If there is a very verbose person, I'll sit back and wait. Verbal diarrhea is no friend of mine. There are some people who just talk too much and don't stick to the issues.

The environment needs to be supportive or conducive to moving issues forward. The best ideas are always the ideas of others. I don't use my

ideas to promote my career. I use them to attack the problem.

Two themes come to mind--solving the problem and helping others. It's always better to give others my ideas. I won't pop in the discussion unless I have something to say; to reinforce, contribute, or deal with the contraction of ideas.

A permissive environment must be present. I like to listen to what someone says and examine the alternatives. I like to take ideas as a whole and present alternatives.

The smaller the group, the easier it is to discuss issues.

I prefer to embrace issues in a non-confrontational matter.

The more familiar I am with the people and they with me, the more comfortable I am. I don't like loud, intimidating groups.

Individuals need to be in sync.

In a group setting one can choose not to respond if others take on the role. If others have a strong agenda sometimes I just let the agenda move in their direction. If I don't trust members I may not get involved. I may have an interest in the topic.

I don't get sleepy in meetings. I enjoy meetings.

c) Sustain a sense of fairness

A group environment that sustains a sense of fairness maintains honest open evaluations of issues with no hidden agendas. There must be an acceptance of all input for the purpose of evaluation of that input. Questions must be asked like does that information relate, who does it affect, and why should it be considered? If honest evaluation of information is not present group members end up with spurious relationships among pieces of information and group

discussion becomes more of a game of talking the loudest and longest to convince others of a point of view. This is contrasted with critical questioning in a fair environment which involves looking at assumptions, searching for new information, and abstracting information to check its relevancy to the issues at hand.

I look at my own opinions and the opinions of others. That tends to breed a sense of fairness.

I need to find solutions that are equitable and fair. I think one needs to have guts or persistence to cut through the issues.

I try to get the group to look at the big issues at all times examining the fairness of the environment.

First you have to observe that there's something out there that requires questioning. The very first thing you have to do is to observe that something is taken as a given.

I prefer a democratic environment.

d) Maintain a common group interest

A group may be as loose as a crowd of engineering faculty who meet on Fridays at the local coffee shop to toss ideas around or as structured as university administrators deciding the fate of tuition increases. Either way, a common interest exists. Too often, however, people are pulled into group discussions who do not have the resources or capacity to maintain a common concern for the issues. Often this is not a fault of the individual but a fault of other pending issues that demand equal or greater attention. When too many concerns face an individual there is not time to think

creatively, there is not time to think abstractly, there is not time to gather new information. Thus decisions are made in haste. Critical questioners interviewed frequently indicated that critical questioning was not a process that could be forced or rushed and that it often required creative idea sharing. If a group is not committed to a shared interest in idea exploration critical questioning can be halted or cut short.

I like to work best with groups of people I choose to work with and have similar interests with; I also prefer nonstructured environments.

I may have an interest in the topic.

You're sparked to get involved when it's something you have a feeling for that matters to you. If the problems are too simplistic I don't think it's worth my critical thought.

e) Serve as consensus builder

The critical questioner tries to maintain a sense of group solidarity by honest disagreement over issues. The goal is to help the group move with the discussion helping members to contribute whenever they can believing that there may be a resolution ahead. The group's job is to try to uncover that resolution. Critical questioners trust their abilities to do this and trust the critical questioning process as a method of uncovering resolutions.

Because of previous roles and my interest in questioning, I can go into any meeting and assume that everyone else will expect me to ask questions. I will ask questions particularly if I'm representing others.

I like to think of myself as a consensus builder and a problem solver, a person who will work to bring two groups together if that's where the problem is. The contribution I can make to a group is to continue to clarify the issues that are in question.

I like to continue to clarify what's been said in attempting to arrive at some kind of compromise and solution. I like being a problem resolver. But you have to be a good listener. I want to make sure others are also hearing what is being said and understand each part of the problem.

There needs to be a centeredness among group members. This creates an open environment. I break arguments out into several subtopics to develop issues and find patterns. You must be willing to sacrifice a little for the solution that all benefits from.

Twenty-seven of the thirty respondents felt that environment did influence their willingness to critically question. However, three respondents felt that the environment did not influence their desire to critically question one way or another. These three interviewees made the following comments.

I don't let the environment influence the situation.

I'm not sure there ever is a case where the environment makes a difference to me.

The environment doesn't matter as long as I have a strong goal to accomplish. I don't care who's in the room or what people in the room think.

Interview data were compared to the statistical data collected. Table 3 outlines the comparison of information. Variables are presented in a numerical sequence reflecting responses in the "always" column since those who commented

Table 3. Comparisons Among Environmental Variables
Influencing Interviewees' Desire to
Critically Question

Environmental Influences	Characteristics of Critical Questioners	No. of Critical Questioners Who Perform Function				
		Always	Usually	Sometimes	Occa- sionally	Never
1. Serve as group facilitator	Listen for opposing viewpoints	16	10	5	-	-
	Look for ideas not yet considered	13	13	3	2	-
	Explore alternatives	11	17	2	1	-
	Identify assumptions	10	16	5	-	-
	Submit ideas for reaction	9	13	8	1	-
	Send discussions in new directions as needed	5	20	4	1	1
2. Create of hospitable environment	Use tact	8	9	12	1	1
	Make point of complimenting others	7	9	11	4	-
	Wait for opportune time to ask questions	6	15	8	2	-
	Support members in their views	4	21	6	-	-
3. Sustain a sense of fairness	Try to be fair-minded	14	16	4	-	-
4. Maintain a common group interest	Identify problem or issue as quickly as possible	12	13	5	1	-
	Assess the context of the problem or issue	11	15	2	2	1
	Try to meet the group's goals for the problem or issue	2	22	6	1	-
5. Serve as consensus builder	Regard solutions as conditional	16	9	5	1	-

Table 3. Comparisons Among Environmental Variables
Influencing Interviewees' Desire to
Critically Question--Continued

Environmental Influences	Characteristics of Critical Questioners	No. of Critical Questioners Who Perform Function				
		Always	Usually	Sometimes	Occas- sionally	Never
	Question cause and effect relationships	13	9	7	1	-
	Listen for cause and effect relationships	12	13	5	1	-
	Look for ways to recombine information	7	17	4	1	2

made such strong statements of conviction about environmental influences.

Critical questioners take a lot of the responsibility for establishing and maintaining an environment conducive to critical questioning. When given a choice, they also prefer to deal with the issues and not the personalities involved. Because there is no best way to solve a problem or discuss an issue, the variables above provide the critical questioner with many tools. These tools are useless if an environment is plagued by interpersonal conflicts, game playing, or other actions of noncritical questioners.

Summary

Critical questioners can be described by a variety of characteristics. The critical questioner asks pointed question and knows when to question, what sorts of questions to ask, and has the inclination to do so. Critical

questioning brings forth for examination what others have accepted or ignored. The critical questioner tries to discover what ought to be, rather than what is. These actions are opposed to the actions of noncritical questioners who tend to ignore the importance of being honest, who tend to let other agendas cloud their inquiry process, who lack the ability to recognize the bigger picture, who process information slowly, who lack foresight, who do not respond comfortably to interpersonal relationships, and who tend not to value accuracy of information.

However, a person may not need to be born with the traits of critical questioning to become one. Interviewees indicated that having the motivation, practicing, focusing attention to the importance of questioning, having relationships with those who do critically question, developing a habit of questioning, being encouraged to question, and learning to reason abstractly are all ways to empower oneself to critically question.

CHAPTER 5

FINDINGS AND CONCLUSIONS

Questions are common to everyday activity. There are various kinds of questions and varying degrees to which questioning can be carried out. Some questions merit quick responses and little thought. Other questioners ask for the release of a simple informational response. Still others call for serious reflection and analysis. This kind of questioning falls into the category of critical questioning.

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. The degree to which individuals critically question and focus significantly on related issues varies among people and situations.

In group settings, where the clarification or resolution of issues is valued by participants, one or more group members may press for an effective solution by asking particular insightful questions. The response to these questions often leads the group to a new understanding of the issue. These group members are critical questioners. The process they use to analyze issues is critical questioning.

The purpose of this research was to examine the characteristics of critical questioners in group settings.

Six research areas were examined: a) definition of a critical questioner--a definition of a critical questioner was presented to interviewees for analysis, b) dispositions of critical questioners--interviewees were asked to identify group settings where they were most apt to critically question and speculate on why peers see them as critical questioners in those settings, c) thought process and steps used by critical questioners--participants identified the thought process and the critical questioning steps they used when resolving group issues, d) variables influencing one's ability to critically question--variables (personal experiences, nurturing environments, education, self-confidence, relationships with friends, and interest in reading) were examined for their influence on interviewees' abilities to critically question, e) perceived differences between critical and noncritical questioners--interviewees identified characteristics of noncritical questioners and the frustrations they have with such people, and f) environmental influences on critical questioning--interviewees described how the group setting influenced their willingness to critically question.

Research questions grew out of personal experiences. The researcher attended many committee meetings where one or two individuals seemed to quickly and accurately identify priority issues and command the groups' attention to previously unrecognized variables or patterns of thought

related to issue resolution and sound decisionmaking. The findings of this study are valuable in identifying and describing who those people are and how they engage in critical questioning.

Thirty-two Montana State University teaching, extension, and research faculty were identified as critical questioners through a modified Delphi format. However, the Delphi nomination process of critical questioning faculty may not have been completely accurate. Those who nominated faculty may have interpreted the definition of a critical questioner too narrowly. Also, some faculty nominated may have gained a reputation for being critical questioners by simply being outspoken, and this is not necessarily a characteristic of critical questioners. Those individuals identified as critical questioners were selected based solely on campus interactions. Others may well have surfaced as critical questioners in their church or community organization where their academic rank or security were not threatened.

Two identified faculty declined interviews due to work schedules. Personal interviews were conducted with 30 faculty. Thirty-one faculty completed a pencil and paper printed survey that asked interviewees to respond to 26 actions related to critical questioning.

This was a naturalistic research study which used both qualitative and quantitative data collection techniques.

Qualitative data was collected from more than 45 hours of interviews. Precautions were taken to eliminate identification of interviewees changing interviewee names to reference numbers and guaranteeing anonymity. Interview data were analyzed with a dBase program using keyword sorting. Data were sorted, grouped, and compiled. Exact quotations were used and were modified only for reader clarity. The quantitative data from a 26 item paper and pencil survey were used to provide triangulated confirmation of participants' verbal comments regarding critical questioning actions. Frequency counts, means, and standard deviations were computed for this qualitative data.

The findings expanded the knowledge about the critical questioner and the actions of the critical questioner. Critical questioning is identified as being different from other forms of questioning because it seeks to promote reflective analysis rather than eliciting information (Brookfield, 1987, p. 93). The degree to which critical questioners assess and evaluate information, the roles they participate in as group members, and the communication skills they employ identify these people as different from noncritical questioners. Data collected provide significant insights into what influences critical questioners, how they mentally prepare to question, and when they question or do not question.

As described above, six variables related to the critical questioner and the critical questioning process were examined. The following discussion is organized under these six research variables. Each variable is summarized according to findings and conclusions. Following the summary of findings and conclusions recommendations for theory, practice, and further research are presented.

Definition of a Critical Questioner

Findings

The definition of a critical questioner was limiting in three areas. First, it was not holistic in that it favored intellectual abstraction but did not include motivations or intuitions associated with the affective domain. Second, the definition did not contain a validity component. Interviewees felt the definition should more accurately address a critical questioning skill that involves examining the validity of issues. The term "substantiated" used in the definition did not convey the full meaning of validity to some interviewees. Third, the definition did not capture the "critical moment". Interviewees said the timing of critical questions played an important role in issue exploration and resolution (i.e., that moment when group members were most receptive to critical questions).

Prior to this research no published definition of a critical questioner existed. Consequently, a definition was designed for this study and then evaluated by interviewees. The definition described the critical questioner as "someone who questions ideas, arguments, comments and observations for sound and substantiated logic." Using this definition in the interview setting established a common ground for identifying critical questioners and aided interviewees in describing characteristics of critical questioners.

This research definition was found to be adequate for establishing a common point of discussion between the researcher and the interviewee. It also provided a foundation for discussion about what was inclusive in the critical questioning process. However, it was limited to the extent that it did not adequately capture variations among the critical questioners interviewed. The definition turned out to be narrow and restrictive.

Conclusions

1. The definition of a critical questioner should be expanded to be descriptive of both cognitive and affective thinking; the cognitive domain being verbal, sequential, logical, analytical, and rational thinking; the affective domain being nonverbal, simultaneous, sympathetic, and intuitive thinking (Springer and Deutsch, 1981, p. 184). The definition examined critical questioning as a focused,

conscious set of activities that, once identified, could be replicated. The definition reflects the cognitive, focused, rational, thinking that can be identified, taught, and practiced.

After analyzing the discussions of interviewees, it became clear that critical questioners were concerned about the definition's exclusion of thinking patterns described, within the affective domain of reasoning that were more intuitive and emotional. Adding an intuitive aspect to the definition automatically begins to cloud the borders between who are critical questioners and who are not. This could make identification of critical questioners difficult, at times.

2. A second thought should be added to the definition stating critical questioners are motivated to bring clarity and have a feeling for the critical moment. Interviewees felt the critical moment was important to the process of critical questioning. Critical questioning can provide an opportunity to educate others by offering the right questions at the right times. Critical questioners are people who ask questions when they feel questioning broadens thinking, provides new information, or helps to clarify a point of view. Interviewees referred to the critical moment as a timing issue related to information distribution. The critical moment is that moment when the group is most conducive to accepting new information. If critical

questioners do not sense a critical moment, it is not beyond the capabilities of critical questioners to create one. A critical moment can be created by raising an appropriate question to the group or directing an appropriate question to an individual; it can be created by identifying assumptions not assessed earlier; it can be created by submitting ideas for group reaction. As one interviewee stated, the critical moment may be synonymous with the critical question. Critical questioners may be more apt to consistently work to broaden peoples' ideas about the present situation and take opportunities as they become available rather than harbor frustration at a missed opportunity to question.

3. There seems to be some confusion as to the meaning of the words substantiated and validated. Interviewees felt that the definition did not express a validity component. However, the word substantiated may not lend itself to as strong an interpretation of validity as the word valid. The working definition of a critical questioner used in this research states that a critical questioner is "Someone who questions ideas, arguments, comments, and observations for sound and substantiated logic." Nine interviewees indicated that the definition was not inclusive of a validity component. The word substantiated should be replaced with a stronger, more precise word or phrase reflecting an examination of the origin of issues in question. A

suggestion for a revised definition of critical questioning is, "Someone who looks for opportunities to pragmatically and intuitively pursue and test ideas, arguments, comments, and observations for soundness, clarity, validity, and logic".

Prerequisites of Critical Questioners

Findings

This portion of the research examined dispositions necessary for critical questioning to take place. Interviewees were asked to identify group settings where they were most apt to critically question and speculate on why peers see them as critical questioners in those settings. Critical questioners were not inhibited by group settings; although there were some settings that were more conducive to critical questioning than others.

Interviewees felt they were nominated as critical questioners for a variety of reasons. The overriding reason was because they spoke out in group settings. However, simply being vocal or outspoken does not accurately identify a person as a critical questioner; many additional variables must be considered. Taking into consideration only the outspoken nature of some individuals is precisely why a few interviewees were identified as critical questioners, when in fact, they may not have been, based on the characteristics of critical questioners found in this study.

For example, their responses to interview questions were lacking in insight and detail and they were unable to characterize the critical questioning process they were identified as using. Unlike true critical questioners, pseudo critical questioners could not identify the differences between a critical questioner and a noncritical questioner.

Reasons why interviewees believed they were nominated are presented below. This list provides a composite picture of who critical questioners are and the dispositions they feel are necessary to critically question. Many of these descriptions are supported by the literature.

- a. being attentive to agreement and differences of opinion,
- b. clarifying issues,
- c. getting to the root of issues,
- d. being openminded,
- e. leading people in new directions of thought.
- f. having strong communication skills,
- g. being analytical,
- h. lacking emotional engagement with issues,
- i. having respected opinions,
- j. solving problems creatively,
- k. being an advocate of critical questioning, and
- l. taking critical questioning seriously.

With a comprehensive list of critical questioning characteristics individuals can measure their own abilities as critical questioners. In addition, individuals may choose to enhance or improve upon those characteristics they consider to be weak or nonexistent.

Conclusions

1. Critical questioners question when they feel it is appropriate. Critical questioning can be a part of a variety of settings if the need and desire merit it as long as people are present who possess a critical questioning frame of mind. However, because critical questioning is not widely understood, there is a great degree of misinterpretation about how to practice it and who does it. The concept of critical questioning and the understanding of who practices it are unfamiliar to many people. Even prominent authors who write about critical thinking and offer some information on critical questioning (Brookfield, 1987; Ennis, 1987; Lipman, 1987; Paul, 1987) cannot agree among themselves on who the critical questioner is.

2. Critical questioners tend to be noticed by their peers. The critical questioning dispositions identified in this study suggest that critical questioners were objective in issue discussion and resolution and this objectivity was what critical questioners were recognized for. In the face of difficult discussions, heated emotions, and limited resources critical questioners were able to maintain objectivity and confidence that issues can be clarified, even if they cannot be totally resolved. When people are objective, they tend to keep an open mind, listen for clues, weigh alternatives, and be creative in their thinking. These attributes contribute to a person's level of self-confidence

and tend to establish one as a leader rather than a follower. To be critical is often "to move toward a more neutral, more objective level of inquiry" (Adler, 1987, p. 249). The price of objectivity is time, effort, information, and conflict with other cognitive aims (p. 249). Perhaps the reason others admire critical questioners is the questioner's ability to avoid interferences with their objective search for knowledge and understanding.

Thought Process and Steps Used by Critical Questioners

Findings

Critical questioners employ three categories of mental processes when they begin to critically question. First, they initiate actions by coming to meetings prepared; this involves puzzling over issues ahead of time, weighing the course of actions before coming to a decision, assessing the value and accuracy of issues, and employing energy in the process. Second, they facilitate group matters by considering all points of view, assessing the consequences of alternatives, remaining emotionally detached to issues, and assisting others from becoming adversarial. Third, critical questioners coordinate information by connecting issues, making comparisons, and formulating information into statements and questions. These actions identify critical questioners as different in their thinking from other

questioners in group settings. They also identify how critical questioners practice critical questioning.

Conclusions

1. Critical questioning takes preparation, requires commitment, and consumes mental energy. Critical questioners do not simply see an issue as needing resolution. They see themselves as able to contribute to decisionmaking and make contributions by preparing themselves mentally. Critical questioners do not simply rely on past experiences and previous knowledge as blind reasoning to justify actions in the future. The critical questioner talks about the past only in reference to its contribution to the future. Other questioners often live with past reasoning not understanding the importance of weighing, evaluating, and comparing existing information with new factors. One would not have a clear choice of issues unless the freedom was there to move in at least two equally acceptable paths. Without exhausting all possible reasoning, by taking the time to "gear up" to questioning, a clear choice is not available.

2. Critical questioners are guardians of issue clarification. Critical questioners realize that honest resolution of issues can not be achieved until the group has discussed all available information. Groups are often guilty of moving in directions without thinking about why they are doing so, without making a clear choice, and without

examining all the alternatives. Groups can tend to move too quickly toward resolution taking things for granted for efficiency reasons and as a consequence, assume away what is most important (Pfeffer & Salancik, 1978, p. 13).

Another aspect of this conclusion is that although there was no evidence of interviewees being victims of groupthink, a set of characteristics within a group setting that prohibits critical questioning, a caution should be raised. While the capability or capacity to critically question lies within the individual, as data from this research indicated, groups can slip into a groupthink mode. In those cases attempts at critical questioning, even among our nation's most revered intellects can fail (Janis, 1971).

3. Critical questioning is a process used by critical questioners to initiate and sustain critical thinking. But what drives the process? The process is not driven by the need to make a decision. It is the process itself that drives it. It is the action of inductive thinking. Critical questioners are driven by a kaleidoscope of information patterns they see in their minds about a certain topic. Until the critical questioner can bring value, accuracy, consequences, and alternatives into the information relationship, the process is not complete. And, even when a critical questioner does come to a conclusion based on all currently available information, a new process may be initiated all over again as soon as fresh

information, new observations, or previously unavailable variables are introduced.

Variables Influencing One's Ability to Question

Findings

Seven variables (personal events, nurturing, education, self-confidence, mentoring, friendships, and reading materials) were examined as to their influence on the development of critical questioners. All seven variables appeared to have had a degree of positive influence on the interviewees. Although their interrelationships were not analyzed, recognition of their importance to the development of the critical questioner is important. Critical questioning is not quickly developed or easily taught. Critical questioning skills are nurtured, encouraged, and influenced, in a number of ways in a person's environment.

The most significant finding among the group of variables was the role played by mentors. Browne (1986-87) stated that in order for teachers to train students in critical thinking they must practice it themselves. This concept appears to be true with this group of interviewees. Two-thirds of the interviewees reported being trained to critically question by a parent or teacher.

An interest in reading was examined as a possible characteristic of critical questioners. Research data did

not reflect a strong connection between pleasure reading and one's ability to critically question but all interviewees did indicate an interest in pleasure reading to one degree or another. Four levels of interest in reading emerged. First, some interviewees were avid readers. A broad interest in reading may stimulate critical questioning. As discussed in the literature review (see Chapter Two) one of the essential elements of critical thinking is connecting information. There seems to be some evidence that critical questioners read to gather more information and essential elements and terms.

Second, some interviewees did only limited amounts of pleasure reading, particularly mystery reading. Some of the research data indicated that a number of critical questioners enjoy the probing nature of mystery reading perhaps because mystery reading is an informal method of practicing critical questioning.

Third, another category of readers among the interviewees, were the ones who read solely professionally related materials. Perhaps they did not feel they had the time to indulge in other forms of reading or perhaps they simply never felt intellectually saturated.

The fourth group, a small percentage of interviewees, did little or no pleasure reading due to lack of time. Interviewees were not asked how much professional reading

they did. These individuals may use a large percentage of their time involved in professional reading.

Conclusions

1. Critical questioning is a process that can be learned through a variety of avenues. However, there are three primary avenues for learning critical questioning skills. They are learning by observing others, practicing critical questioning skills, and being exposed to a variety of viewpoints through reading. Consequently critical questioning can be promoted and enhanced through training, interacting with recognized critical questioners, and regularly experiencing a variety of information through printed materials. Therefore, to encourage or enhance critical questioning, opportunities for mentoring should be expanded. Seminars teaching critical questioning techniques should be offered or alternatively, critical questioning should be a component of all curriculum. Students should periodically be assessed on the quality of their questions not the quality of their answers. In addition, accessibility and time resources should be provided to learners so that a variety of information and perspectives can be accessed and observed.

Characteristics of Critical QuestionersFindings

There were many reasons why interviewees thought other people did not critically question in group settings. To be able to critically question a person must be equipped with a knowledge of how to critically question and a number of skills that facilitate doing it. A person must be willing to use those skills with the goal of seeking to clarify information. Because critical questioning is not widely understood and because it is difficult to do, many people may not be aware of critical questioning as an analytical tool, may not have the resources to practice it, may simply decide not to do it, or may not recognize the consequences of having done it.

In addition, this research found that those who do critically question have many frustrations with those who do not. Critical questioners were frustrated with noncritical questioners for four major reasons: a) noncritical questioners operate with ulterior motives. b) They do not highly value truth seeking. Truth as used by critical questioners reflects an unending concern for latent variables responsible for the most accurate pattern of relationships as opposed to a noncritical questioner's satisfaction with assumed patterns of relationships. c) They lack many skills required of critical questioners. d)

They lack initiative to seek out yet to be discovered patterns. These frustrations provide a reverse image of the four major characteristics of avid critical questioners.

Conclusions

1. The ability to critically question appears to be unevenly distributed among people. Differentiated application of critical questioning creates a communication gap between critical questioners and noncritical questioners. While critical questioners view their own behavior as valuable and contributing to the search for knowledge and "truth" or the most sound relationship among available information, noncritical questioners can view the same behavior as nitpicking or an expression of an overly negative attitude on the part of the critical questioner. Conversely, noncritical questioners' satisfactions with less than accurate patterns or relationships among variables or less than adequate solutions (that fail to capture the full range of relationships affecting an issue) is a source of frustration to the critical questioner. Critical questioners view such solutions as temporary at best and as a potential source of future confusion or conflict for the group. Furthermore, they may view noncritical questioners' comments as trivial and a waste of time since the comments are too narrow to capture the full pattern of relationships that the critical questioner sees. Continual triviality can breed

contempt for noncritical questioners by critical questioners since the criteria for problem resolution is vastly different for the two parties.

2. Critical questioners and noncritical questioners operate in vastly different worlds of reality. Unless both types of people can appreciate the other person's point of view, frustration, anger, and withdrawal can follow. From the perspective of group interaction, these actions not only inhibit issue identification and problem resolution, they can result in less than optimal decisions.

Environmental Influences on Critical Questioners

Findings

Critical questioning can take place in any environment. However, interviewees preferred to be involved in environments that encouraged critical questioning. One of the most appreciated aspects of a positive environment was a sense of being welcome. Interviewees were quick to point out that although feeling welcome was nice, it was not mandatory. Some settings mentioned, such as the university setting, by definition provided more opportunity for questioning to take place than others. However, those interviewed identified a strong motivation or drive to critically question, and the setting did not appear as important as that drive.

Even though critical questioners did not feel limited by their environment, they described the most significant environmental influences to be a) a purpose for being there, b) a sense that the issues merit critical examination, c) an openminded membership, d) freedom from time pressures, e) an inquisitive attitude among group members, and an appreciation for the truth. Because the drive to seek truth is such a high priority for the critical questioner, an environment lacking in respect for truth and trust is one from which the critical questioner may eventually withdraw. Initially the critical question attempts to facilitate group discussions, to develop a cohesive and hospitable environment, and to explore all ideas with an open mind. If these attempts fail however, many interviewees felt strongly that they would abandon the process and seek other ways to spend their time.

Conclusions

1. Critical questioners question everything including the environment in which they function. For maximum effectiveness they prefer environments that are conducive to critical examination of issues. In other words, they apply effectiveness criteria to the environment in which they are asked to function or participate. Environments that do not provide for critical questioning are viewed by critical questioners as an ineffective use of time and therefore,

wasteful of their resources. At the very least, these environments are considered boring and tedious and something to be endured since they fail to stimulate critical questioning or accomplish issue resolution.

2. Meeting coordinators do not adequately prepare an environment for productive meetings simply by inviting participants. All aspects of the meeting have to be conducive to the critical questioning process in order for critical questioning to occur. In group settings, it is to the advantage of the group to make their environment hospitable. A hospitable environment includes a sense of openness, fairness, and communication among members.

Questioning is central to the learning, growth, and development of a democratic nation (Phihal, 1989). Open non-distortive communication is a central concept in a free society. For the critical questioner, an environment that encourages discourse and argumentation is the only way that people can decide on the validity of claims, and resolve issues, rather than suppress, coerce, and pressure one another (p. 41). Without an environment conducive to critical questioning and information exchange, there is little or no learning, no change, and no growth. It is the questioning process within a receptive theater that enables new ideas to be considered, provides a stage for debate, and determines if conclusions are justified (Hunkins, 1976, p. 2).

Recommendations Related to Theory

A sound theory predicts or specifies when an event will occur or under what conditions it will occur. Therefore, a theory of critical questioning must predict or specify the necessary conditions for critical questioning to appear. Critical questioning will occur when a) the opportunity exists for an issue to be critically questioned. There has to be a need or opportunity for critical questioning. There has to be specific reasons why critical questions should be asked. An issue might require more information, assumptions may need to be examined, or cause and effect relationships may need to be identified. b) Individuals involved must possess the necessary resources or capacity to critically question. These resources can include techniques learned from mentors, the capacity to think abstractly, and the motivation to ask critical questions. c) There must be a supportive group environment. The group must value the critical questioner's input. They must agree that critical questions should be asked. This is the opposite of the groupthink concept developed by Janis (1971). d) The critical questioner must feel that critical questioning will shed new light or help to resolve an issue. This theory responds to why critical questioners ask questions. They are looking for more information, possible answers, and clarification. Therefore, the theory of critical questioning

must possess four dimensions which in turn will specify when critical questions will appear.

Recommendations Related to Practice

Learning and understanding the skills of critical questioners have many practical applications. These skills may be of interest to individuals and organizations as they relate to professional development, and increased organizational effectiveness.

Staff development training programs on critical questioning could be used by business and industry to train employees to sharpen their decisionmaking skills. Training in critical questioning is particularly appropriate for people working in problem solving groups, planning groups, and leadership management and curriculum development teams. Critical questioning skills can help identify what information is important on the job and why, and they can equip personnel with strategies for making sound decisions.

Teachers and other educators should be trained to critically question and practice it in the educational environment. Both this research and the literature indicate that practicing critical inquiry through role modeling is one of the best ways for students to learn critical questioning. Students can learn from teachers through observation, practice, and experience.

✓ People who regularly make decisions in group settings should be trained to avoid groupthink actions. To the extent that critical questioning is the reverse of groupthink, group decisionmaking bodies should be provided training in how to cultivate critical questioning. These groups should be trained in how to create a critical questioning environment.

The environment plays a role in encouraging critical questioning. Therefore, educational administrators should be sensitive to the changing environment in group settings and the role that environment plays in encouraging serious critical questioning. If administrators were more aware of, or concerned about the influence environment has on a group's potential to critically question, consideration may be given to appropriate resources that provide encouraging group questioning environments.

When committee assignments are made in organizations, one of the considerations should be the appointment of critical questioners to the committee. If committee issues merit serious consideration, equally serious thought should be given to who the decision makers are and how qualified they are to consider the full extent of the issues. When administrators or those assigned to forming committees better understand the advantages of critical questioning more wise decisions can be made regarding placement of individuals on committees.

The advantages of being able to critically question should be widely discussed in the educational system. If people understood the potential for critical questioning, they may be more likely or willing to see themselves and their social situations in new ways so that conditions that are repressive or distasteful can be changed. "Telling you what to think brainwashes you, enslaves you to others' ideas; teaching you how to think liberates you from others' ideas and helps you form sound and sensible ideas of your own" (Ruggiero, p. 5, 1988).

Finally, critical questioning can empower individuals by giving them a greater degree of self-control over their environment. For example, clarifying cause and effect relationships can help a person focus or direct their resources or behaviors to those critical things that need to be changed. Critical questioning can help a person prioritize the use and direction of limited resources. Similarly, uncovering assumptions can help establish the proper limitations for a particular event or course of action.

Recommendations for Further Research

Through the application of this theory future research can further specify the type or nature of the problem or issues that promote the most rigorous critical questioning. In addition specific aspects of the group climate where critical questioning is appropriate can be specified.

Critical questioning can be examined from two perspectives a) an inward perspective which would examine individual styles of critical questioning, and b) an outward perspective which would examine the framework and conditions where critical questioning might appear such as with creative thinking, problem solving, and dialectical thinking.

Future research can also explore the relationships between critical questioning and critical thinking. Increased information and a broader understanding of critical questioning will provide a foundation to use and teach critical questioning. Answers to the following questions could contribute to that knowledge base:

1. What are the specific characteristics of mentors mentioned as important to critical questioners?
2. Are there differences between critical questioning by men and by women?
3. What is the meaning behind the idea that questions are more important than answers.
4. How do critical questions affect, inform, or shape the process of critical inquiry?
5. To what extent are there differences among critical questioners by occupation, lifestyle, cultural background, and learning style?
6. To the extent that critical questioning is a process, what are the stages of the process? How

does the environment affect the stages in the critical questioning process? What is the nature of the relationship between the stages?

7. Is the critical questioning process a linear process, a nonrecursive process, or an iterative process?

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APPENDICES

APPENDIX A
FACULTY LETTER



Department of Health
and Human Development

Herrick Hall
Montana State University
Bozeman, Montana 59717

Telephone 406-994-3241

February 6, 1991

Dear MSU Faculty:

Critical questioning is an important part of our professional approach to working in an academic university setting. What are the characteristics of strong critical questioners? Who are some of the strong critical questioners among MSU faculty?

My doctoral research in Adult Learning will identify characteristics of strong critical questioners through a structured interview process. Would you please take a few minutes to identify current full or parttime MSU faculty you know to be strong critical questioners in university meeting settings? Use the definitions stated below to identify those individuals. List faculty who most closely fit the definitions. List as many faculty as you like. Include yourself if the definitions are descriptive of you. For purposes of this study, please use the following definitions:

Definition of MSU Faculty: Those people who currently have full or parttime on-campus teaching, extension and/or research appointments as adjunct, assistant, associate or full professors.

Definition of Meeting Settings: All occasions where a group of two or more faculty converge to discuss topics of relevance to the university setting.

Definition of a Strong Critical Questioner: A critical questioner is someone who questions ideas, arguments, comments, and observations for soundness and empirical support; one who is less inclined to base their thinking on emotional beliefs and opinions, ideologies, fashionable credos, folk wisdoms, and other nonrational bases (Logan, 1976, p. 30).

Descriptive actions of strong critical questioners include:

Strong Critical Questioners

- seeking evidence for reasons
- investigating claims
- synthesizing
- analyzing
- separating cause/effect relationships
- probing for meaning
- looking for underlying assumptions
- connecting micro and macro relationships

While you enjoy the enclosed tea, please list those MSU faculty who you would describe as strong critical questioners (list as many or few as you would like):

List Names

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Please return the completed form by February 20, 1991. Simply refold this self-addressed form and return it in campus mail. Nominations of faculty will be not be identified with nominees. Thank you for your help.

Respectfully,

Wendy J. Hamilton,
Adjunct Assistant Professor,

APPENDIX B
CONTACT SHEET AND INTERVIEW FORM

CONTACT SHEET AND INTERVIEW FORM

Contact Name _____ Interview
No. _____

Department _____

Phone (w) _____
(h) _____

I am doing a doctoral research project looking at questioning critically. Using a peer selection process, a number of MSU faculty have identified you as a person who asks good questions and is a critical thinker.

Would you be willing to set aside about an hour so I can interview you in your office sometime soon?

RECORD OF CALLS

Call	Date	Outcome	Interview	Date	Time	Place
------	------	---------	-----------	------	------	-------

1 _____

2 _____

3 _____

4 _____

5 _____

INTERVIEW FORM
Dissertation Research Study
Montana State University

Interview Time

Interview No. _____

Beg _____

Date _____

End _____

- _____ Ask if they mind being recorded. Turn on tape recorder.
- _____ Transfer calls.
- _____ Introduce myself.
- _____ Have watch/clock to keep track of time.
- _____ Explain this is confidential. (Will be identified by # only.)
- _____ Explain what I will do with information.
- _____ Tell them about check off sheet.
- _____ Explain that this is their interview; take as much time as they'd like; don't want process to inhibit their responses.
- _____ Explain that questions are meant to guide interview not control it.
- _____ State definition of critical questioner.

Definition of a Critical Questioner:

A critical questioner is someone who questions ideas, arguments, comments, and observations for sound and substantiated logic.

Notes:

Interview Questions

1. Why do you think many faculty peers view you as a critical questioner?
2. What is your definition of a critical questioner?
(Feel free to refine your definition throughout the interview.)
3. Describe the reasons you think others aren't critical questioners. What do you think are the differences between critical questioners and non-critical questioners?
4. What events in your past may have influenced or helped you to become a critical questioner?
5. Are your friends critical questioners?
6. What frustrates you about other people in a questioning environment?
7. Rate your level of self-confidence on a scale of one to ten (10 being high).

8. Describe a recent group setting you were in which you took the role of a critical questioner (eg. faculty meeting, department meeting, town hall meeting). This setting should be a place where the group was attempting to address or resolve a problem or issue and you were an active participant in critical questioning. I'm interested in hearing about how the environment influenced your desire to be a critical questioner.
9. What were your contributions were to resolving the issue?
10. Describe how you go about asking critical questions. What is the thought process you use to ask critical questions?
11. Do you believe critical questioning a learned behavior or does it come naturally in most people?
12. What role does knowledge of the subject matter play in your critical questioning process?
13. Please describe the non-professional reading you do.

14. Describe the general characteristics of settings where you find yourself most apt to question critically.

APPENDIX C
PRINTED SURVEY

WRITTEN RESPONSES

Imagine you are in a group setting trying to solve a problem or resolve an issue through a questioning process. Check the actions you employ.

	1 Always	3 Sometimes	5 Never
	2 Usually	4 Occasionally	
a. Make a point of complimenting others	1	2	3 4 5
b. Support group members in their views	1	2	3 4 5
c. Wait till the opportune time to ask a question	1	2	3 4 5
d. Look for ideas that haven't been considered	1	2	3 4 5
e. Send discussions in new directions if needed	1	2	3 4 5
f. Play the role of devil's advocate	1	2	3 4 5
g. Listen for cause and effect relationships	1	2	3 4 5
h. Question cause and affect relationships	1	2	3 4 5
i. Try to identify the problem or issue as quickly as possible	1	2	3 4 5
j. Use tact	1	2	3 4 5
k. Choose your words cautiously	1	2	3 4 5
l. Identify assumptions	1	2	3 4 5
m. Assess the context of the problem/issue	1	2	3 4 5
n. Explore alternatives	1	2	3 4 5
o. Regard solutions as conditional	1	2	3 4 5
p. Try to meet <u>your</u> goals for the problem or issue	1	2	3 4 5
q. Try to meet the <u>group's</u> goals for the problem or issue	1	2	3 4 5
r. Look for ways to recombine information	1	2	3 4 5
s. Submit ideas for reaction	1	2	3 4 5
t. Question your own train of thought	1	2	3 4 5
u. Look at the "bigger" picture	1	2	3 4 5
v. Employ an accurate use of language	1	2	3 4 5
w. Question your own ideas	1	2	3 4 5
x. Try to be fair-minded	1	2	3 4 5
y. Listen for opposing viewpoints	1	2	3 4 5
z. Take charge of the discussion	1	2	3 4 5

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