

CRITICAL THINKING AND BUSINESS EDUCATION  
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### Abstract

This is a qualitative and descriptive study — the result of collaboration between and among the researcher and sixteen local business executives. The views of these people were juxtaposed with educational research and literature pertaining to the topic of critical thinking.

Four themes appear to have emerged during this study:

1. There are different views and perceptions about critical thinking that can be reconciled through discussion and exploration of the meanings or intentions of words that local business people use to describe and illustrate critical thinking.
2. In general terms, the types of critical thinking explored and defined here are both deductive and inductive. It appears that both are necessary for critical thinking to be defined fully.
3. Story-telling, analogies, vignettes, metaphoric language, and the jargon of business were forms these business people used to illustrate and describe their own thinking activities, and from which their personal definitions seemed to emanate.

4. Critical thinking, it appears, is considered by these business people as a kind of thinking that could be learned in one context and transferred to another.

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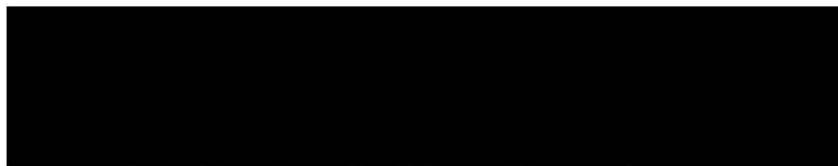
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Railroads did not stop growing because the need for freight and passenger transportation declined. That grew. The railroads are in trouble today, not because the need was filled by others (cars, trucks, airplanes, even telephones), but because it was not filled by the railways themselves. They let others take customers away from them because they assumed themselves to be in the railroad business, rather than in the transportation business (Levitt, 1975, p.75).

## CHAPTER ONE

### Introduction and Rationale

As Theodore Levitt (1975) intimated, the general decline in the growth of transportation industries of the day, and the decline of American railroads in particular, were due to the failure of industry leaders to strategize and to think critically. As the need for transportation continued to grow, the leaders in the railroad business believed the need for their services would always exist. However, “change” does not always equate to growth in existing services. Invention made cheaper and more practical alternatives possible. Business shifted toward those modes of transportation and communication that were more flexible and responsive to the needs of potential customers.

The complacency of railway owners and operators doomed them to temporary setbacks, and ultimately, to failure. Instead of thinking in critical ways — redefining their purpose and future directions, expanding the appeal of their utility, and then adapting to the changing needs of people in the marketplace — they remained isolated in their thinking and failed to change and adapt.

All aspects of change, whether cultural, moral, technological, political and legal have tremendous effects on the business environment. In the past, this has been mostly predictable from the devices of trend analysis and other forecasting methods. These changes have been successfully dealt with by conventional strategies. Historically, business courses have most often taught students to anticipate and react to changes with pre-set responses, contingency plans or follow-up strategies.

Today, we live in a changed and rapidly changing world. With the acceleration of change there is need for critical thinking and improved business skills development.

Because the changes in business today are less likely to follow expected, familiar and foreseeable paths, and because of the rapidity and intensity of change, pre-set formulas and responses are virtually useless. The likelihood of change in the post-modern world should, therefore, cause business people, and business educators, to re-evaluate everything once thought stable, learn new ways to anticipate, new and better ways to examine, evaluate, and act. In short, business people need to learn to think better, and in more critical ways.

Business educators, in turn, have to meet these challenges by altering their instructional approaches. The development of curricula and activities that can enable students to anticipate and respond to changes before they happen, and as they occur (and possibly even to invent change themselves), is in the future for business education. In order to do this, students require opportunities to practise critical thinking activities in a number of circumstances that parallel real business situations and that can eventually be transferred to new contexts.

The teaching of critical thinking activities and skills, and the learning of better problem-solving, predicting and analysis techniques, will become increasingly necessary. Business educators will have to include the development of critical thinking abilities as an aspect of every course offering, if not as a central aim. I believe critical thinking and strategic decision-making will become an even more essential component of every business school's curricula in the very near future.

Many businesses are now international and multi-national in scope. Therefore, contemporary business school graduates must possess a global viewpoint and be equipped with more sophisticated strategies for thinking. It is no longer viable for one individual or corporate entity to possess a narrow world view; nor can any remain satisfied with occupying a static place in the dynamic and ever-changing marketplace.

Today, Levitt's classic case study of the failure of the railroads reveals the "Achilles heel" of modern business management. There is the need to think critically and creatively, and at least in part like an iconoclast. It is vital that business people question traditional ways of doing things. They must continuously seek to understand their current economic context, and develop their capacity to capitalise on the potential for growth and change. If business students can learn how to orient an organisation's resources to fit future needs; if they can remain flexible and adapt to unforeseen circumstances; and if they are mindful of the dual goals of profit and performance while remaining humane and ethical, they will increase their likelihood of becoming tomorrow's successful business managers.

After twenty years of instructing and facilitating student learning in business education courses, and consistently hearing from employers that their "greatest wish is for employees with the ability to think", and "employees who are able to thoughtfully use what they have learned," I am convinced it is important for business educators to deliberately address critical thinking. In order to do so, the kinds of critical thinking skills employers want business graduates to have, must be identified. Further, methods of

introducing critical thinking concepts, and then practising them in classroom settings, must be investigated.

Because business education students are for the most part in their twenties or beyond, it is also important to investigate adult learning theory. Malcolm Knowles (1990) suggests that learning is different for different groups, and is mostly related to their culture and needs. He theorises that post-secondary educators should recognise that while the adult learner's methodology for learning may appear to be similar to that of a child, it is in fact generally motivated by more practical needs. He proposes a model for learning and teaching that he calls andragogy, which he describes as "the art and science of helping adults learn" (Knowles, 1990, p.2). The andragogical approach can be used to set learning directions and ultimately to apply previously learned knowledge, skills and attitudes in new contexts.

Knowles uses Carl Rogers' student-centred learning hypothesis as a source for his own theory:

We cannot teach another person directly; we can only facilitate his/her learning. A person learns those things he perceives as maintaining and enhancing him/herself. Experience that the learner perceives as inconsistent with his/her self image is either denied, distorted, or the self image is changed to include it. The educational situation most likely to be effective promotes learning that is not a threat to the self image and that expands the field of experience (perception) of the learner. (Knowles, 1990, pp.41-42).

This implies that the modern business educator can no longer simply rely upon providing material in a controlled, sequential and so-called scientific manner whereby students memorise facts and information rather than develop an understanding of concepts and the ability to use the skills they have learned. Accordingly, business educators will

need to consider designing different forms of opportunity for learning. As Koffel (1994) suggests, teaching in business schools of the future will be a much different task than we know it today.

In sum, it was the possibility of developing heuristics for the instruction and facilitation of critical thinking in business education contexts that motivated me to do this study.

### The research problem

A definition of critical thinking was sought via educational research and literature, and through surveying and dialoguing with selected members of the local business community. A summary of the former is presented in chapter two. The survey and dialogue questions were designed to determine:

- the participants' perceptions and understanding of the term critical thinking.
- whether critical thinking activities and skills were considered important by these people.
- which critical thinking skills graduates of a business school should possess.
- which critical thinking skills should be taught in business education.

By collecting and collating the participants' responses and drawing inferences from the dialogues, it was possible to generate conclusions regarding the kinds of critical thinking activities and skills they deemed important for success in their respective business environments.

I hoped that employers involved in this way would feel a sense of renewed commitment and investment in Camosun College business graduates. This should also help

add to the participants' perceptions of which critical thinking skills are desired by other employers.

The information was gathered from actual and prospective employers and, as a consequence, outlines some of the skills or qualities that make some graduates more employable than others. As a result, the study should enable me to create a list of practicable suggestions including a list of guidelines sought by near-graduates about the local business community's expectations regarding critical thinking skills for business graduates.

Finally, I gathered some useful information about skills, abilities and components that could contribute to helping establish a course, or course modules, incorporating critical thinking.

#### Theoretical framework

While the development of some critical thinking skills has been a product of formal case-study as used in business school settings for decades, business schools have not yet, to my knowledge, identified and formalised the development of critical thinking activities and skills into a distinct academic subject. In the present business climate, and because of the accelerating pace of change in technological, socio-cultural, economic, political, ethical, legal, and environmental terms, as well as the pressures of competition, I firmly believe that an investigation of this topic is timely. There is an ongoing need for people in the modern, applied business world, and business educators as a consequence, to help students develop new thinking strategies and expand their thinking skills generally.

The findings from this study, and the writer's conclusions, are presented along with recommendations that business schools generally explore ways and means of incorporating a course, or course elements, specifically designed to develop critical thinking skills, and subsequently consider the creation and implementation of a course (or elements of a course) in critical thinking.

This research's value culminated in a group of articulate business people, collaborating in defining critical thinking and establishing some other definitions or guidelines around critical thinking actions and skills that successful business people exhibit in themselves and expect in their employees. The research has initiated dialogues and encouraged these participants to think about their own thinking processes and what they expect from others. It has also helped bring to the forefront of concern for some local business educators, some critical thinking activities and exercises (discussed or identified in this study) that might be introduced to, and assimilated by, business undergraduates for later transfer to the applied world of business.

Other contributions include:

- the listings of critical thinking activities and skills for possible use in a heuristic about instructing and facilitating critical thinking, and
- the template profile of the thinking abilities of supervisors.

The importance these people place on critical thinking in the workplace was examined in this study, and it could be re-examined or repeated in many more specific business contexts and settings.

### Significance

Presently, it would appear that local business education courses and teachers could place more emphasis upon instructing actual critical thinking activities and skills. The results of this study underscore the need to do so.

As a result of this study, I feel able to make suggestions regarding the place of critical thinking activities and skills in business education courses. It is hoped that other business educators will evaluate these results and, as a consequence, consider including critical thinking activities and skills in their own course offerings and practices.

### Presuppositions

Before beginning this study, I realized that I had many assumptions, expectations and pre-understandings about the topic of study, the participants, and the research I planned. I did not want to unduly influence or bias my observations or conclusions. I recognized that my relationships with the participants and what I thought to be “common sense” knowledge of critical thinking contributed to dispositions, suppositions and pre-understandings that may cause me to misinterpret responses and information.

I have tried to suspend personal influences in order to create a “new way of observing the familiar” (Andersen, 1995). I needed to be open to unique realities and differing points of view.

The design of the study, and my involvement as planner, data collector, and liaison amongst the participants required that I refrain from imposing my expectations, theories and pre-understandings on the data and outcomes. For example, I was aware that before

instigating any process or finding agreement on the intended meanings and transferability of certain terminology used in business, I needed to:

- collect the preparatory material before any dialogue started.
- encourage each co-researcher to add to or change this preparatory material before beginning a formal dialogue.
- consider the relatedness of words and terminology, while avoiding the imposition of my thoughts or interpretations.

• In this way, personal observation and self-awareness has, I believe, strengthened the study and increased its validity and reliability.

In addition to the aforementioned, there were other presuppositions of note:

- Initially, I expected that most of the participants, although very knowledgeable on many subjects, might be somewhat confused by the nomenclature of critical thinking.
- I had expected them to do some research into the subject, as a consequence of receiving the preparatory material, and as a product of their own curiosity.
- I hoped they would all be enthusiastic about discussing definitions of critical thinking and see its value to students and ultimately themselves as prospective employers.
- I expected that participants would personally gain from the exercise and would “invest” in it, thus enriching the data.
- I expected that the dialogues would catalyze interest and commitment to clarifying our understanding of critical thinking, and lead to suggested activities and perhaps curricular components for simulating and practising critical thinking in a classroom.

Further, I believed, then and now, that they would see the study as a useful and productive step towards initiating and encouraging their personal reflection upon critical thinking skills they admire and desire in others, especially employees, and that they would want to see critical thinking as an aspect of business education students’ experience.

It is important to note, however, that the nature of qualitative data collected from these persons, relating to their own contexts in business, may result in difficulty generalising these themes to other settings and situations. Thus, the conclusions presented

here are in a form from which it is hoped the reader may make inferences that could be useful in similar or parallel settings. Further, based on the responses and advice of the participants, it would seem the idea of incorporating critical thinking activities and skills into business curricula has merit and is worthy of further investigation.

## CHAPTER TWO

### Literature Review

This review of the literature is in three sections:

1. The first section contains reasons why the development of critical thinking skills and their practise in schools is of the utmost importance, even to the level of possible survival in economic and business terms, of a nation.
2. Following that are a limited series of definitions by which researchers have attempted to capture the essence of the meaning of critical thinking in certain contexts.
3. There is a summary of research findings supportive of how critical thinking skills could be, and are, taught in some business curricula.

### Importance

To learn to reason, to rationalise, to anticipate and to manipulate a critical thinking environment through the development and application of critical thinking skills, is probably of paramount importance to the survival of all individual business entities. This holds especially true in the *milieu* of applied business.

Courses in critical thinking are essential for the business world of the future. At present, the economic history of all nations contains a litany of epitaphs and stories concerning business failures and deaths. In the western world, unless the business person recognises the problems associated with a failure to think critically and plan ahead for change, and the business educator steps in to help teach business people to use critical thinking skills as a part of an ongoing “survivalist” business mentality, I and others, believe that business deaths could worsen and reach epidemic proportion within the next couple of decades (Johnson, 1987).

In today's applied business reality, the stock of physical resources and quality of competence of each country's "thinking power of the labour force" will go a long way to determining who "captains the industrial-business-ships-of-state" tomorrow. Some governments are now treating critical thinking education as a potential mass asset. No longer are workers and their supervisors treated as "cogs in an industrial machine." They are now encouraged and expected to make strategic, on-the-spot decisions, that even middle managers would not have dreamed about making during the industrial era. Since personnel in developing countries can now run the same machines as workers in more industrialised nations, at a fraction of the labour cost, market leaders in industrialised nations realise they must now look "up-market" for employment and training possibilities in critical thinking. In these rapidly changing markets, they have to supply better quality goods, in a more timely fashion and with more variety (De Bono, 1993).

In 1988, the American Society for Training and Development, under contract with the U.S. Department of Labour, conducted research to discover the most sought-after, entry-level skills in future workers. Surveying its 60,000 plus members, the ASTD identified seven categories of skills as the most valuable to employers, of which critical thinking is given central focus (Carnavale, Gainer & Meltzer, 1989).

This underscores the fact that employers of the future, be they private or public-based, will want graduates of secondary and post-secondary institutions to be broadly and deeply educated in terms of their thinking abilities. In short, employers of the future will want their employees to be able to think: to use and express salient thoughts, to do so

lucidly, and with informed understanding in a *milieu* that requires more pragmatic solutions to problems yet to be discovered and dealt with (Kearns, 1990).

Similarly, Langer (1989) makes a case for being “mindful” about our personal and business actions. She says that the “single-mindedness of self-image leaves both corporations and individuals very vulnerable”(p.15). She warns of the danger of maladaptive behaviours such as “learned helplessness” — a state which must be avoided. Feigning helplessness in business or government today will dramatically increase the probability of dire consequences.

In essence, the practice of putting one’s “business head” in the proverbial sand and ignoring the signs and need for change is a kind of “mindless passivity.” This means that in the face of necessary change, little or even nothing is done by the business to mitigate threatening situations. Simply put, if the entity or corporation at risk chooses not to exercise control, and fails to react to new circumstances, to quickly and accurately recognise new market signs of change, and ultimately fails to respond with positive actions like trying to “actively think its way out of threatening situations and instead chooses to remain passive”, it automatically increases its chances of perishing (De Bono, 1993).

Consider the outlook for workers in industry and business in the developed nations in the future. Increasing globalisation and automation demand ever-more skilled work forces. The emphasis on where manufacturing facilities are in relation to marketplaces is shifting in geographic and demographic terms as whole economies shift locations, and in the process displace workers and companies by the thousands while changing local economies by the day (Fusfeld, 1982).

Further, the globalisation of markets and business activities by multi-nationals, may eventually result in low-paying, low-value-added positions being exported from the first-world nations to third-world nations. Automation already dictates that any work positions that stay in richer countries will demand more brain-power than muscle-brawn. This trend has affected manufacturing mostly to date, but it is also beginning to have a significant impact in some service industries. Automated cash machines for banking, and computerised reservations systems for travel, are just two examples among many (Cluster & Rutter, 1980).

In first-world countries, prosperity can breed its own kind of new service requirements, especially as a result of the information technologies. This results in a shift in business planning and expectations, which in turn, have impacted on the emphasis of business education around the world. “Smarter” machines need more competent and better educated people, people who are more strategic in managing change as it affects their working abilities (Cluster & Rutter, 1980).

In an article entitled “Workplace Basics: The Skills Employers Want” (Carnavale, Gainer & Meltzer, 1989), the authors list thirteen “important skills” that employers of the future demand. Among those identified, seven are related to critical thinking skills as referred to in this study. Some of these include: problem-solving skills, predicting outcomes, analysing, the ability to set goals, and developing the skill of questioning in a search for alternate solutions.

The importance of critical thinking in business cannot be overstated. Now, and more so in the future, there is an urgent need to increase human capacity for thought, the kinds of thought in which people can engage, and the quality of thinking that takes place.

### Definitions

There is a spectrum of existing definitions of critical thinking that range from very broad and inclusive to those that are more narrow and hierarchical.

Paul (1995) surmises that critical thinking is thinking that requires intellectual ability and discipline in order to be useful in any teaching context. It must be rigorously organised along standards that are clear and concise. This tenet would also hold when transferring one's ability to think critically, problem-solve, or any of the close forms of creative, reflective, or innovative thought processes used in one context or another. Such contexts include those forms of critical thinking used in applied business that may be transferable to a business classroom.

Those in the business of teaching business, require an accurate and precise sense of what critical thinking is, and need to present solid heuristics when teaching within the context of acceptable business practices and concepts.

According to Paul (1995), critical thinking skills are contextual, and with proper definition and examination could be introduced as part of a reformed business curriculum that would imbue present teaching approaches in business with useful and fresh perspective.

But some believe that critical thinking is not a distinct type of thinking at all. Among these detractors Frank Smith makes a point of saying that “thinking is just that - *thinking*”. He says that even though thinking activities are given any one of a large diversity of descriptive semantic names that appears to distinguish them from each other, “saying it does not necessarily, in fact, make it so” (Smith (1990)).

De Bono (1993) and Smith (1990) both make the point to their readers that “thinking critically” is, in their view, the same as thinking “critically”, “creatively”, “reflectively”, “analytically” or any other sort of dynamic descriptor of thinking activity that determines courses of action by analysing data and ideas, recognises and solves problems, while attempting to predict results.

De Bono (1992) asserts that our conception of the term is inaccurate and explains, in his inimitable “lateral way”, that the term “critical thinking” has a very precise meaning derived from the Greek “kritikon” meaning “to judge”. He concludes that this has caused us (especially in North America) to think of critical thinking as only “judgement thinking”, a conclusion and mistaken perception that haunts the success and progress of businesses and our industries today. He goes on to argue that we must learn to produce something with thought.

We cannot rest on the idea that critical thinking covers only aspects of thinking as in its more traditional definition. We cannot afford to think only in judgmental and non-creative ways. We must rather include productive and new kinds of creative thought as well (De Bono, 1993).

Contrast this with the complicated, but I think more complete and effectual approach taken, in an attempt to define the term critical thinking recently in a paper titled: *A Conception of Critical Thinking for Curriculum, Instruction and Assessment*, commissioned by the Examinations Branch of the BC. Ministry of Education (Bailin, Case, Coombs, 1993). This paper settled my thoughts by recognising the complexity and dynamics of the phrase *critical thinking* within three subordinate activities:

1. critical challenges. (the task)
2. intellectual resources.(consisting of knowledge, attitudes and strategies drawn upon when thinking critically)
3. critically thoughtful responses.
- 4.

These latter authors attempt to cover all the bases. They put forth that their definition has four distinct advantages over others because they describe critical thinking in terms of “action” components including:

1. explaining: the role of subject matter in critical thinking contexts.
2. resolving: uncertainty over the tension between the general and the context-specific nature of thinking.
3. focusing: on the quality of thinking, not on prescribed steps.
4. facilitating: an integrated approach to learning and to the assessment of critical thinking.

In order to simplify things now and avoid confusion later, I will include here, a form of disclaimer. I cannot pretend to improve on, or adequately summarise the many definitions of critical thinking that exist in their own right. Instead, I am making a point of generalising and, in this study I support the position of Dr. Frank Smith. I therefore, make no distinction between critical thinking as opposed to any other kind of higher level thinking distinguishable only through semantic differentials of descriptions of thinking, or actions of thinking (Smith, 1990).

### Business curricula and critical thinking

There is not a lot of contemporary research available specifically about teaching critical thinking skills in community colleges, or business school settings. An ERIC search on what has been written on this topic in the last five years revealed few entries which proved to be actual research studies. The majority of what I found fell into the category of experience-based advice or opinion pieces. Experience-based advice or opinion pieces are defined here as articles based on the writer's expert knowledge (Morris, 1993), or the writer's personal experience (Politano, 1994), rather than the reports of research studies designed to investigate a specific question regarding critical thinking.

The following sections of this review of the literature relate to the teaching of critical thinking skills by using reflective thought, problem-solving techniques, predicting, question-asking, case studies, and the important area of thinking about ethical concerns in business.

### Metacognition and critical thinking

Metacognition relates to the higher cognitive processes involving critical thinking usage in the context of problem-solving, predicting, question-asking, analysing and other thinking activities or behaviours as used in business itself (and in business education, most notably in business case-study). Metacognition is unarguably accepted by most social scientists as the highest form of thought processing. It involves invoking an understanding of the processes for recognising the self, for monitoring one's behaviour and actions and regulating outcomes and results (Holliday, 1989).

As a parallel, the metacomponents of business planning, monitoring, controlling, and evaluating processes are commonly followed and recognised as management processes that include planning, organising, and controlling (Sternberg, 1987).

The relatively recent combining of psychology, artificial intelligence, computer science, neural biology, linguistics, philosophy, and science education into cognitive sciences, offers hope, in Lavoie's opinion (1991), to explain the information-processing intricacies of human knowledge and reasoning.

Palinscar and Brown (1985) expand the field by using the term "reciprocal teaching", a successful technique for teaching sciences in which they rely on the application of comprehension fostering, and comprehension monitoring, techniques.

This metacognitive approach to thinking and the teaching of thinking could be very relevant to business education as well. The general problem-solver uses metacognition by progressing through three states of knowledge involving:

- the identification of information about subject or problem.
  - followed by the specific applicators to solve the problem.
  - finally arriving at a final goal or state (Glass, 1979).
- Business people refer to these same kinds of activities in case study format as:
- accumulating and prioritising facts in a summary.
  - analysing and testing solutions and their outcomes.
  - concluding and recommending procedures or actions (McCarthy , 1990).

In the modern business mind-set, there is already an ongoing recognition that things are in a constant state of flux, and the solutions and recommendations good for one day will probably not hold true on another. There are too many unstable factors and variables possible in the business *milieu* ever to imagine "casting a business-case solution in stone". It is when business crosses with some of the concepts of psychology, statistics,

economics and law, that some principles and guidelines can be brought into the mix to add consistency.

For the most part, business people are conscious of the need to view and think about the world as full of dynamic forces that are in fact accelerating change. Lesgold (1989) says that we navigate through a myriad of facts and ideas searching for solutions. They spend a good deal of their time thinking critically about ways to deal with these changes. This goes on *ad hoc* until we think-through and develop effective problem-solving activities. Whatever the final strategy is called, the “litmus test” of a solution proposed to end the search for a strategy to follow, involves a good deal of soul-searching and planning.

### Problem-solving and critical thinking

Moving from metacognition to a more esoteric representation of the mind as a kind of “problem space” and the thinking mode in which it resides, we first must note that there are two general types of knowledge: *declarative* and *procedural*.

Declarative knowledge centres on facts, concepts, data, and information. Procedural knowledge is knowing how to do something (Lavoie, 1990). Procedural knowledge is the opposite of declarative knowledge. It is dynamic, automatic (subconscious) and requires extensive practice to learn. Declarative knowledge on the other hand is static, conscious and easier to learn (Lohman, 1989). Both types of knowledge appear to be necessary to think critically in solving problems.

Anderson (1987) has gone further and says that practice with a focus on the application of procedural knowledge to declarative knowledge should lead to greater 'proceduralisation', a process which builds domain-specific declarative knowledge into productions. This supports the notion that critical thinking involves using both components to be successful.

In some cases, problem-solving behaviours are a required trait if a manager wants to be successful in business situations (Larkin, 1980). But it also remains obvious that extensive trials must be undertaken to improve the teaching of problem-solving successfully as well (Helgerson, 1990).

A number of cognitive behaviours are associated with problem-solving. Several of the more interesting appear in the work of: Pizzini, Sheppardson and Abell (1989); Mayer (1989); Bransford and Stein (1984); and Potts and St. John (1989), in which the outlines of problem-solving are presented in model form. But the details of the actual interplay between students' declarative and procedural thinking remain largely a mystery (Lavoie, 1990).

It appears important from the research, that at the very least, steps must be undertaken to explain the cognitive structures of thought and the functions of those metacognitive processes that can help students to perceive and solve problems within a number of subject domains by using critical thinking techniques that can be modelled and practised in a business class setting.

The relationship of cause and effect in problem-solving is improved and amplified when subjects see terms and variables that they perceive as having relevance to the

problem. It seems acceptable to conclude then, in generalisable terms, that deducing and making generalisations from facts and premises in terms of accurate predictions is a behaviour that can be commonly associated with metacognition and involves critical thinking activities.

If we consider that critical thinking is a problem-solving activity in which we break down our thinking, in order to understand better and solve the “problems” we identify, we can compose some steps that are commonly used in applied business and other case-oriented subjects. The steps are:

1. Identifying and defining the problem.
  2. Analysing the problem.
  3. Forming tentative solutions.
  4. Choosing the best solution.
  5. Testing the solution.
- (Mader & Mader, 1988)

It is important to emphasise that thinking critically does not always begin with a problem, and even if it does, it seldom has in the applied business setting, single or simple solutions. Alternate and contingency solutions abound. In many cases critical thinking occurs without problem-solving going on in the conventional way. So long as hypotheses are proposed and evidence evaluated, while judgement is suspended and alternative explanations are sought that are abstracted from their discoveries, researchers or analysts are engaged in critical thinking processes.

### Predicting and critical thinking

Prediction is another aspect of thinking processes that it is important to describe here. The ability to predict outcomes and to visualise solutions is central to problem-

solving (Good, 1989). Buechler (1983) calls the ability to solve problems an essential component of scientific inquiry. Most business people would agree that this helps form the basis of good business analysis.

Predicting and problem-solving are processes that allow us to survive and progress in a continually changing universe. The better we are at predicting, the better the vantage point that might lead to important discoveries in science and even judgements on social issues. Success as a predictor can also lead to great monetary gains, a better understanding of issues, and even to better quality lifestyles (Lavoie, 1989).

Predicting is inevitably linked with inductive reasoning which uses processes like categorisation or pattern recognition, and through inference, helps the critical thinker to generate hypothetical relationships and results (Holyoak & Nisbett, 1988).

Basic courses in business can prepare students for more in-depth specialised courses to be taken later. These are often composed primarily of new vocabulary terms, set-content material, and previously-processed information. However, emphasis should instead be placed on generalising with large amounts of data in order to draw inferences.

The following definitions are important in this context:

- **Generalisation:** a rule, principle, or a formula that governs or explains any number of related situations.
- **Inference:** arrival at a conclusion that evidence, facts, or admissions point toward but do not absolutely establish or draw tentative conclusions from incomplete data. “Inferring is the result of making an evaluation or judgement in the absence of one or more relevant facts and requires supposition” (Costa, 1989, p. 311).

Koffel (1994) says that students who have participated in a course in which the instructor used strategies to link information across disciplines should be able to apply

specific knowledge to job tasks as well as specific processes to a variety of similar circumstances.

Koffel (1994) goes on to state that the skills commonly associated with predicting, include the following:

- an ability to examine facts and relationships.
- an ability to identify similarities and relationships.
- an ability to differentiate and describe dissimilarities as well as similarities.
- an ability to determine direct or indirect cause and effect relationships.

In information-processing terminology, predicting is a process of combining knowledge of the input state, with a causal rule, to result in the predicted output state (Carlson, Sullivan & Schneider, 1989).

This relationship between the inductive-reasoning type of thinking, and predicting, strongly favours the conclusion that predicting relies to a degree on cause-effect declarative knowledge as well as the procedural nature of “if-then” production rules, relative to how they are formulated and applied to make a prediction (Lavoie, 1989).

The conclusions of Lavoie’s study (1989) include references to success in problem-solving involving an intricate network of relevant declarative knowledge that is manipulated by appropriate procedural knowledge. Lavoie characterises procedural knowledge by the use of action verbs such as identify, apply, evaluate and interpret. He also states that declarative knowledge involves terms, variables, facts, and relationships between facts, that are used to make a prediction (Lavoie, 1989).

The “if-then, production systems” of cognitive network models of prediction exemplify the important role of prediction power in teaching and learning (Klauer, 1989; Anderson and Milson, 1989). This network builds from a procedural knowledge base of

cognitive processing behaviours that search for, identify, define, apply, deduce, induce, and evaluate a declarative knowledge base of terms, variables, facts, and the relationships between them all (Lavoie, 1989).

Other models of problem-solving and predicting such as *IDEAL* (Bransford & Stein, 1984), *ACT* (Anderson, Boyle & Reisen, 1985), *Triarchic Theory* (Sternberg, 1985b), and the *Structure of the Intellect* (Guilford, 1956), do not seem to have the detail or breadth of Lavoie's cognitive network model (1989), which includes useful information about declarative and procedural knowledge as it is required in predicting behaviours (Lavoie, 1989).

Problem-solving, prediction and their relationship to critical thinking have always been key components of what is called "progressive or forward-thinking" for success in business. Questions do still remain though. For instance, Perkins (1987) wonders if it is possible to set up a framework or template of problem-solving activities; in effect, a generalizable heuristic model or models of problem-solving and predicting behaviours that could be followed and even taught and practised.

These are all metacognitive thinking activities that are considered highly necessary for success in predicting and problem-solving (Joyce & Weil, 1986).

It follows then, that prediction ability is an activity (and skill) of the critical thinker.

### Questioning and critical thinking

Lavoie (1991) describes how students of the future will think critically, reason logically, and ultimately predict possible solutions to solve problems, both old and new,

through the creation of networks of cognitive processing behaviours to relevant knowledge bases, in ways most conducive for solving problems. They will achieve conceptual understanding and facilitate subsequent learning when teachers encourage students to ask better questions and therefore get better feedback. This ultimately depends on teachers furnishing quality information at opportune times.

In his book *Developing Minds*, Arthur Costa (1989, p.151) refers to “mediative strategies”. Similar in form to the venerable *Socratic Questioning Model*, Costa bases his strategies on the instructor, as mediator or facilitator, raising questions and leading students to develop and criticise their own discoveries, theories, hypotheses, or explanations.

Facilitators stimulate ideas so that students become capable of seeing and describing what would otherwise have been phenomena, or patterns beyond their ken, by designing systems, explaining causality, inducing concepts, establishing proofs, considering alternative points of view, constructing real problems to solve (Costa, 1989).

In *Critical Thinking*, Paul and Binker also describe the Socratic method as having the power to "allow students to develop and evaluate their thinking by making it explicit" (Paul & Binker, p.269).

In a study she undertook in 1983, Sternglas stresses the importance of developing student writing skills (an essential skill in business), and reveals that a sense of the value of the writing was influenced tremendously by students asking questions, and in that process finding purpose for their writing exercises. Through investing themselves in the topic in this way and realising or establishing the importance of the results, real advances in style

and impact of the writing occurred. Questioning helped the writers to “create meaning”, causing them to think critically about the purpose of their writing, and improved outcomes (Sternglas, 1984).

Complex cognitive strategies develop increasingly as a result of increases in meaning through questioning. This strongly relates to thinking processes going from concrete to abstract reasoning processes.

### Case analysis and critical thinking

Robert Ennis (1986) defines critical thinking as a reasonable, reflective thinking that is focused on deciding what to believe or do. This can include some basic areas of critical thinking abilities including clarity, basis, inference and action (Mader, 1988).

Within the last decade, the state of California has formally mandated the necessity of instituting the instruction of critical thinking in all publicly-funded schools.

Instruction in critical thinking is to be designed to achieve an understanding of the relationship of language to logic, which should lead to the ability to analyse, criticise and advocate ideas to reason inductively and deductively and to reach factual or judgmental conclusions based on sound inferences drawn from unambiguous statements of knowledge or belief. The minimal competence to be expected at the successful conclusion of instruction in critical thinking should be the ability to distinguish fact from judgement, belief from knowledge, and skills in elementary inductive and deductive processes, including an understanding of the formal and informal fallacies of language and thought. (Mader, 1988, p.22)

The use of case-study in business schools as a method of practising thinking skills is well documented. In a publication entitled *The Case For Cases in Teacher Education* (Merseeth, 1991), the author argues well for the inclusion of case-study methods in the field of teacher training as well.

Like law, medicine, clinical psychology, and public policy, business education has made good use of this method for many years. There also is no doubt that the way a business teacher frames questions and asks for solutions to a dilemma, will encourage students to diagnose, reflect on, justify choices of solutions, consider following alternate action plans and then choose a final solution.

The business world presents some unique applications for cases. In business pedagogy (and andragogy) cases are used to inform and to stimulate discussion and analysis, and ultimately to instruct people how to “navigate and determine courses of action to be taken”.

Situations similar to those encountered in the real world can easily be provided. Students can play the roles identified in the case study. Activities such as these can help the student understand the realities of having to deal with differing personalities while at the same time having to assess the dynamic forces involved in decision making.

A knowledge of political, social, and economic forces are essential components of making critical-thinking based decisions. Often, role-playing in a case can serve the student well in helping to create a pattern of thinking that can be carried into real-life business situations.

Case studies are best used as the foundation for leading students through inductive/deductive reasoning regarding controversial issues and trends. When students are shown the differences between inductive and deductive reasoning, they can use case study material about a particular problem or trend in a discipline using (and defining) their own reasoning approach.

I believe case study is the best method presently available wherein business students can benefit the most in practising critical thinking skills. In case study, it is important to emphasise that students should have to generate their own lists of questions. It is only then that they will begin to understand how difficult it is to analyse a problem from outside an academic area. Often, the instructor's questions, especially if developed beforehand, are so transparent they do the major abstract thinking for students by giving away too much information that students should learn to identify themselves (Koffel, 1994).

Today, business cases are used to help students establish methods of problem-solving and predicting outcomes as well as dealing with specific content. Case studies are often used to train students to “know and to act” applied business situations. When used successfully, they produce business graduates grounded in theory and abstract knowledge. More important perhaps, is the learned ability of knowing when to apply those certain essential elements of a solution. This recognises the importance of the elements of content knowledge and action empowerment designed to deal with situation-specific dilemmas in regulated ways (Christensen, 1987).

Good business cases are complex, often ambiguous and are based on carefully crafted research designs and field work. In presenting a case, a good instructor will use questions to guide discussion. The facilitator should not have a predetermined conclusion in mind (Christensen, 1987). Andrews (1984) says the successful business case instructor will “keep out of the way” and allow the class to discover things unknown and new to the

instructor as well. Drucker (1988) says that solutions and conclusions must remain in flux in order to reflect the ever-changing conditions of the business environment.

There is also an important series of differences worth mentioning here that exist in the way cases in business and other areas are treated by practitioners. In the study of law, a series of precedents guides the student and the process of deductive reasoning holds sway, but in business, the student must immediately accept that there are no real precedents, or antecedents, and few landmarks or guidelines that interplay with the results of inexact trend analysis and unreliable forecasting. In business, the context alone guarantees differences each time. Inductive processes, including intuition and good timing, also have a prominent place in business case solutions.

Perhaps most important is the recognition that differing perceptions and cultural mores constantly interplay with these cognitive or “thinking” components and may influence the outcomes of business cases dramatically from one day, or one case participant, to the next. A body of substantive knowledge, or ways of doing things correctly, does not exist in business as it does in Law or Medicine; it more resembles a body of opinion (Roethlisberger, 1977).

In general terms, cases can be very beneficial in teaching teachers as well. In 1990, Florio-Ruane and Clarke contended that using cases to teach teachers is highly desirable and develops a sense of the possibilities, as well as a sense of what is. Cases can help people to observe closely, make inferences and formulate organising principles. Kleinfeld (1988) also states that cases send a powerful message that teaching is complex, contextual and reflective.

John Chaffee (1988) offers these definitions applicable to the case-method:

- Argument: a form of thinking in which certain statements (reasons) are offered in support of another statement (a conclusion).
- Reasons: statements that support another statement known as a conclusion in order to justify it or make it more probable.
- Conclusion: a statement that explains, asserts, or predicts on the basis of statements known as reasons.

The key to success in using case method in an educational setting generally lies in the teacher not operating from a set of principles or theories but rather building through metaphor, stories and experience in contextualised situations and with multiple scripts (Light & Pillemer, 1984). These “scripts” define strategies for practices that are organised and accessible and subject to continual revision (Merseth, 1991). The teacher has to use salient patterns of events to provide a conceptual foundation for strategic events. The conceptual task for the teacher in this context is that of induction, not deduction. Teaching using cases relies on the specifics of context, who is teaching what to whom, and considers a multitude of varying conditions. Accurate prediction as a result of dispassionate and pure deduction is not likely (Bolster, 1984).

Teaching and business have a commonality here in that they do not function in environments in which there are absolutes. Certainly there are principles that guide both in practice, but neither deduction nor induction reigns supreme, neither universal truths nor rampant chaos reigns. It is here in this middle ground that the case for cases is most strong.

As Merseth (1991) implies, choosing cases as a pedagogy does not embrace a belief that only theoretic principles are important. Simply knowing a principle is of little use. Business Schools are successful with the method because they use cases as

representations of complex and difficult context-laden material and they use a discussion method that stresses critical inquiry rather than results.

According to Kennedy (1988) “deliberate action” is another form of case study expertise that reflects a recognition of the multiple ways of interpreting a situation, as does “critical analysis”. Deliberate action moves beyond critical analysis to yield potential actions and their probable consequences. Both “deliberate action” and “critical analysis” are forms of expertise that require more than knowledge. They require frames of mind which, in the end transform a novice into a person seeking better solutions, and critically examining practice while seeking solutions (Kennedy, 1988).

Wagner (1984) wonders if we use the case method to untie the “knots” of teaching. The literature has made much of the case-study method as an alternative (and secondary pastime) in teaching, but it cautions against using the method to the exclusion of other theories and concepts that are more proven. Wagner (1984) says case methodology is almost in itself a new kind of learning endeavour that needs much more studied exploration as to its efficacy and realistic results.

As I have already stated, the use of case study methods to teach critical thinking skills, in my opinion, is essential. In his book *Teaching and the Case Method*, Christensen (1987) outlines some of the important aspects and requirements of success in case-method teaching. He notes that one of the most difficult things about cases is giving the student a sense of realism in the presentation. Cases must have the imperative of reality, and still retain the effectiveness of describing the distinctive concept relationships to be taught.

### Ethics and critical thinking

Hallock and Downie (1986) describe an innovative pilot programme that emphasises ethics in education and the value of writing as a means to promote critical thinking. Highlighted in the goals of the programme is the pragmatic justification for teaching critical thinking skills through the process of writing for learning and the use of writing to foster critical thinking skills.

Too little attention is paid to the student as a fully functioning human being capable of using knowledge to reach moral and social ends. The study leads us to conclude that students must become critical thinkers rather than uncritical “storage tanks”. Students should learn to analyse, abstract, and distil ideas (and reject some while accepting others) in an atmosphere that rewards them for their questions, creativity and innovativeness. Writing teaches them to externalise thinking processes by conceptualising and synthesising experiences.

Students should be provided with experience by teachers and allowed to synthesise their own results. This results in a student body that thinks more critically, is more knowledgeable, aware and thoughtful and can analyse, organise and synthesise. In the words of the authors, “writing to learn created, if not more talented writers, at least more talented thinkers” (Hallock & Downie, 1986).

Ethical judgements must be combined with critical thinking skills in all areas of business. This makes them inexorably entwined in terms of educational needs for today. Business and professional organizations are all concerned about the inability of graduates to analyse, solve problems and make decisions with ethical considerations always in mind.

Attempts at educational reform to include these skills has been ongoing on the part of many prestigious organisations in the U.S.A. and Canada, including the College Board, the University/Urban Schools National Task Force, The Carnegie Foundation for the Advancement of Teaching, Phi Delta Kappa, and a multitude of Provincial and State ‘Authorities’ of Education — to name but a few (Ruggiero, 1986).

Thinking skills and ethics deserve special consideration in the business curriculum across the broad spectrum of subjects from accounting to marketing as there is a demonstrable need to practise thinking skills in all areas of practice. There is such a close connection between thought and expression, that “some authorities believe that many of the problems that have traditionally been considered language deficiencies are, in fact, cognitive deficiencies” (Ruggiero, 1986).

Business educators need to do more than just talk about aspects of ethics, such as the history of ethics, or the importance and necessity of developing ethical behaviours for business. I believe a conscious effort on every business educator’s part is required to develop critical thinking skills in their students within the realm of understanding morality, responsibility, accountability and ethics (and their relationship to business generally).

Ultimately, the subsequent and profound effects business decisions have on all aspects of our environments will have to be stressed in all our students before we can expect them to develop the necessary moral judgement to survive in the dangerous world of the future. When students finally arrive at an understanding of the moral dilemmas facing business people, all the time spent seeking to avoid the corruption and false notions

of pragmatic rights and wrongs that subjectivity could otherwise breed as solutions, will be a positive and progressive step forward for us all.

Finally, I believe that by reviewing and revising our business curricula, we must accept the need to teach tomorrow's business people to think through the ramifications of gaining a clear and responsible understanding of the effects of their business decisions in the moral and ethical sense before considering the traditional political and monetary outcomes of doing business, so that final results are socially acceptable, first and foremost.

## CHAPTER THREE

### Method

Chapter Three describes:

- the research questions
- the procedures followed
- the participants (or co-researchers) in the study.
- the method and measures used.
- some ethical considerations are also outlined.

The study was based on the following research questions:

1. How might a select number of local business people define the term “critical thinking”?
2. What would these same people identify as important critical thinking activities or skills required of themselves, colleagues, subordinates, superordinates, and prospective employees?
3. Might a collective definition of critical thinking be constructed from their responses, and the activities and skills they deemed important?
4. In what ways might critical thinking activities and skills, expected in the workplace by these people, be identified, analysed and classified?
5. Might a heuristic, for instruction and learning, and useful to other business educators, emerge as a result of this process?

To investigate these questions, the following steps and processes were undertaken:

- an exploration of research and literature for concepts, activities and skills related to critical thinking.
- a survey and structured dialogues with local business executives.
- analysis, and classification of critical thinking skills and activities as identified and practised by these business people.
- the creation of a basic profile of local business executives.
- the compilation of critical thinking activities and skills that are most desirable in their workplaces.
- development of descriptions of critical thinking skills and instructional strategies that might be incorporated into business courses, with the aim of teaching critical thinking skills to business students so that they might transfer these skills to workplace environments.
- checking-back with participants to ensure that what they said in the questionnaires and dialogues were accurate; and that the compilations they collaborated on

creating with the author were true reflections of their collective definitions and views.

### Study participants

Participants were selected on the basis of three main criteria:

1. They were in middle-to-upper-level, business-management positions in which they had direct responsibility for the work of others. That is, they could not simply be a manager of things, such as a “manager” of a fund or an information system that had no actual employees. They had to directly manage a staff of at least five people.
2. They must have employed, or have shown interest in employing, a business graduate within the last five years, on either a full-time basis, or on a co-op work term for at least 3 months.
3. They were willing and able to dialogue on this topic.

Eighteen business executives known to the author, originally agreed to participate.

They were representative of both private and public industry. Almost all of the participants have had dealings with the author in an educational capacity, or in private business dealings, at some point within the last ten years.

Each of these people had developed a comfortable rapport and trust with the researcher over the years. All of the participants have established reputations as business leaders in BC. Of the eighteen who originally agreed to participate, sixteen remained committed to the study until its completion.

The size of the companies or government agencies and number of people these participants employ, and the number of years each has been associated with their present positions was noted. Their status or titles and responsibilities, and their years of service as supervisors, was also included.

Demographically, the participants can be described as follows:

- 10 are CEO's (chief executive officers and/or owners), or are high-ranking executives employed in a public or private sector company.
- All are ultimately responsible for a number of employees (ranging from 20 to 1000+), although none of them directly supervises more than 20 persons.
- Contact with more than 10 subordinates per day is quite rare.
- Five are senior executives, partners, managers or owners in enterprises that has a minimum staff of 20 and they directly supervise all, or most, of these people.
- Four of the participants are women.
- All of the participants are between the ages of 40 and 55.
- Most have been in senior management for at least 10 years and some for over 15 years.
- Most have been in their present posts, or at an equivalent position, for at least 10 years.
- 13 participants have one university degree or professional designation.
- Three have an MBA or the equivalent.
- One has a Ph.D.; another has an LL.M.
- Three have limited experience as teachers at post-secondary institutions.
- One had formal schooling to grade 10 and two others, high school matriculation.
- All are presently located in companies with head offices in the lower mainland area of B.C.

All of the foregoing descriptors about the participants are noted to acquaint the reader with a general profile and background information that contributed to their perspectives.

#### Preparatory Material(Questionnaire)Design

Participants were first given some preparatory material (Appendix A). They were assured in an accompanying letter (Appendix B) of anonymity for their companies, and as individuals.

Distribution of preparatory materials was preceded by a phone call to outline the purpose of the study, and to ascertain interest and confirm the willingness of individuals to participate. The preparatory materials were then hand-delivered and details of the purpose

and methods to be used for collecting data were explained. It was suggested that a writing time of about two hours might be required to answer the preparatory material questions.

Participants were asked to sign a consent form (Appendix C), and all the necessary explanations were given to enable them to complete the preparatory material. They were then asked if I could return within a few days to collect their responses. It was my hope that doing so would increase involvement and response rates. This also allowed me to answer any questions and correct any misconceptions about the study's purpose or their involvement. I remained available in person and by telephone to clarify questions and aid in the completion.

These steps were taken to build trust and to encourage free responses from the participants, who were consistently assured of the author's recognition that their privacy would be protected.

### Dialogues

All of the participants engaged in two dialogues: an initial dialogue and a follow-up dialogue. The first eight people involved in the first round of interviews participated in an additional conversation related to the first dialogue. The purpose of doing this was to overcome the problem of not having a lengthy composite for the first eight dialogues by having a second conversation with these people, using the composite compiled at the end of the first dialogue round. Four other people participated in a third dialogue in May of 1995, the purpose of which was to confirm the accuracy of the words and phrases, as well as the analysis and synthesis of same.

Before starting the initial dialogues, I waited for participants to add anything to, or ask anything about, the preparatory material. If they asked for their question-and-answer sheets back, I returned them. I then asked if they had any further questions or comments regarding the study to that point. Then, after reviewing responses to the preparatory materials with the participants, I began each dialogue by telling the participants that I was trying to create a composite set of what I called “action words and phrases” to define critical thinking. Further, I informed them that the process would be cumulative: significant and generalizable words and phrases would be added as each successive dialogue occurred.

Because of the richness of language, it is difficult to avoid using metaphors and stories to help others understand the intended meanings. I recognised the necessity of this and encouraged it. I asked the participants to tell me stories or provide vignettes about their experiences that would help illustrate or exemplify what they meant by critical thinking. I reminded them that I would not repeat their stories; but - because I felt that the words and phrases I was looking for would be embedded in them, and would therefore be useful for this study - we agreed I might use single “words-in-context.”

From the outset, I recognised the need to narrow the choices of terminology hoping that intended meanings might survive removal from contextual references. By this process, the gerunds used to describe critical thinking were aggregated. What I was attempting to do was to discover words and phrases that were widely accepted by the participants as activities and skills of critical thinking. I told each co-researcher that I

would be sharing these words and phrases as well as some of their general thoughts, with all the other participants in a non-identifying way.

I expected that asking for definitions, in the form of examples, would enhance our understanding of critical thinking and inspire further questions.

During the first set of dialogues, all participants were also asked:

- about their own and their supervisor's job descriptions noting the kinds of critical thinking activities and skills that were important to these jobs.
- about the kinds of critical thinking skills they felt were most desirable in prospective job candidates.
- about critical thinking skills they perceived as necessary to succeed, and possibly to be promoted, in the environments within which they worked.
- to generate a list of descriptors regarding critical thinking activities and skills pertinent to their workplace that they might wish were taught and practised by students.
- for thoughts and comments on how critical thinking skills might be taught in business education courses for later transfer to applied business.

Questions about their own, and others' jobs were asked in the expectation they would:

- develop a sense of the kinds of critical thinking skills they possessed.
- discuss how they obtained these skills and when.
- discuss how they were required to use the skills in their present positions.
- discover the degree to which critical thinking activities and skills were important in their co-workers.

In follow-up dialogues, participants were asked to:

- describe the kinds of critical thinking activities skills important to them in general ways.
- cite recent examples from the last three months, of critical thinking activities and skills important to them and their employees in the workplace.
- discuss the importance they ascribed to, and deemed desirable, in the critical thinking skills they or their employees exhibit.

I explained the objective of each initial and follow-up dialogue, reminding each participant of the intended search for an accurate definition of critical thinking activities and skills in their own and others' environments.

Throughout these dialogues, I tabulated clusters of “action words and phrases” into lists meant to describe activities and skills related to critical thinking. I took the lists with me from dialogue to dialogue.

These ‘evolving’ clusters of terms were referred to and discussed during our conversations. I occasionally interrupted a dialogue to ask for clarification. When participants had further thoughts, I listened for any words and phrases that I could construe as “action words.” I asked for further clarification of terms--especially those contextually embedded, or used as analogies and metaphors.

I listened for meaning in words and phrases that were repeated, words that might underline or emphasise some particular point about critical thinking activities and skills. Throughout this process, I listened and looked for descriptive words that might eventually be removed from a particular contextual source and still hold true. I made notes and kept track of these points and commentaries as they occurred. While I was unable, at times, to immediately compare points with information supplied in dialogues with other participants, I shared this information with the participants whenever it was possible to do so without losing focus.

I deliberately used the questions on the questionnaire form to guide each dialogue and to encourage participants to illustrate their responses with stories. In this way, the questionnaire/guide was also used as a template, a common framework for each of the dialogues.

The schematic in Appendix E illustrates the dialogue interaction and evolving collaboration that occurred.

### Combining preparatory and dialogue materials

This section deals in greater detail with the collection of the data and the processes used to collect it. To review, data were collected by means of:

- preparatory materials (questionnaires).
- first dialogues were used to clarify information recorded by participants on the questionnaires.
- follow-up dialogues were used as a perception-checking device, a means of cross-referencing a participant's initial responses with others' responses in composite form.

Dialogues were at venues chosen by the participants and held at their convenience, within ten days of completing the questionnaire.

Intentionally, questions were designed to be as open-ended as possible in both questionnaires and dialogues. Although the dialogue questions were guided by questionnaires, not all were followed in exactly the same way for each specific case. This was due to variations in the participants' respective business environments. Nevertheless, they were adhered to as much as possible.

### Concerns

At this juncture, it is important to acknowledge factors that may be considered potential weaknesses of this study.

- Only eight of the sixteen participants did any pre-reading or preparation. In retrospect, I might have supplied a list of definitions and some readings, especially of cases to illustrate critical thinking skills used in business. I did not do this, however, as I felt the participants may be unduly biased by such action. A compromise might have been to supply some definitions and readings representing

a range of critical thinking skills and case examples, plus some references to guide participants to sources of information.

- When I reviewed the composite answers with the participants, the majority of them became more animated and appeared much more interested in discussing what they agreed and disagreed with.
- Several of the participants took minor issue with some of the response composites. These points were mostly about the perceived importance of certain critical thinking skills or practices, and the lesser importance of others.

### Validity and reliability

In any study, there should be concern regarding validity and reliability. I am fully aware that being the sole researcher, field worker, analyst and writer on any project is potentially problematic. The question of whether the participants were truly representative of the whole local business community did not overly concern me, as I wanted to clarify meanings and understandings with the help of these successful business people. Perhaps readers' concerns about "weighting, representativeness, and researcher bias" can be put at ease by the following:

- The participants were selected in large part because they were known by the researcher to be successful, articulate and knowledgeable.
- All participants were known to the researcher and had an established relationship that would allow for candour and free-exchange.
- Participants were not intended to represent the entire business community. Rather, they were chosen as models on which to profile critical thinking activities and skills.
- They were kept separated from one another, in part so that there would not be dominance by any one co-researcher.
- Verbatim commentaries were not shared, in order not to unduly influence, interfere with, or "taint" responses in any way.

I recognised that the participants would have many personae that could be presented in different situations. I believe that the participants may, some of the time, have looked for the “right thing to say” or “the right answers.” (Miles and Huberman, 1984).

One of the best ways to improve the reliability of qualitative research is through “triangulation” (Miles and Huberman, 1984). In this study, triangulation occurred in two phases. First, I used different instruments and methods to collect the data: a questionnaire and several dialogues. This resulted in getting more than one measure from each source. In the final analysis I drew tentative conclusions and double-checked these with the participants before finalising the lists.

#### Ethical considerations

All the participants in the study are sophisticated business persons. No questions were asked of a nature that would impose any risks to their personal or business reputations or welfare. Nevertheless, it was felt that informed consent was required and a letter was sent to each co-researcher outlining the nature of the study and its intentions as to methods and expected outcomes. The letter (as in Appendix B) specifically asked that no preparatory material results were to be faxed. The letter also stated that the participants could choose to withdraw from the study at any time without explanation.

Ethical approval for completing this study was obtained from the University of Victoria, Human Subjects Committee. All data was kept in a locked filing cabinet and destroyed after compilation, by shredding and burning.

A letter of consent was signed by each co-researcher (Appendix C), and this letter will be kept until six months after this thesis is defended.

At every meeting with participants, they were assured that no business information would be shared or passed on to anyone else, except in the described composites, or in the format of a general summary. No other information that could identify participants, would ever be released or alluded to.

## CHAPTER FOUR

### Results

Once again, the following research questions have been addressed in this study:

1. How might a select number of local business people define the term “critical thinking”?
2. What would these same people identify as important critical thinking activities or skills required of themselves, colleagues, subordinates, superordinates, and prospective employees?
3. Might a collective definition of critical thinking be constructed from their responses, and the activities and skills they deemed important?
4. In what ways might critical thinking activities and skills, expected in the workplace by these people, be identified, analysed and classified?
5. Might a heuristic, for instruction and learning, useful to other business educators, emerge as a result of this process?

The results section describes the participants’ responses to the preparatory material and their responses to the dialogues. Further, the combining of responses to questions used in the questionnaire and the dialogues is included.

According to Miles and Huberman (1984) qualitative research design is generally loosely structured and inductive so as to allow themes to emerge during fieldwork. Events and outcomes are generally not predictable, and therefore settings and measuring instruments are difficult to predetermine and use. The best measures are words-in-context, which become the harbingers of meaning in qualitative research, and are in effect its interpretation-in-context (van Mannen, 1990).

In this study, and after completing a literature review, I developed some suppositions of how I felt participants would respond. I chose persons known to me as successful business executives who I thought could contribute thoughtful and articulate

responses that could be correlated with one another. I readily admit that I was looking for “confirmation of my own thoughts” on the subject. These preconceived ideas, predetermined questions, and confirmatory expectations, are by design, unavoidable but the study results were not all that predictable.

### The dialogues (interviews)

The result of methods used, of my sharing participants’ descriptions from the dialogues, seemed to catalyse individual response “depth,” while clarifying some definitions. This process seemed to help them confirm and “anchor” their own comments. Participants attempted to find agreement between their responses and those of others. I acted as the *liaison* between individual interviewees and the evolving composite of responses.

Twelve of the sixteen initial dialogues, were not exceptional in conduct or content from one another, except in terms of setting and timing. My analysis of field notes resulted in finding some agreement:

- Field notes recorded during the dialogues were congruent with the participants’ responses to the questionnaire.
- With some sharing of the composites, the participants solidified their respective views and attempted to reconcile their words and phrases to be in loose agreement with others’ definitions and comments.
- The participants demonstrated a willingness to agree on a commonly accepted series of terms and definitions that would resolve disparate or confusing terminology related to what critical thinking is. This allowed all views to be encompassed within their own context.

For instance, when it was suggested that the business phrases “strategic planning” or “long-term forecasting” could both be viewed as synonymous with the term “critical thinking,” the participants began to see how to reconcile one vocabulary with another. Jargon could then be better understood, as participants began to view terminology in a more flexible way.

These twelve participants worked towards finding agreement of meaning and the integration of their views by my use of the compiled lists of gerunds. There seemed to be some “need to conform” in operation. I acknowledge that as a product of this design. I believe this tendency would be even greater in a research study using a focus group, or a study in which protecting the participants’ anonymity would not be a concern. These possibilities aside, I think that the study motivated participants to try to “fit together the pieces of the puzzle.”

The other four dialogues were somewhat unique. Two participants collaborated and recorded their responses on a single questionnaire. One participant stated she was unsure of how to complete the form; another indicated he had not had time. In these instances, I assisted the participants with completion of the questionnaire. This necessitated providing information from composite responses.

In one of these cases, the composite had built up to include all responses to date, plus the data that came from the first 14 dialogues as well. I felt that even these latter dialogues were still worthwhile as they displayed a sense of what the two participants were wrestling with. They stated they had no understanding of the concepts of critical thinking as a distinct way of thinking until after we started to explore some of the kinds of

thought processes they went through in planning, budgeting and allocating business resources within their own contexts.

I continually referred back to my field notes as I went about the study and changed some procedures to fit the evolving data. During data collection I flagged particular words and phrases. These served a useful purpose as cues and stimuli to invite further commentary and response. This reflected the dynamic aspects of how the data were collected and then used to catalyse the responses. The responses were also used to illustrate to participants the evolving nature of their understanding. As a result, they became further invested in the process of collecting data.

I purposely encouraged participants to change or try to “fit” their responses into what I referred to as “critical thinking action word lists.” I submerged individual responses in favour of building stronger composite sets of responses. To accomplish this, I encouraged some of the participants to look beyond the context of their own business experiences. Thus, the gerunds that are listed in Chapters 4 - 5, were developed.

Finally, I have combined the responses to the preparatory materials (questionnaire) and dialogue responses in the same order as that used to retain focus in the dialogues. Therefore, the questions and responses are presented in the order in which they appeared in the preparatory material.

### Demographics

A more complete picture of demographic information is not available for publication because of privacy issues. But of those who recorded responses to questions A, B, C, and D of the questionnaire, the following is offered as a summary:

- Participants noted their areas of responsibility include those that might be expected of CEO's; business partners, owners and managers; as well as high-level public officials. For example, supervising, researching, strategizing, controlling, and evaluating were some of the terms they used to describe their activities.
- When asked to prioritise their most important management functions, they listed the following: articulating, problem solving and predicting, advising, allocating, and reviewing, among many others.
- One participant indicated he had been with the company for twenty years. Four noted fifteen years to twenty years of service; two noted ten to fifteen years; and four of the participants noted they had been in their positions for five to seven years.
- Despite their small number, participants represented a variety of industries and vocations.

Demographic information was collected in order to establish the credentials of the participants. It demonstrates a wide range of job types and skills. As expected, the data illustrates critical thinking is required by all of the participants--to perform their tasks, and supervise the work of others.

Making comparisons of companies is possible only in the very general sense with this data. Suffice it to say that the different perspectives on critical thinking and its importance in business are most probably a product of workplace environment.

There were ten mid-to-senior-level executives in the co-researcher group, and four high-level managers.

There is almost an even split in the representation of private enterprise (seven) and public service (nine) corporations. Of note is the fact that within the group of sixteen participants, it was the four women who had been in their positions (or equivalent positions) for less than seven years. Of the most senior managers, all were men and had been in their positions for at least ten years.

Five individuals had stressed the importance of listening skills and communication with their employees and the public as their most important functions. Five others, highlighted the importance of money, interest rates and inflationary trends as the key to their success as entrepreneurs and public servants alike. All stressed the importance of being a generalist and seeing the larger picture of world events as being very important on the local scene.

There was much mention of reviewing staff and performance evaluation as a means of finding opportunities to impress staff with the need to meet goals and budgets.

#### Preparatory material (Questionnaire) answers

I used the same questions in the dialogues, as I used in the questionnaires, and asked them in the same order.

Table 1 is a list of “action words” and gerunds compiled from responses made by the participants on the questionnaires as well as during dialogues.

Table 1

#### A Complete List of Action Words From All Sources

ability to absorb	being ethical	consulting
able to formulate	being flexible	controlling
acting	being moral	coordinating
adding value	being objective	creating
addressing	being pragmatic	deciding
advising	being provocative	defining
ambitious	being trainable	determining
amplifying	being willing	developing
analyzing	blending	diagnosing
applying	buying	directing
asking	challenging	discarding
attention getting	collecting data	disseminating
being altruistic	defining needs	distributing
being autonomous	communicating	evaluating
being circumspect	concerning	dreaming
being ethical	conducting	empathizing

enthusiastic	listening	reviewing
examining	maintaining	revisiting
expecting	managing	rewarding
figuring	mediating	satisfying
finding	mentoring	seeing (big picture)
flexible	modeling	selling
following	motivating	sorting
formulating	observing	sponging
generalizing	offering	strategizing
getting along	organizing	striving
giving	perceiving	supervising
guiding	planning	supplying
handling	playing	surveying
having initiative	portraying	synthesizing
identifying	presenting	taking,
implying	predicting	tenacious
improving	presenting	thinking independently
innovating	pricing	trainable
intelligent	prioritizing	training
interpretive	problem-solving	transforming
investing sweat	producing	trying
judging	questioning	underlining
keeping distance	receiving.	understanding
leading	recommending	weighing decisions
learners	researching	willingness
liaison	responsible	working

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The following is editorialised from the data collected and compiled for each question as noted:

**1) What does the term critical thinking mean to you as it applies to your business situations?**

The participants' responses covered a broad range. Some of the definitions included, as in one co-researcher's mind: "something done in a structured, logical methodology — seeking to define problems and opportunities"; or as in another response, "the kind of thinking that causes one to revisit and re-evaluate thoughts"; another to,

“think in an uncluttered space”; and still another citing, “thought that impacts on the everyday operations of the company”- “it” essentially means the same thing.

All the diverse definitions are context-based within and drawn from each co-researcher’s own reality. Yet they are all very alike. All these attempts at definition, and those not cited, are indicative that the participants view critical thinking activities as extremely important, even crucial to the well-being of their companies. They engage in “it” almost all the time. They view “it” as having enormous potential.”

My synthesis of the areas of agreement among them is that critical thinking involves the kind of conscious thinking activity which is done at a higher plane than the ordinary. It requires focus and concentration, which can be helped by a positive physical and mental environment in which others value one’s thoughts and encourage the very activity of thinking with rewards of varied types. They were all in agreement that “it” is crucial as an activity and the ability to do “it” is a set of highly desirable skills. They see “it” as the kind of thinking which extrapolates and gives direction and guidance to actions they are considering taking. They almost all see it as a somewhat creative, certainly intuitive, and definitely logic-based, cognitive experiential-activity at the highest level.

It is somewhat difficult to extract a specific and universally acceptable definition from such a small group without possibly compromising the necessary importance that each co-researcher’s definition has in the context of their own environment. I have attempted by the study to find a reasonable collective definition, and to apply what I feel are the components of how to foster better answers to this kind of question in the future business classroom.

**2) List examples of critical thinking you have used in your business over the last three months:**

There were some discrepancies and misunderstandings that presented in the definitions first collected from the preparatory material that were sorted out in the subsequent dialogues. I was attempting to discover if there were definitions in the participants' minds that matched any of the definitions I had already encountered in my reading. To my surprise, there were at least two main groups that formed in describing the kinds of critical thinking activities the participants felt they did. One group used the word critical thinking to key on examples of critical thinking which included "critiquing and defending thinking actions." The other group spoke of critical thinking as including strategic planning and very high-level, "unimpeded kinds of thought".

Those in the first group were mostly accounting-trained and systems-based. The latter were persons who had been involved in a good deal of strategic thinking and planning as part of their responsibilities. These latter participants were also much more generalist-oriented in their approach to the other questions.

This makes more sense if one takes into account the context within which these participants work.

Some of the more colloquial terms used included description like critical thinking happens: "When I take into account the big-picture considerations"; "future-oriented"; "thoughts having significant impact"; "what-if? questions"; "a structured and logical methodology"; "analytical thinking"; "revisiting"; and "problem diagnosis".

### **3) Describe your job in terms of its critical thinking elements, activities or skills:**

This question resulted in the creation of a list of the things a business person does that relate to ongoing activities involving critical thinking skills and which could include some of the following:

- Synthesis of opinions, data, observations;
- Analysing problems/situations;
- Problem formulation;
- Problem diagnosis;
- Analysis of alternatives;
- Problem-solving;
- Judging future outcomes.

Some general examples of where these skills might apply in the business milieu include:

- Formulation of corporate business strategies.
- Handling of corporate external relationships with government, suppliers, customers and the community
- Mentoring and advising business unit heads
- Financial — pricing, results examination, etc.
- Personnel — performance planning and review, human resources policy review; mediation of employee differences; opinion survey interpretation.
- Customers — buying preferences, market demand, survey analysis
- Suppliers — review of proposal evaluation, distributor suitability; etc.
- Service offerings — what equipment to buy; what products to develop
- Leadership and management generally — dealing with people, leading, vision formulation, objective setting, etc.

Table 2 consists of a list of action words that co-researchers used to describe their own and their colleagues critical thinking skills and activities.

Table 2

Action Words Used by Co-researchers to Describe Their Jobs (and Their Colleagues) in Terms of Critical Thinking Skills

addressing	evaluating	planning
advising	examining	portraying
amplifying	expecting	presenting
analyzing	formulating	pricing
applying	handling	problem-solving
buying	implying	questioning
challenging	judging	recommending
communicating	leading	reviewing
concerning	liaison	revisiting
controlling	listening	sponging
deciding	mediating	strategizing
defining	mentoring	supplying
developing	motivating	surveying
diagnosing	observing	synthesizing
discarding	offering	underlining
disseminating	organizing	understanding
distributing	perceiving	

Participants also pointed out the importance of sometimes being aware of “workplace cultures” as this can have a bearing on the kinds of critical thinking done at their companies. There were some points about having to deal with archaic management styles. One co-researcher mentioned present-day management still holds reverent the “sacred cows and mythologies” of management styles. In the co-researcher’s opinion some of these attitudes represent potentially serious problems in labour relations as a result of increasingly rapid change.

Participants had little difficulty identifying and naming what I will term critical thinking skills or abilities that demonstrate the critical thinking skills they saw in themselves and their colleagues.

**4) List any critical thinking skills you believe essential in employees under your supervision:**

The skills these participants say they would look for in employees, or prospective employees, are presented in Table 3. This question, and numbers seven and nine, are very similar in what the participants list as important critical thinking skills.

Participants stressed that they want people who are trainable, with good listening and presentation skills and who are capable of asking questions and supplying answers that are well-presented as they solve problems in innovative and creative ways.

Most employers said they do find ways to directly reward those that show initiative in offering good ideas and suggestions that illustrate their commitment to thinking critically and having the confidence to present their ideas. One senior executive refers to the need to think critically when sorting out material from an ever-increasing amount of available information available. In the view of some other participants critical thinking is often used to decide or determine that which is relevant and important. It also appears that the ability to forecast and predict are highly valued critical thinking skills in employees.

**5) List key critical thinking skills exhibited by your supervisor:**

Without exception, participants acknowledged that there is “a boss” even if they are self-employed, or the CEO of their company. Several participants said that “the boss” is some form of “governing ethic, or super-ethic”.

One co-researcher, somewhat tongue-in-cheek, referred to the “taxman” and “the customer” as being the only real “bosses”, but then restated his point as “the real challenge is to meet the demands of the customer in the marketplace.”

Others referred to the skill their bosses showed in defining their “sense of the big picture” as important indicators of critical thinking skill. The reflective, or circumspect, way that their bosses would transform the context into more meaningful presentations was viewed as demonstrating critical thinking skills. All those that had direct bosses were very complimentary of their apparent leadership styles, as well as their critical thinking activities and skills.

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Table 3

Action Words that Co-researchers Use to Describe The Critical Thinking Skills Exhibited by Supervisors

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giving	being ethical	predicting
leading	being moral	seeing big picture
advising	strategizing	being altruistic
objectivity	supervising	being autonomous
defining needs	formulating	selling
keeping distance	collecting data	listening
maintaining	adding value	
being circumspect	transforming	

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**6) What kinds of business environments are conducive to critical thinking activities in your business?**

Having a sense of security and trust were the key to factors here. The notion of a rewarding business environment and climate which rewards people for the kinds of thinking and sharing activities that might result, was stressed.

They stressed an “open and positive” business environment and a “challenging business climate” as being important in encouraging critical thinking activities.

Some referred to physical things like “office geography” as important to encourage critical thinking activities. Having people close, but not obtrusive, seemed important to most.

A stable company financial picture was also stressed as important to the participants in encouraging a climate for critical thinking. They felt their employees would be more prone to think critically, and voice their ideas and thoughts in an environment where financial stability was enjoyed.

### **7) What critical thinking skills would increase the likelihood of success for an employee-applicant in your firm?**

One participant identified that a good ability to analyse and use problem-solving skills, as well as “a generous amount of demonstrable intelligence” can go a long way to satisfying the desires of employers. Another makes a point of saying that their company is interested in hiring people that have “good business skills first, and an affinity for their field of expertise”. Business skills are highlighted and seen as more important than technical skills by many participants. A key business skill that they referred to is the ability to think creatively as well as to discover and solve problems.

The ability to interpret difficult or crucial situations is an important skill for most of the participants, as are basic common sense, and a willingness to listen, and learn, on the job.

Creating and following action plans, and being capable of seeing the whole picture and presenting an accurate overview are other critical skills valued. One co-researcher wants people willing to invest “sweat equity” in themselves and their ideas.

Last, they all stressed the value of the ability to communicate ideas. Table 4 consists of a list of action words that co-researchers used to describe critical thinking skills that they would desire in employees.

Table 4

Action Words that Co-Researchers Used to Represent Ideal Critical Thinking Skills in Prospective Employees

ability to absorb	generalist	researching
ability to formulate	having initiative	solving problems
ambitious	intelligent	strategizing
attention getting	interpretive	striving
being objective	investing sweat	tenacious
being pragmatic	learners	trainable
being provocative	modeling	weighing decisions
defining	portraying	willingness
enthusiastic	presenting	
flexible	questioning	

**8) Describe opportunities you have to learn critical thinking skills:**

All participants believe that a formal, educational environment teaching critical thinking activities and skills should be a necessary if not mandatory part of a business graduate's general education.

Most of the participants are "life-long learners", and indulge in self-study and journal reading on a very consistent basis. Two referred to television as an important part of their learning tools.

Attending industry meetings with their peers and having to supervise others provided opportunity for many. All participants liked the challenge presented by technology and the excitement of the changes it will bring.

Most stressed the value of being proficient in mathematics and suggested that having an understanding of accounting as an absolute necessity in business.

### **9) What critical thinking skills do you want business graduates to have?**

According to some of the participants, this answer depends on career objectives and, to some extent, “basic personality”, intellect, attitude, philosophy, and the like. One co-researcher said that using the term, “independent thinking skills” in place of “critical thinking skills” in this question would have been better, particularly when considering what these graduates should have been taught in the way of various thinking skills.

Another co-researcher went on to say that these desirable critical thinking should be defined as “the thinking skills necessary to look at a situation, a set of data, problem, etc. from an independent viewpoint, rather than an incremental one, or one which really represents the present or previous thinking of others.”

And finally, a revealing comment from one participant:

Independent thinking skills are not necessarily left brain skills; they probably utilise both hemispheres. In short, there is a tendency for people early in their careers and/or with minimal related experience to follow the path that has already been trod, rather than to think of a new, different, innovative, advanced solution, idea, theory, etc. (Lest I mislead, this tendency is by no means limited to people new in their careers; it is somewhat endemic in many organisations).

### **10) Please make suggestions, thoughts, or comments, on critical thinking and its importance to business:**

Some of the “action words” developed in this study appeared to be used more and more often in the dialogues with participants. I have presented the composites to demonstrate certain of these action phrases and words can be quite useful if the interpretation of their occurrence in context is remembered. Again, I remind readers that it is difficult to generalise beyond the study group for accurate and replicable data, but an

element of surmising can point directions at the very least. But to give a sense of what the conversations were like, I am quoting the gist of what several participants said in response to this question. One participant, a CEO in private industry stated:

Making, or taking, the time to think things through, that is re-examining what has happened while planning for the future possibilities before they occur, and as far forward in thinking as circumstances will allow, is the essential thing that I do. I think it's essential for success in business. I am the policy-maker, and ultimate responsibility lies in this office for whatever happens. I better be able to think critically, and about my own decisions especially, to ensure the whole organization survives. In terms of whether it's a valuable set of skills or activities - the answer is resounding yes! Find a way to teach people to think and we'll give them the skills to succeed in our organisation.

Another, from the public service group in the study says:

Planning and strategizing are the essential aspects of my role here. Proper planning and strategizing are the most important aspects of my job. I don't get too involved with everyday decision-making. That doesn't mean I'm not part of that process, just that I spend a good deal of my time thinking through long-range possibilities. I've got a few regular habits that relate to my thinking-time and the time I do it best. I try to arrive at 6:30, before most of the traffic is on the road and the rest of the employees are here. And I use the first hour or two of this quiet time to review the status of where I think we're going, and if corrections in direction need to be made.

Most of my decisions are not immediately felt throughout the organisation. But then there's the need sometimes to react to political "knee-jerks". That requires a different kind of critiquing, a thoughtful process of persuasion and euphemising, downplaying possible consequences by playing up to possible negative scenarios. Politicians want to do the best they can for the electorate and still get re-elected. I want the organisation to survive no matter who's in power, and that requires a lot of critical thought! Yes, please teach grads to think in critical ways. It is essential that they do so to progress.

Still another of the co-researcher responses, this time from someone in private industry:

Thinking in critical ways can often be a very enervating experience. I get to project what “should be” and the results of this kind of process can spell the difference between success and failure. I love the challenge of strategizing and plotting a course through the minefields out there. Of course if I screw up, there’s an awful lot of opportunity to criticise and be criticised, for not strategizing well enough. I guess that’s critical thinking on other peoples’ side as well. I try to have team sessions where people try out their strategies. These become a kind of thinking-brainstorming effort where we all reveal our innermost thoughts without fear. But then I’m the boss, and I’m the most fearful.

And finally the following statement from one of the participants is very representative of how many others view critical thinking skills, and is worth quoting as a close to this chapter:

Business and governments alike must continue toward more and more customization of products, services and programmes. The ability to develop unique, one-off solutions, rather than to tinker with the status quo, will be increasingly critical to both organizational, and individual success. Independent, creative, non-imitative thinking will equate to critical thinking and its importance will be fundamental.

One of the current fashionable phrases is to refer to the learning organization as being one which is contemporary and enlightened and which owes it’s core success to advocating, supporting and even compelling continuous learning by all its people.

While I accept this premise, I believe it is more important to first create the thinking organization which advocates, supports and rewards independent and critical thinking. Then perhaps the thinking organization can evolve into the learning organization.

## CHAPTER FIVE

### Interpretation of the Results

If I were to try and create a meaningful list of beneficial critical thinking activities and skills for graduates and near-graduates of college business programmes to practise and model, the list would undoubtedly be made up of many of the activities and skills in the Tables in Chapter 4. I would advise business educators to include these kinds of skills in business instruction wherever possible.

I would suggest to business students that they seek out successful business personnel as mentors, in various business areas, who display these traits and skills at the level to which they aspire and try to profile them in terms of their critical thinking skills as well as their working patterns.

Since reviewing the literature and conducting research into how critical thinking is perceived on the local business scene, I have concluded that critical thinking can be best defined by using “action words” or gerunds, in terms of the activities and skills that describe how people perform it. I have attempted to analyse, sort and classify these critical thinking activities and skills, using them. Now I will attempt to illustrate how these classifications can be further interpreted to form the basis of a heuristic for teaching critical thinking activities and skills in business education.

As revealed in the literature: Lavoie (1991), Langer (1990), De Bono (1993), Koffel (1994), Bailin, Case, Coombs (1993) are just a few examples among many who use gerunds to describe the activities and skills of critical thinking.

In the following Tables, I have borrowed six key words in Hyde and Bizar's *List of Intellectual Processes* (1989) as a means to further sort and categorise the gerunds drawn out in the study. I have used the following six terms and their abbreviations (in bold) to re-sort the tables of gerunds already drawn from the responses:

**s** = schema

**f** = focus

**p** = pattern

**e** = extension

**pr** = projection

**m** = metacognition

Tables 5 - 8 consist of the same action words as in Tables 1 -4 only re-sorted into the six categories borrowed from Hyde and Bizar's model. Table 5 consists of action words that co-researchers view as inherent in themselves and their colleagues.

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Table 5

Action Words Used by Co-Researchers to Describe Their Jobs (And Colleagues) in Terms of Critical Thinking Skills

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e	handling	f	synthesizing	m	reviewing
e	buying	f	underlining	m	revisiting
e	concerning	f	understanding	m	strategizing
e	leading	f	addressing	p	deciding
e	motivating	f	advising	p	diagnosing
e	offering	f	applying	p	discarding
e	organizing	f	defining	pr	amplifying
e	portraying	f	developing	pr	implying
e	presenting	m	analyzing	pr	disseminating
e	pricing	m	challenging	pr	distributing
e	problem-solving	m	controlling	s	expecting
e	recommending	m	evaluating	s	judging
e	supplying	m	formulating	s	surveying
f	examining	m	planning	s	communicating
f	observing	m	questioning		

s mediating

s mentoring

s perceiving

Table 6 consists of action words that describe critical thinking skills

desired in employees

Table 6

Action Words Used by Co-Researchers to Describe the Critical Thinking Skills They Want in Employees

e	figuring	m	formulating	pr	rewarding
e	finding	m	challenging	s	following
e	getting along	m	directing	s	identifying
e	pricing	m	dreaming	s	liaison
e	prob. solving	m	researching	s	producing
e	empathizing	m	reviewing	s	responsibility:
e	leading	m	strategizing	s	training
e	presenting	m	analyzing	s	trying
e	recommending	m	asking	s	acting
f	thinking ind.	m	controlling	s	being ethical
f	blending	p	coordinating	s	being flexible
f	receiving.	p	determining	s	being trainable
f	sorting	p	diagnosing	s	being willing
f	weighing	pr	prioritizing	s	guiding
f	working	pr	satisfying	s	listening
f	advising	pr	creating	s	maintaining
f	applying	pr	improving	s	making a profit
f	conducting	pr	innovating	s	managing
f	consulting	pr	playing	s	communicating
f	developing	pr	predicting		

Table 7 consists of action words that co-researchers used to describe critical, thinking skills in supervisors.

Table 7

Action Words that Co-Researchers Use to Describe the Critical Thinking Skills Exhibited by Supervisors

e	giving	e	leading	f	advising
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f synthesizing	m be moral	pr predicting
f objectivity	m strategizing	pr seeing(big pict.)
f defining needs	m supervising	s being altruistic
f keeping dist.	m formulating	s being autonomous
f maintaining	p collectingdata	s selling
m becircumspect	pr adding value	s listening
m be ethical	pr transforming	

Table 8 consists of action words that co-researchers used to represent ideal critical thinking skills in prospective employees.

Table 8

Action Words That Co-Researchers Used to Represent Ideal Critical Thinking Skills in Prospective Employees

e solving probs	m questioning	s willingness
e modeling	m researching	s work ethic
e portraying	p able to formulate	s ambitious
e presenting	p interpretive	s attention getting
f weighingdecisions	pr being provocative	s being pragmatic
f being objective	pr creative followers	s enthusiastic
f ability to absorb	pr generalist	s having initiative
f defining	s striving	s intelligent
f flexible	s tenacious	s investing sweat
m strategizing	s trainable	s learners
pr presenting	s liaison	s leading
pr creating	s being flexible	s recommending
pr predicting	s applying	s satisfying

Table 9 is a compilation of gerunds from Tables 1 - 8. This table and all the rest of Tables, were re-sorted again in May-June of 1995 with the help of another dialogue session involving myself and four of the original co-researchers.

This addendum to the original study was completed over a ten-day period. The process was simple after I telephoned the four participants and asked if they would assist in sorting out some of the lists of gerunds gathered in the first dialogues. They participants were happy to assist. We met at their offices.

Table 9

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A Complete List of Action Words From All Sources

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ability to absorb	examining	portraying
able to formulate	expecting	predicting
addressing	figuring	presenting
advising	finding	pricing
amplifying	flexible	prioritizing
analyzing	formulating	problem-solving
asking	generalist	producing
being autonomous	guiding	questioning
being circumspect	having initiative	recommending
being ethical	identifying	researching
being flexible	implying	responsibility:
being objective	improving	reviewing
being pragmatic	innovating	revisiting
blending	intelligent	rewarding
buying	interpretive	satisfying
challenging	judging	seeing big picture
collecting data	keeping distance	selling
communicating	leading	sorting
consulting	liaison	strategizing
creating	listening	striving
deciding	maintaining	surveying
defining	making a profit	synthesizing
defining needs	mentoring	tenacious
determining	modeling	thinking independently
developing	motivating	transforming
diagnosing	objectivity	trying
discarding	observing	underlining
disseminating	offering	understanding
dreaming	organizing	weighing decisions
empathizing	perceiving	willingness
enthusiastic	planning	working
evaluating	playing	

---

Up to this point, I had worked with sixteen participants to compose the previous series of Tables that reflected what the participants had said, and as is compiled in Chapter 4. From here on, I was collaborating with only four.

Before starting this final dialogue, I first asked these four participants for any further thoughts they might have on critical thinking. After sorting through this data and having them contribute what they wanted to add, we narrowed the task to re-sorting the lists into new forms.

I have reviewed the literature and conducted research into what critical thinking is perceived as on the local business scene. In both my reading and research, I have found that critical thinking can best be defined by using “action words” or gerunds, in terms of the activities and skills that describe how people perform it.

I have attempted to analyse, sort and classify these activities and skills, and now I will attempt to show how these classifications could form the basis of a heuristic for teaching critical thinking activities and skills in business. There is an overview of Hyde and Bizar’s Heuristic (1989, p.17) in Appendix D.

Again, I used the “key aspect” words listed in Hyde and Bizar’s *Overview of Intellectual Processes* (p.16) as a way to organise and categorise the complete list of action words identified as in the data collected. The aim of doing this was to build more meaningful data. I encouraged the co-researchers continuing suggestions for inclusion in these lists. Each of these final dialogues lasted about an hour, during which time we tried to decide which of the critical thinking activities and skills would be the most advantageous for the critical thinker to have in business. Table 10 is a synopsis of all the action words now aggregated and re-sorted according to the six categories I am working with.

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Table 10

Action Words From All Previously Coded Tables: Now Re-Sorted With Six Categories

s willingness

s trainable

s tenacious

s surveying	f underlining	e portraying
s striving	f training	e organizing
s selling	f listening	e offering
s satisfying	f flexible	e motivating
s recommending	f developing	e modeling
s perceiving	f defining	e leading
s mentoring	f advising	e handling
s mediating	f working	e giving
s listening	f weighing	e getting along
s liaison	f thinking ind.	e finding
s leading	f synthesizing	e figuring
s judging	f sorting	e empathizing
s investing sweat	f receiving	e concerning
s intelligent	f observing	e buying
s having initiative	f maintaining	pr seeing big picture
s expecting	f examining	pr being provocative
s enthusiastic	f developing	pr transforming
s defining	f defining needs	pr satisfying
s being pragmatic	f consulting	pr prioritizing
s being flexible	f conducting	pr presenting
s being autonomous	f blending	pr predicting
s being altruistic	f being objective	pr portraying
s attention getting	f applying	pr playing
s applying	f applying	pr innovating
s trying	f advising	pr improving
s training	f advising	pr implying
s responsibility	f advising	pr forwarding
s producing	f addressing	pr distributing
s managing	p synthesizing	pr disseminating
s maintaining	p interpretive	pr creating
s listening	p formulating	pr amplifying
s liaison	p discarding	pr adding value
s identifying	p diagnosing	m weighing decisions
s guiding	p developing	m supervising
s following	p determining	m strategizing
s communicating	p defining	m revisiting
s communicating	p deciding	m reviewing
s being willing	p coordinating	m researching
s being trainable	p collecting data	m researching
s being flexible	e leading	m questioning
s being ethical	e supplying	m questioning
s advising	e recommending	m planning
f acting	e problemsolving	m leading
f weighing decisions	e pricing	m formulating
f understanding	e presenting	m evaluating

m dreaming	m controlling	m be circumspect
m directing	m communicating	m bemoral
m diagnosing	m challenging	m asking
m determining	m being ethical	m analysing

---

s = Schema

The 38 entries in Table 11 under “schema” represent the largest group of compiled action words that relate to critical thinking activities and skills collected from these participants. This broad category relates to the way that business people, and business students, store and structure as well as access and retrieve prior knowledge or stored information. How information and thinking activities follow certain patterns is important.

For teachers of critical thinking, schema can mean helping to organize material for eventual presentation to student. To students, schema could be the ways to prepare oneself to accept and take on or conceive new knowledge or manipulate new information with existing schema. De Bono calls this “Lateral Thinking” (1984) and reasons that so much information is being presented to business people that we need to rename some of the terms of thinking in business itself. In *Surpetition* (1994) he refers to the need to find new ways to deal with new information and better more efficient ways to use our existing “scripts” of thought.

Schema are very important in business education. A teacher needs to facilitate student learning by recognising students will inductively understand concepts better, more quickly and thoroughly if they are taught within the relationship of their existing schemata.

Mind-mapping, journal keeping and thinking within an interpretative framework can all be used to help a business student relate to schema frameworks. It is a poor

business person who does not keep good records and analyse the trends and effects of the many variables that affect everyday business life. Business people depend on schema and record-keeping in many ways to help them succeed and predict further success in the future. It has been said that the real “currency” of business now and into the foreseeable future is information and the ways that it is handled. Without a good frame of reference and access to interpret it, information is useless.

Table 11

---

Schema - Category of Action Words


---

s acting	s expecting	s mentoring
s advising	s following	s perceiving
s applying	s guiding	s producing
s attention getting	s having initiative	s recommending
s being altruistic	s identifying	s responsibility
s being autonomous	s intelligent	s satisfying
s being ethical	s investing sweat	s selling
s being flexible	s judging	s striving
s being pragmatic	s leading	s surveying
s being trainable	s liaison	s tenacious
s being willing	s listening	s training
s communicating	s maintaining	s trying
s defining	s managing	s willingness
s enthusiastic	s mediating	

---

Case study is an excellent vehicle in which to use schematic frameworks because it helps the business student learn to draw on an existing pattern of investigation and analysis. Because schema are viewed as personal frameworks of organising and interpreting the world, they deal with tacit knowledge and assumptions as well as inferential knowledge. Evaluation and interpretation are the important aspects of schema and from the action words listed. It is easy to see the how these critical thinkers valued this kind of intellectual process.

f = Focus

Table 12 lists the 29 action words that these critical thinkers agree fit into the category of “focus”. This refers to a thinking person “looking for meaning” and relating new meaning to accepted or entrenched meaning (Hyde & Bizar, 1989).

What does a person focus on when confronted with new information? What are his or her perceptions about?

Table 12

Focus - Category of Action Words

f acting	f working	f developing
f weighing decisions	f weighing	f defining needs
f understanding	f thinking ind.	f consulting
f underlining	f synthesizing	f conducting
f training	f sorting	f blending
f listening	f receiving.	f being objective
f flexible	f observing	f applying
f developing	f maintaining	f advising
f defining	f examining	f addressing

According to Hyde and Bizar (1989) focus is intertwined with the broad areas of schema and metacognition. Teaching someone to focus or analyse one thing is not necessarily going to be easily transferable as a mode of thought process if the context is radically different. Analysis is very much contextual based. Consider trying to teach someone to analyse statistics and then hoping they might transfer that activity to political analysis. The point is that teachers of business must strive to broaden a student's contextual framework and use examples to show analysis techniques cross subject boundaries and content domains. Focusing is an intellectual exercise and can be learned so that it will cross from one domain to another if enough exposure to both contexts is presented.

Teaching students organising techniques, helping them research and write formal reports, demonstrating and modelling good analytical skills and insights in a transfer of knowledge, or perspective, are all good techniques to help students sharpen focus.

p = Pattern

The intellectual process we use to establish “pattern” in making sense of our complicated world is remarkable. We need to create pattern to make order out of chaos. Obviously this involves some reliance on schema and focusing our perceptions on past experiences. In doing this study I was continually looking for patterns that would help make sense of all the information that I was collecting. The Tables in this study, including their shapes and words, are an attempt to establish order and make information more meaningful. Because I am a neophyte researcher and writer in this style, I have struggled through many drafts of this thesis before this final one; all in the hope of producing an acceptable pattern. Table 13 has 12 entries from this data collection:

---

Table 13

Pattern - Category of Action Words

---

p synthesizing	p diagnosing	p deciding
p interpretive	p developing	p coordinating
p formulating	p determining	p collecting data
p discarding	p defining	

---

Teachers can make students aware of the important relationships between pattern and learning by shifting perspectives and presenting information in forms that arouse curiosity and challenge students to explore new ways of seeing and thinking. Presenting art as advertising of the middle ages or advertising as art of the 21st century is a good

example. Students will need to adjust their concepts and sense of mores to accept new patterns of critical thought.

e = Extension

Table 14 introduces the participants' 17 selections for "extension" which takes us to the more complicated levels of critical thinking that build on top of other kinds of intellectual processes. Group decision-making, problem solving, "brainstorming" ideas in co-op teams, learning how to work through pretend ethical dilemmas, conducting social research, preparing debate unconventional issues and topics are all good approaches to practising extension. Whenever people, either individually or in a group, have to stretch their imaginations and find a deeper solution to a problem they are practising extension. In the applied business workplace there are lots of these thought-provoking situations requiring critically careful actions and skills.

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Table 14

Extension - Category of Action Words

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e concerning	e leading	e presenting
e empathizing	e modeling	e pricing
e figuring	e motivating	e solving problems
e finding	e offering	e supplying
e giving	e organizing	e recommending
e handling	e portraying	

---

pr = Projection

The collection of critical thinking activities and skills represented by "projection" and chosen by these participants is representative of some very complex thinking as in Table 15. According to Hyde and Bizar (1989, p.45) projection thinking involves

“divergence from the direction application of what has been learned into new and creative expressions and understandings”.

This whole study was a form of projection for many of the participants and myself. In their own businesses they are constantly using projection techniques to critically think about the future, the allocation of “what if” scenarios for resource allocation, and how to innovate or create new kinds of marketplaces for their continued growth and success. There are lots of teaching strategies that can be used to incorporate practise in these kinds of critical thinking activities including brainstorming, case study role-playing, group projects designed and run by students, new-product design and mock or real opinion surveys to assess divergent points of view. It is extremely important that the teacher become a facilitator when instructing in the area of projection. A creative climate in the classroom involving students directing their own learning is an important step to success at projection.

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Table 15

Projection - Category of Action Words

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pr seeing big picture	pr predicting	pr forwarding
pr being provocative	pr portraying	pr distributing
pr transforming	pr playing	pr disseminating
pr satisfying	pr innovating	pr creating
pr prioritizing	pr improving	pr amplifying
pr presenting	pr implying	

---

m = Metacognition

Table 16 lists the participants’ 23 choices of metacognitive critical thinking strategies resulting from this study.

and reviewing techniques that focus on the self. According to theorists the need to learn more about these processes, to be empowered about thinking for oneself at a conscious level, and reflecting on the process of thought is extremely important.

Again the ubiquitous case study is an excellent tool for teaching metacognitive processes if the emphasis is on examining one's own thinking patterns and activities. This process of self-examination and reflection is essential to the successful business executive as the following list in Table 16 shows.

Table 16

Metacognition - Category of Action Words

m weighing-decisions	m questioning	m determining
m supervising	m planning	m controlling
m strategizing	m leading	m communicating
m revisiting	m formulating	m challenging
m reviewing	m evaluating	m being circumspect
m researching	m dreaming	m being moral
m researching	m directing	m asking
m questioning	m diagnosing	m analysing

There was also some discussion around trying to decide what critical thinking activities and skills might be involved in “strategic” (long term planning and decision-making) kinds of critical thinking, versus the critical thinking involved in carrying out a plan in a “tactical” (shorter-term planning and decision-making) way. It was generally agreed that the higher the position of the critical thinker, the more likely he or she would be expected to think critically in the long term, and certain skills and activities would reflect this expectation. On the other hand, the group agreed that the newer manager, or manager-in-training, would likely have a different set of critical thinking activities and skills expected of him or her.

While writing up these final results, I realized I might be introducing a new set of problems to this study with new data. In order not to nullify the original results in any way, but rather to use them to continue building on, and at the suggestion of one of my advisors, I decided that these new composites might form the basis of some different conclusions than the original research questions intended.

Further perusal of these latter Tables, in the context of the study, has helped me rationalize this exercise as a valid extension of the first dialogue compilations in spite of the reduced numbers of participants and potential problems noted above. These extra Tables are included here so that readers may arrive at their own conclusions about the value of this additional material.

For this group at least, it was a consensus decision to conclude that Table 17, therefore, represents the minimum skills and activities of a critical thinker in business at the local level. No matter the status, seniority or other aspects of a person's position in an organisation, these appear to be primary activities and skills necessary for successful critical thinking in business, and further should be considered as appropriate activities and skills to incorporate into a business curriculum.

Table 18 contains all the words that appear in more than one table of Tables 2 - 4. The revisited participants agree these are more specific in context-orientation than the words in Table 17. We agreed to note these were only slightly secondary in importance to the critical thinker beginning in business. The consensus was that the data in Tables 17 and 18 revealed the importance of both these sets of activities and skills as being of real importance to every person in business generally.

18 revealed the importance of both these sets of activities and skills as being of real importance to every person in business generally.

These gerunds were more generalisable than the descriptors that follow in Table 18, which appear only once in Tables 2 - 4 and the co-researchers and I concluded they are more relevant to positions and settings that are job-and-position oriented.

Table 17

These Action Words Represent Critical Thinking Skills Common to at Least Three of Tables 2- 4

e	problem-solving	m	questioning	s	advising
f	listening	m	strategizing	s	defining
m	determining	p	formulating		
m	leading	pr	presenting		

Table 18

These Action Words Are Critical Thinking Skills Common to at Least Two of Tables 2-4

e	solving probs	m	analyzing	pr	portraying
f	training	m	being ethical	pr	presenting
f	listening	m	challenging	pr	creating
f	advising	m	controlling	pr	predicting
m	revisiting	m	diagnosing	s	liaison
m	communicating	m	weigh decisions	s	being flexible
m	questioning	p	synthesizing	s	applying
m	researching	p	developing	s	leading
m	reviewing	p	formulating	s	recommending
m	strategizing	p	defining	s	satisfying

Table 19 is a composite of the agreed on thinking skills that these four participants concluded are probably of greater significance for the business critical thinker who is charged with the task of forecasting and positioning for a company in the long term. There are many words here that these participants agreed could be generalized across the face of

most businesses to describe the skills and activities of the higher levels of leadership and task orientation.

Table 19

Revisited Participants Agree These Action Words Relate to Critical Thinking Skills in Strategic Settings or Job Positions

ability to absorb	expecting	predicting
able to formulate	figuring	pricing
advising	finding	prioritizing
addressing	flexible	problem-solving
amplifying	formulating	producing
analyzing	generalist	questioning
asking	guiding	recommending
being autonomous	having initiative	researching
being circumspect	identifying	responsibility:
being ethical	implying	reviewing
being flexible	improving	revisiting
being objective	innovating	rewarding
being pragmatic	intelligent	satisfying
blending	interpretive	seeing (big picture)
buying	judging	selling
challenging	keeping distance	sorting
collecting data	leading	strategizing
defining needs	liaison	striving
communicating	listening	surveying
consulting	maintaining	synthesizing
creating	objectivity	tenacious
deciding	making a profit	thinking independently
defining	mentoring	transforming
determining	modeling	trying
developing	motivating	underlining
diagnosing	observing	weighing decisions
discarding	offering	willingness
disseminating	organizing	work ethic
evaluating	perceiving	understanding
dreaming	planning	working
empathizing	playing	
enthusiastic	portraying	
examining	presenting	

critical thinking skills and activities, there are special leadership and motivating qualities and skills found desirable in tacticians.

Table 20

Revisited Participants Agree These Action Words Relate to Critical Thinking Skills in Tactical Settings or Job Positions

ability to absorb	distributing	observing
able to formulate	evaluating	offering
acting	empathizing	organizing
adding value	enthusiastic	perceiving
addressing	examining	planning
advising	expecting	portraying
amplifying	figuring	presenting
analyzing	finding	pricing
applying	flexible	prioritizing
asking	following	problem-solving
attention getting	formulating	producing
being autonomous	getting along	questioning
being ethical	giving,	receiving.
being flexible	guiding	recommending
being objective	handling	researching
being trainable	having initiative	responsibility:
being willing	identifying	reviewing
blending	implying	rewarding
buying	improving	satisfying
being pragmatic	innovating	selling
collecting data	intelligent	strategizing
communicating	interpretive	sorting
concerning	investing sweat	supervising
conducting	judging	supplying
consulting	leading	surveying
controlling	liaison	synthesizing
coordinating	listening	taking,
deciding	maintaining	tenacious
defining	objectivity	training
determining	making a profit	transforming
developing	managing	trying
diagnosing	mediating	underlining
directing	mentoring	understanding
discarding	modeling	willingness
disseminating	motivating	

The next two Tables, 21 and 22, contain a rather more esoteric list of words. This compilation was initially found by all to be much more difficult to assess and conclude as to meaning and intent. Nevertheless, these terminologies for some, purport to be related to deciding which of the action words were seen as intrinsic and extrinsic to a critical thinker's needs in terms of their likely influence on the persons' co-workers (without discriminating subordinate or superordinate roles).

Not surprisingly, we were not able to discriminate as even a small group, the differences between the use and meaning in context of these terms as being intrinsic or extrinsic on any kind of consensus basis. In fact, the task of arriving at the lists in the following Tables proved to us all that generalizing complicated and difficult thought processes outside of contextual format, was for all practical purposes nearly impossible. I recognize that the exercise, although not successful as intended, was still a valuable one because it emphasized how this kind of research can be so useful in pointing out that very discrete thought processes cannot be easily defined and identified as separate one from another outside of context. There is a natural ambiguity that exists with solo words, and a propensity for them to be misunderstood when they are used out of context.

I offer these last tables without further analysis or comment, as a possible starting point for further reflection and study.

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Table 21

Revisited Participants Agree These Action Might Have "Intrinsic" Value and Probably Have an Indirect Effect on Others

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ability to absorb	being circumspect	blending
able to formulate	being ethical	challenging
ambitious	being flexible	defining needs
analyzing	being moral	communicating
being altruistic	being objective	concerning
being autonomous	being pragmatic	consulting

Table 21

Revisited Participants Agree These Action Might Have “Intrinsic” Value and Probably Have an Indirect Effect on Others

ability to absorb	discarding	perceiving
able to formulate	evaluating	planning
ambitious	dreaming	predicting
analyzing	empathizing	presenting
being altruistic	examining	prioritizing
being autonomous	finding	problem-solving
being circumspect	formulating	questioning
being ethical	generalist	recommending
being flexible	giving,	researching
being moral	having initiative	reviewing
being objective	identifying	revisiting
being pragmatic	implying	satisfying
blending	improving	seeing big picture
challenging	innovating	strategizing
defining needs	intelligent	surveying
communicating	interpretive	synthesizing
concerning	judging	taking,
consulting	leading	tenacious
creating	listening	thinking independently
deciding	objectivity	trainable
defining	managing	transforming
determining	mentoring	trying
developing	observing	understanding
diagnosing	offering	

Table 22

Revisited Participants Agree These Action Words Might Have “Extrinsic” Value and Probably Have a Direct Effect on Others

ability to absorb	being willing	developing
acting	blending	diagnosing
adding value	challenging	directing
addressing	collecting data	discarding
advising	communicating	disseminating
amplifying	consulting	dreaming
analyzing	controlling	empathizing
applying	controlling	enthusiastic
attention getting	coordinating	finding
being flexible	deciding	flexible
being provocative	defining	getting along
being trainable	determining	giving

presenting	rewarding	trainable
presenting	satisfying	transforming
presenting	selling	trying
pricing	solving problems	underlining
prioritizing	sorting	understanding
problem-solving	striving	weighing decisions
questioning	supervising	willingness
recommending	supplying	work ethic
recommending	synthesizing	
revisiting	tenacious	

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### Profiles

It was also my intent in doing this study, that critical thinking skills and requirements expected by business people generally on the local scene could possibly be categorised and eventually made available in more than list form as in the foregoing Tables. As an example of the more descriptive kind of profile that might be used, I have produced a composite profile from the data gathered about my co-researchers and present it in Figure 4. Groups composed of business people in ever more narrow specialities, could be brought together in the future to contribute meaningful data in their specific disciplines and profiles might be formed from them in turn.

These profiles could be developed for very discrete programmemes. They might show the direction and extent of the critical thinking processes required for management positions in any specific field.

Several specific profiles of critical thinking skills could be developed to enhance students' choices of courses, and help near-graduates prepare for the job market. These should be specific to a discipline. This would allow students to prepare for specific vocational pursuits in specific ways, based on the context of the discipline. Also, these

These profiles could be developed for very discrete programmes. They might show the direction and extent of the critical thinking processes required for management positions in any specific field.

Several specific profiles of critical thinking skills could be developed to enhance students' choices of courses, and help near-graduates prepare for the job market. These should be specific to a discipline. This would allow students to prepare for specific vocational pursuits in specific ways, based on the context of the discipline. Also, these profiles might eventually be used to help tailor programmes to suit individual students' capabilities.

The following Figure 1 summarises this composite profile created with the data collected about the participants:

Figure 3. A composite profile

**Personal Characteristics:**

45 -55 years of age.

Has moved up (or laterally) at least three times so far.

Expects to move at least twice more, often to completely different vocation.

**Education and Experience:**

-Average of Bachelor's level plus one advanced designation (engineer, accountant, MBA or equivalent or trade qualifications)

-At least 15 years of working experience with a minimum of 10 years in senior management.

-At least five years in supplementary training programmes.

-Involved in ongoing training, at least in one formal educational institute, within the last five years.

**Gender:**

-11 males and 4 females

**Place of work:**

-8 in private Sector, 7 in Public Sector

**Income levels:**

\$75,000 — \$150,000 plus bonuses per annum.

**Job status:**

-mid management ( Director level in Government, GM in private industry)

-senior management ( Dep. Minister, or Sr. VP in Govt., CEO or Sr. Exec in private industry)

**Average working day:**

- rise at 5:30 am, read industry reports, daily paper arrives at 6:30, possibly log onto Infonet for latest world & business news before.

- 1st meeting at 8:30, or review electronic mail & messages at office

or home (often at 6:30) responses to urgent matters.

- meetings scheduled throughout day on average of one every 45 minutes, including lunch. (twice a week takes 2 hour lunch for personal matters)
- Important strategy, budget and planning meetings spread throughout week, always leave two hours in every day for emergencies, used as “walk around and drop-in time” otherwise
- rarely travel except on business and time is of the essence. Quickly in and out of meetings and back to office. Few leisure perks.
- always on -call, at the direction of circumstance and demands of all staff. Usually has “open-door policy” but little idle chit-chat.
- never late, respects other people’s time too much
- schedules performance reviews and staff meetings for early morning hours. Usually doesn’t mix lunch with staff, often with clients.
- does most of own word processing, filing etc..
- doesn’t have a secretary rather a credit manager, receptionist or office ally, often answers own phone
- has little time for trivia, but loves a good joke and always ready to show compassion and concern for staff
- never leaves office before 6, often delayed until 7:30, bed by 12
- has a passion for work and loves to accomplish things.
- is motivated by challenge rather than ambition, accomplishments rather than money.
- never consider self-interests before company’s.
- always optimistic, seldom depressed, usually type A

**Self-image:**

- hard-working and attentive
- responsible to company and markets or public
- as mentors for employees
- as final arbiters in conflict with staff

- good at financial and regulatory stuff
- inundated with paperwork (better with computers)
- never seem to have enough time to do all things they want to in day
- often dissatisfied with own performance
- always educating themselves and keeping up with industry
- always planning
- seldom watch TV, even for news, more interested in books, magazines, etc.
- have other passions besides work, including family and a hobby
- very seldom rattled, nearly never panic.

**Critical thinking skills they admire:**

- ability to discover or diagnose problems from myriad facts
- creative approaches to solutions to problems
- give unselfish praise and approval for other's good ideas
- the ability to analyse fact from fancy
- the ability to reflect on and see things from different perspective
- the ability to sum up important points, prioritises them and present views clearly and with little bias
- the ability to synthesise and make decisions taking all factors into account
- the ability to separate important detail from chaff and incorporate into solutions
- the ability to formulate and present arguments rationally but with presence and conviction
- the ability to challenge and willingness to reward thinkers for their productivity.

**Critical thinking skills they want in employees:**

*Communicative:* that is able to take in and synthesise facts and detail and sort out important from trivial, the present synopsis clearly and with aplomb.

*Trainable:* Possessed of an inquiring mind. Seeks reasons why?

*Proactive:* Does not wait for direction but rather takes direction and then innovates within guidelines to get the job done.

*Conservative:* Not a loose cannon. Will check and make sure actions will be beneficial to company and reflect responsible approach to activities i.e. thinks critically about actions.

*Enthusiastic:* Wants to get ahead but thinks of consequences of actions and sets goals and objectives for successful completion.

*Flexible:* Wants employees to show they can be persuaded through debate and argument, and still be rewarded for convictions and confidence.

*Generalist:* Would rather hire a person with good business skills and able to critically think through decisions than one who is a technical expert without these same skills. Says technical skills can be taught on job, common sense business skill and though or attitude cannot.

*Tenacious:* Wants someone with fierce loyalty and willingness to stay at things until they are complete.

*Pragmatist:* Needs to adjust to fit situation. Cannot be square peg in round hole. Should be a team player and able to get along with everyone.

*Good forecaster:* Should be able to see through the action and determine best course to take in achieving goals for company and self.

*Work ethic:* Should have willingness to stick to it and get the job done but not at any cost. Wants people who are self-directed but, morally honest and dedicated to caring for others and the public interest. Not afraid to question ethics of actions but not wanting to impose religion on others.

*Learners:* should be interested in continuing learning of industry and professional training. At the very least continue to master job.

*Problem-solver:* Must be able to order facts and intuition and use critical thinking skills to analyse and strategize best solutions to fit cases at hand.

*Presenting skills:* After knowing all facts, should be able to present with dramatic flair in an honest and forthright manner, the information with or without personal opinion attached.

## CHAPTER SIX

### Discussion and Conclusion

Every thought tends to connect something with something else, to establish a relationship with something else, to establish a relationship between things. Every thought moves, grows and develops, fulfils a function, solves a problem. This flow of thought occurs as an inner movement through a series of planes. An analysis of the interaction of thought and word must begin with an investigation of the different phases and planes a thought traverses before it is embodied in words (Vygotsky, 1962, p. 125).

This is an exploratory, descriptive study based on a small, admittedly biased (in quantitative terms) sample. The participants of the study are all members of a local business community that could be described as isolated from the mainstream. Because of the geographic circumstances that finds participants in a relatively small metropolitan area (approximately 250,000), on an island, and with a business culture that predominates in three industries (tourism, government, and retail-support- services), a reader could argue against the efficacy of any conclusions and recommendations drawn as not being generalizable to any other population. I will be the first to agree.

Since qualitative research is focused on and supported by the words and actions of people in a specific context, and the data that is collected through preparatory materials, dialogues, observations, or any other means has to be understood in its contextual meaning, most research cannot be “held constant” or ignored in context (Miles and Huberman, 1984).

A researcher cannot focus solely on individual behaviour without attending to contexts. Any such results would be fraught with potential misinterpretations of

circumstances and events and “missed” meanings. According to Misher (1979), context drives the way we understand the meaning of things, and contexts incorporate meaning. It would be interesting to be able to illustrate the working environments of the participants in this study in more complete detail and in context, but this is very difficult to do in the write-up of this study because of privacy issues.

Since this study is designed to be only a first step in obtaining information that is specific to the needs of a post-secondary business programme in our specific local area, and the intent is not to generalise findings beyond it, I feel justified in publishing the findings for that specific purpose.

While these findings are not generalizable, others may wish to replicate this study with a view to unique situations, or design other studies on this topic, taking into account their own patently unique limitations.

In my approximately thirty working years, the last eighteen as an educator in the business of teaching business, I have been immersed in a special subculture *milieu* called business and its ancillary pedagogy, business education. This world has its own special language, idioms, and precedents. As a neophyte researcher but ardent observer in this culture, I have intuitively gravitated from the quantitative or positivist view of research to the more passive, but still very useful, qualitative one. I believe there should be recognition and elevation of the importance of the qualitative research in the business milieu.

#### Dynamic dialogues

Some other important points about the study that are central to the discussion and conclusions:

- I had about 110 pages of field notes, spent 10 full days in the field, and had a collection of notes on responses. All of these comments have been recorded as interpreted throughout as results. During the study, information was shared with participants as collected. In this way, the analysis of the data fed into the process of research design (Morris, 1994).
- The collection of data helped to create a path to follow. The final attainment of collecting and interpreting the data is, I believe, very true to the people involved and required that the language used by all of us was discovered and translated by the participants, including me, to finally “re-present” in feedback, their commentaries to themselves. In essence we created a kind of self-talk within the paradigm of local business activity (Maxwell, 1990).
- The accounts of answers (even though abbreviated) are authentic records of the co-researcher’s thoughts.
- Since all the co-researchers and I have been immersed in this culture of business and business education for at least 5 years, I believe we have contributed to the emerging theories about thinking in business, at the local level.
- In qualitative research, it is common for the researcher to keep a keen eye for the representative research, and to include and make much of the best responses. I did that in questions 3, 9 and 10.
- In qualitative research, the gathering of data is open to discovery and is internally driven. Ethnographers discover “what the study was really about”, in this case the “business world”.
- The ethnography of communication involves an understanding and broadening of values and concepts. According to research field-workers, ethnography is “good in and of itself”. By understanding what others say we gain insight into ourselves (Scherzer, 1993). Users of ethnography use it to improve some practice in their field.
- Qualitative research and ethnography improves the quality of inferences (Maxwell, 1990). It informs the assumptions of professionals. People in the field will determine whether any of the suggestions, conclusions and recommendations turn out to be worthwhile.

According to Miles and Huberman (1984) the best approach for a qualitative researcher to take is not to pre-code any datum until after it has been collected and the researcher has had a chance to see how it functions or “nests” in its context, as well as trying to determine how many variations of it there are. This is because data sometimes can have a tendency to reflect the codes that are supposed to represent them. In this approach there is “a code-in-use flavour” as compared to a “prefabricated start list”. In

such situations, the analyst can be more open-minded and context-sensitive (Miles & Huberman, 1984).

The danger here, of course, is that the researcher may code with retrospective hindsight and find too much coherence in the data. According to Miles and Huberman (1984), if a researcher instead codes on an ongoing basis, as I did, the coding process can help drive the research as well as getting the data ready. Instead of coding later and possibly “enfeebling the analysis”, in their view qualitative research should strive to be “iterative, where one pass at a site leads to a reshaping of one’s perspective and of one’s instrumentation for the next pass”(p. 63).

One way I dealt with these problems was by dividing my data into general headings, or categories, and assigning datum to categories. The following Figure 2 shows how I categorised the data into six broad categories:

### **Stage 1 of compiling dialogues**

1. *setting/context*: general information on settings, participants.
2. *perspectives*: participants' critical ways of thinking and thinking orientation
3. *process*: sequences, flow, changes over time of action words and phrases
4. *activities*: regularly occurring use of action words, phrases, and critical thought
5. *events*: specific activities such as planning and strategizing meetings
6. *strategies*: ways of accomplishing things with critical thinking activities

### **Stage 2 of compilation**

1. Here is how these broad categories looked mid-stream in the study (after the first dialogues were complete, but before the final dialogues):*setting/context*: specifics on participants, revision of language to fit context
2. *perspectives*: contextual differences worked out with action words and phrases
3. *process*: continue as before
4. *activities*: dialogues to work out contrasts and comparisons of terminology in checking back activities
5. *events*: dialogues, checking back, reformation of composites
6. *strategies*: find alternative terminology to substitute for business equivalents

### **Stage 3 of compilation and interpretation**

1. *perspectives*: discrete differences if any, noted in expected critical thinking activities amongst supervisors, peers and employees.
2. *process*: specific lists of critical thinking action words developed and profiles started of business critical thinkers.
3. *activities*: analyse results to find critical thinking skills and activities that could be incorporated into business classrooms. Define how to facilitate for transfer.
4. *events*: plan to use discovered skills and activities in class and encourage building of critical thinking profiles.
5. *strategies*: enlist cross-section of people (including learners) in ongoing process of discovering ways to facilitate learning of critical thinking skills.
  - recommend examination of curriculum to accommodate critical thinking skill training in all courses
  - review existing course components to accommodate critical thinking elements and enlarge profiles
6. *setting/context*: context-specific situations in which critical thinking is used or could be practised.

Figure 2. Stages of categorising data.

I used this approach in order to try and avoid difficulties. By keeping the broad general categories intact, but changing the entries as part of my field experience, the study evolved nicely as participants were brought to an understanding of existing concepts and then introduced to new concepts (sometimes it was just different vocabularies specific to their context). All this caused changes in the results from my initial expectations while allowing for the incorporation of different outcomes. I didn't want to fall into the trap of "force-fitting" the data into a pre-selected list of codes that would not encourage the discovery of colloquial and localised factors; and that in the end might undermine my initial concept and intent of collecting and aggregating "evolving" data into useful composites for later analysis.

After the final dialogues, the checking-back being done, I selected a group that represented 50% of the participants. Then I recomposed my general categories once more.

I have tried to offer intuitive and useful commentary in this section and to avoid "lack of meaning" in expressions and deductions that are themselves meaningless in their vagueness. In that light there are some descriptive Tables to display data, and an attempt to track the chronology of data collection. I have tried to be inductively oriented in my methodology and the collection of the data and in turn to be deductive in my presentation of findings, and ultimately the recommendations finally made.

The schematic in Appendix E illustrates how the study evolved from conception to final defence. As I moved from stage to stage, I was influenced by my advisors and participants at various points and as I discovered difficulties, I circled back to rethink the

themes and records I had kept. The collaboration of my participants and the advice of my advisors were invaluable to keep the study on course to successful completion.

### Defining critical thought

Richard Paul (1995) says the following in a promotional brochure for the upcoming *Critical Thinking Conference* in Sonoma, California in July (1995):

The majority of teachers and students currently approach content, not as a mode of thinking, not as a system for thought, nor even as a system of thought, but rather as a sequence of stuff to be routinely 'covered' and committed to memory. When content is approached in this lower order way, there is no basis for intellectual growth, there are no deep structures of knowledge formed, no basis for long term grasp and control.

Critical thinking, in contrast, approaches all content explicitly as thinking. It takes thinking apart. It weaves new thinking into old. It assesses thinking. It applies thinking. It is thinking about thinking, while thinking of an order to make thinking better: more clear, more accurate, more relevant, more deep, more broad, and more effective.

I first created preparatory material and followed it with in-depth dialogues. By working with a number of local business employers through that process, I explored their ideas about critical thinking.

As stated at the outset, the term critical thinking has a plethora of meanings that I think are all correctly applicable in the context in which they are used. Without taking the escape hatch offered by Frank Smith and disputing the need to define the term as separate from any universal thinking activity, I think in the context of business generally and this

study of fifteen persons specifically, that I can arrive at a “workable and useful” definition of the term within the limitations noted.

In my interpretation of the collective mind of these study participants, critical thinking involves the kind of thinking activity which is done at a higher plane than the ordinary. It requires focus and concentration, which can be helped by a positive physical and mental environment in which one’s thoughts are valued and encouraged by the very activity of thinking critically, which in and of itself is rewarding.

Critical thinking appears to be a very important activity as evidenced by the stress and value placed on it by the participants as they struggled with clarifying statements to define it and then postulated how it affects their individual need to operate their respective businesses.

In spite of several of participants referring to critical thinking as being “equivalent to strategic thinking”, and others at first disagreeing on the use of that term as a synonym, it would appear that all are in agreement that critical thinking is crucial as an activity and the ability to think critically is a highly desirable skill in business. Whether it is, as in one co-researcher’s mind, “something done in a structured, logical methodology — seeking to define problems and opportunities”; or as in another response, “the kind of thinking that causes one to revisit and re-evaluate thoughts”; another to, “think in an uncluttered space”; and still another citing, “thought that impacts on the everyday operations of the company” - in the final analysis the terms essentially means the same thing. All the diverse definitions are context-based within the co-researcher’s own reality. Yet they are all very alike. All these attempts at definition, and most of those not cited, are indicative that the

participants' view critical thinking activities as common and extremely important, even crucial to the well-being of their companies. They see themselves engaging in "it" almost all the time. They all view "it" as having enormous potential consequences and they all view "it" as progressive or "forward thinking".

Nevertheless, they see critical thinking as the kind of thinking which extrapolates and gives direction and guidance to actions they are considering taking. No matter how long the time they take to indulge in thinking critically in their respective situations, they almost all see it as a somewhat creative, certainly intuitive, and definitely logic-based, cognitive-experiential-based activity at the highest level.

#### Implications for a business curriculum

Any curriculum that is developed to foster critical thinking needs to focus instruction on intellectual processes and on what content is being thought about during the thinking. Process and content are inextricably interwoven. There is no way of learning a body of content without learning how to use it in thinking something through.

The following describes the general shape of a curriculum to foster the development of critical thinking:

#### Process

Teaching for process, rather than simply accepting solutions, is highly desirable in order to support critical thinking environments, and in turn is conducive to its development. Citing solutions does not provide students with any incentives to use critical thinking skills in a business course. Instructors have to remember that a "correct answer"

does not equate to formulating a correct answer, and does not contribute to, or make people aware of the need to develop their own problem-solving skills.

Creating controversies, encouraging students to challenge assumptions, and creating tests to teach instead of tests for grading, could all be the natural outcomes of such an approach.

Better tools have to be continually developed in conjunction with this approach to teaching business, including tools that stress analysis and the synthesis and dissemination of vast quantities of information.

Let us call “process evaluation” by another name, “formative evaluation”. This renaming underlines the need to emphasise the continuing re-examination of the programmes that educators generally, and in this context business educators, need in order to remain vigilant in seeking to change the goals and objectives of all testing methods.

Stufflebeam’s (1965) CIPP model (context, input, process, and product) should be borne in mind whenever a new programme is being contemplated. This recognises that teaching for process is teaching for product. The following is loosely based on Kneedler’s Critical Thinking Skills Process Model. I have altered it to reflect the differences in age of students and the pedagogical context. Figure 3 illustrates a way in which the content, process and product are interrelated.

**UNASSESSED INFORMATION**

From business spheres, contacts, associations, readings, school, home, communitybooks, magazines, television, newspapers, maps, and so forth.

**BASIC SKILLS**

The essential skills of business including an understanding of marketing, accounting, law etc., that help organise and prepare information, such as ability to understand and use written and related business materials, locate and organise information in situation context and locate and use reference materials and vocabulary pertinent to the business and customer needs.

**CRITICAL THINKING SKILLS DIAGNOSE, DEFINE AND CLARIFY A MULTITUDE OF POTENTIAL AND REAL PROBLEMS ON AN ONGOING BASIS**

- a. Identify central issues or problems.
- b. Compare similarities and differences
- c. Determine which information is relevant
- d. Formulate appropriate questions
- e. Express problems clearly and concisely

**JUDGING INFORMATION RELATED TO THE PROBLEM**

- a. Distinguish among fact, opinion, and reasoned judgement
- b. Check consistency
- c. Identify unstated assumptions
- d. Recognise stereotypes and clichés
- e. Recognise bias, emotional factors, propaganda, and semantic slanting
- f. Recognise value orientations and ideologies

**SOLVING PROBLEMS/DRAWING CONCLUSIONS**

- a. Recognise the adequacy of data
- b. Identify reasonable alternatives
- c. Test conclusions or hypotheses
- d. Predict probable consequences

**PROCESS OUTCOMES**

**HAVING LEARNED CRITICAL THINKING SKILLS**

**BUSINESS STUDENTS SHOULD BE ABLE TO:**

- Assess information, define problems, weigh evidence, and draw conclusions.
- Participate effectively as citizens and contributing business people in any culture to which they are assigned to accomplish- their business goals.
- When necessary and for the success of the business entity, and their personal selves, defend and justify intellectual and personal values, present and critique arguments, and most importantly, show appreciation for the viewpoints of others.

**Figure 3.** A critical thinking skills process model

### Group learning

During the dialogues, the co-researchers frequently pointed out the importance of people in their companies working together in teams or groups. Group projects are a natural place for the facilitated class to indulge in the practice of critical thinking skills. The evidence of "what, where and how" facts are presented, has a great bearing on elucidating the final solution or result of a problem, which in turn is only enhanced by the "why" inherent in all good answer and solution testing.

The group project strategy is also similar to the teamwork usually required by companies for major projects. Stress on the individual in the decision-making role and the analysis role is key, although each group member serves a distinct but contributory function.

Very important here is the interim report and feedback necessary to maintain momentum and accomplish an ongoing assessment of each individual's commitment.

### Modeling

“By wondering aloud, teachers simultaneously convey interest in and respect for student thought and model analytical moves for students (Paul & Binker” 1989,p. 269).

Each of the participants saw themselves as models for their work forces. The importance of modelling came out regularly in informal discussion and was supported in the literature. Through observation of these individuals over the past years, I can agree with the notion that they are exceptional models for their work force. This pertains to both their business actions and their thinking styles.

We have to teach thinking process, model thinking, and teach for transfer to other technologies. The lateral transfer of thinking as a tool is the ultimate goal. By providing specifics in the form of critical thinking tools for students, in order to help them in their approach to thinking; striving to develop hypotheses; verifying the reliability of their sources; and practising to achieve analytical insights, then testing them, we can help students to gain a foothold in the modern business world. By modelling critical thinking for students, a facilitator provides a role model for thinking which students will emulate and remember long after the content material of the text has faded.

### Transfer

Whether relating thinking skills for transfer to other disciplines or using creative thinking approaches, instruction must be developed to give students consistent examples that can be adopted on the job (Fogarty, 1989).

Some ways to teach for transfer include:

- using specific and parallel examples
- demonstrating transferability
- using parallel skills
- supporting with proofs

Choosing skills representative of the job requires the facilitator to develop research capable of identifying the top skills as defined by the job's performance requirements.

Business curricula could be rewritten so that the content material is clustered and parallel to specific job skills. The culmination of the learning evaluation then becomes a near-performance of those job skills.

Koffel (1994) supplies some examples of the kinds of critical thinking skills that are not always facilitated in a business class setting, and certainly should be evaluated as an important component of every business course assessment, include the following:

- an ability to write reports.
- communicating verbally to clients/employees.
- analysing a client's situations.
- researching information.
- developing and writing a proposed plan.
- portraying and presenting.
- scheduling activities in order to meet deadlines.

A fallacy of our educational system is the continual emphasis educators place on "right vs. wrong" solutions to problems. Employers do not have a supply of right answers. Rather, problems generally have a multitude of solutions. A good or "right" solution is the best one can hope for. By being put into a position where one has to create and analyse many possibilities, establish the positives and negatives for all, and finally choose a solution appropriate to the situation, the student is put into the role of creative and critical thinker. Evaluation is the key here, as the educator must appraise and value the students' attempts to find solutions, while recognising the subjective aspects of the task. Facilitator judgement is very important in reinforcing student responses.

### Metacognition

By becoming conscious of their own critical thinking process and practising step-by-step reasoning while writing down their reasoning processes for some of the problems or issues students face, facilitators can systematically establish the steps of reasoning they use themselves in solving problems. Then in turn they can recite and work through these

steps for the benefit of students. If allowed to contribute input and help throughout this thinking process, students will undoubtedly learn to use their own thinking capacities.

Using metacognition, business instructors can encourage their own critical thinking processes, which in turn will allow and encourage students to think for themselves, to question, to challenge (the instructor's and the textbook) authorities. This atmosphere encourages the freedom to argue, create, challenge and contribute that will challenge everyone. All of this requires dedication and practice. Eventually replacing instruction with facilitation will cause people to have to invest, justify and support their conclusions.

#### Integrating critical thinking into curriculum

There are various teaching methods that integrate, or put together in realistic contexts an array of critical thinking activities to develop skills. Case studies and journal writing are two such methods.

##### Case study.

As the participants identified, the ability to interpret difficult or crucial situations is especially important to most potential employees. In case studies, it is common practice to place students in groups of 3-5 to work collaboratively to identify and solve problems of varying complexity. Encouraging students to take on the role of "peer coach" advising, observing and commenting on the critical thinking of the group participants is a new concept. In such a scenario the facilitator can coach or help participants to coach each other, and in this role to criticise and review their own and others' thinking skills.

Koffel (1994) offers some general guidelines to pairing for enhancing groups for the best climate of critical thinking and peer-coaching to occur:

- no pre-approved partnerships;

- coaches should attempt to identify faulty thinking;
- everyone should strive to be in a "helping-mentor" role;
- recognise there is a difference between "coaching and criticism";
- "active listening" skills should be encouraged for all.

Establishing priorities and attempting to approach projects as if they were a series of problems needing critical thinking priorities will cause a lot of interaction between group members. Learning is accomplished vicariously, by observing and by modelling.

Business firms require teamwork and co-operation to accomplish similar kinds of activities successfully, so practice of this type will help establish a template of critical thinking behaviours for use in the future.

To teach using cases is not for the weak-willed and lazy teacher. The case method requires that the teacher becomes a learner and at best a facilitator for the learning of others. Figure 4 illustrates how the case-method teacher could help students concentrate on critical thinking processes by being aware of the six intellectual processes.

- Identify what appears to be the main problem. - schema
- Identify other problems that influence the main problem. - projection
- Identify issues that relate to all problems. - focus
- Identify possible causes for problems - schema
- Identify evidence or facts from the case that relate to possible causes. - focus
- Develop hypotheses about causes of problems. metacognition
- Test hypothesis using evidence and theories. -projection
- Make a judgement on most likely causes. - metacognition
- Develop possible solutions for each problem based on theoretical cause and also possible solutions. - extension
- Study each possible solution and forecast effects of solution on future situation. - extension
- Develop solution scenario for resolving the problem. - projection
- Develop detailed solutions.- metacognition
- Document your thinking process.- pattern
- Write final case study analysis with recommended solution(s).- pattern

Figure 4. A heuristic for analysing cases using critical thinking.

This guide might be used to give students direction for identifying critical thinking problems and issues on their own. Then they could use the case study information to think through possible causes and solutions about the ways they arrived at solutions and the valuable thinking patterns that could emerge. The model provides for critically assessing decision-making as well, because the student makes decisions on the issues, their causes, and finally recommendations and solutions. It provides the student with more real critical thinking practice than just solving solving problems.

### Journals.

Students can be made aware of their own thinking processes and approaches to problem-solving, decision making, and creative thinking. Metacognitive aspects could be instructed as a part when problems are understood, and new teaching/facilitating methods could be enhanced if students were asked to think about their thinking processes. By keeping a log of thought processes as they attempt assigned case studies, problems, and issues, students become aware of patterns in thinking approaches.

A sample of solutions should be included with any assignment. A checklist or "thinking-pattern-model" previously discussed in class, might greatly enhance thinking processes. This handout should include a full description of the kinds of instructor expectations about critical thinking required through this exercise so that students can learn to adjust their approaches to certain thinking problems and develop more successful solutions. (Blench and Fogarty, 1986)

What about evaluation and feedback? As Raths, Wassermann, Jonas and Rothstein (1986 p.187) say in *Teaching for Thinking*, maybe the best kind of feedback concentrates

on the kind of comments that cause students to “reflect more upon their ideas — and through the encouragement of deeper analyses and examinations”. All this amounts to making comments in a non punitive way with a considerate manner.

Perhaps we should also be reconsidering the value and purpose of examinations which might be used to reward students’ thinking processes rather than their memory skills. More open book exams, and group exams, are just two possible ways to achieve this.

In order for these approaches to be successful we would have to bend some “rules” and most certainly we need to adjust our expectations and goals fairly drastically. In this process we would address the expectations and needs of students as well. It is all very well to talk about facilitating critical thinking skills, but we need to develop tools to measure progress clearly enough to develop those skills in ways that can demonstrate to one and all, students included, that definite progress in improving thinking skills is possible.

It should be the business educator’s primary role to provide opportunities for students to take up thinking skills and attempt to deal with ever more complex and difficult challenges, developing solutions in ways that ultimately empower students to face the realities of the real business world and contribute positively. In my opinion, there is no more necessary role for a teacher than to be the catalyst for a student’s personal growth in thinking.

## Evaluation procedures

I believe business educators need to design measuring and “testing” instruments to assess progress in critical thinking development. They need to bear in mind the real purpose of the test itself, the importance of context, and the value of practising skills in realistic experiential settings. A test should never be used to expose what the student does not know how to do or what to remember, but rather to encourage and amplify in a motivating and rewarding way the kinds of thinking skills and knowledge that the student is able to bring to situation analysis and problem-solving.

A clear understanding of this formative versus summative evaluation approach is crucial to success in teaching critical thinking skills development. Students can certainly be “tested” in many more efficacious ways than writing a mid-term or final to demonstrate their critical thinking development. Some other ways might include:

- group or individual presentations in oral and written submissions;
- improvisational in-class debates on issues;
- observation, throughout a term, of questions and answers to others’ questions.

In truth, the student’s own assessment of learning progress and that of his/her peers in assessing contributions to their critical thinking development can often be a better indicator and assessment of progress than any series of so-called ‘objective test’ measures. At the very least these latter methods should have a weight equal or better to that of weighting to conventional test forms in any business class.

There is no doubt in my mind that business educators should be emphasising the critical thinking components of learning in all testing situations. Effort should be made to

assess in authentic ways the developing critical thinking abilities that people use effectively in their work. The participants identified that their activities frequently involved:

- Synthesis of opinions, data, observations;
- Analysing problems/situations;
- Problem formulation;
- Problem diagnosis;
- Analysis of alternatives;
- Problem-solving;
- Judging future outcomes.

At present, content-specific testing instruments are the norm, but more emphasis should be put on oral testing and project assessment rather than on individual essay tests and various forms of short answer tests. Instead, business educators might consider group essay tests and group or team performance tests. These tests should be designed to search for the right answers, but considerable rewards should be given for the thinking processes which help a student arrive at answers through "good-thinking".

Tests should ask students to explain their thinking and to think critically. Rewarding "reasoning skills" should be far more important than arriving at the "right" answer even in courses where finite numbers of answers exist.

Business educators have an opportunity to change their own attitudes and expectations in what they encourage their students to do as an adjunct to critical thinking assignments. They must cease asking for a regurgitation of subject matter, especially if it is to be presented back to them from rote-memory form.

Business educators should be revising course content to de-emphasise that which represents detailed information that is "nice to know" but not crucial to the task at hand. As an alternative, the business educator could emphasise memorising only really crucial

points and concurrently reward the practice of student demonstrations of critical thinking skills.

By reducing the emphasis on content, the facilitator in business education ends up being less tautological, task-oriented and goal-focused in the sense of training.

The paramount task of the business educator would then appear to be in concert with the views of the participants in this study, and that is to support the idea of the development of researching, analysing and strategizing skills in graduates.

We need to create a group of self-motivated managers who seek to do a job assignment using innovative and creative approaches that represent well-thought-out research blended with experience and intuition. Such people, the managers of the future, will be critical thinkers who recognise the value of working within process, but will not be trammelled by the confines of mythologies that relate to archaic traditions in tomorrow's business world.

In this study, I have attempted to reflect my own thoughts, and those of others gathered by me, and to create an expression of the values and feelings (and yes, attitudes) that some people in business education may take direction from. The answers of the participants of the study are not just from the cognitive domain. They are answers that are the product of experience, intuition, imagination, and idealism. Even the cynicism of hard business reality shows up here. For me, part of the interest in the process of this study was the interpretation problems associated with the many ways in which business life can be perceived based on the myriad experiences of people. Making significant sense of life experience , or clarifying meaning, has never been an easy task.

Searching for meaning in a conversation that deals with intellectually challenging concepts is one thing; trying to find commonality of definition, as the only link-pin and interpreter among many offered is another matter — and I find it is daunting.

I hope I have made some sense of the data without applying too much of my personal bias, and not drawn false conclusions in the end. I truly hope the study might serve as a contribution, however modest, to business, and other business educators who come to understand the need for a recognition and development of critical thinking as a teachable set of skills. I hope it at least encourages whichever educators might peruse it to explore the field in greater depth. I, for my part, am not done with my own exploring and testing of critical thinking concepts in the classroom, nor do I ever expect to be.

#### Implications for research

Although there is a great deal of research on the topic of critical thinking, little is available on the applications of critical thinking skills and theories in the post-secondary business education world. An obvious conclusion is that there is a need for more research in this area.

Perhaps more correctly, there is a need for more research into how to incorporate critical thinking skills development into the business classroom so that students can benefit from being able to identify specific kinds of critical thinking types and practise them for transfer to the “real” business world.

Another area of research might be to expand the sample size of this study and further, to attempt to identify and define more specific types of context-based critical thinking skills and activities over a broader base of business people and their perceived needs, both public and private.

A third study might include a definition of the types of “climate” or “environmental” factors that contribute to or encourage critical thinking development and use in “real” business settings, that can be brought into a classroom for practice.

It would be exciting and interesting, if one had the resources to expand this study into the empirical world, to survey a population of significant size in the BC business arena, and possibly beyond. Perhaps a well-thought out questionnaire that could be sent to survey persons identified in various areas of business and at particular levels of status and responsibility, to determine their thinking styles and expectations. Such a study would obviously take a different more quantitative tack, and attempt to record the kinds and numbers of responses, in ways that models of thinking styles and skills or thinking activities could be discovered and explored over a larger and more representative sample population. Quantitative methods and outcomes would do much to verify and validate the dialogues and conclusions drawn by this study which hopefully would contribute to hypothesis building, question formation and data search directions in such an undertaking.

This study and other investigations will (hopefully) eventually mean the creation of a critical thinking curriculum on the local business education scene, including the need to develop and improve on testing and evaluation methods specific to critical thinking, and which measure critical thinking skills in terms of demonstrable student progress in some

meaningful way. Follow-up studies, and studies to test the efficacy of new measuring tools, could certainly provide the basis for more research.

Last, for the moment, I believe there should be an ongoing investigation into the creation and diarising of the expectations (perhaps by creating some kind of dynamic industry-related mental “profiles”) that employers have now, and will have in the future about critical thinking, as they are bound to change substantially over the near term, and as they undoubtedly will impact on the business programmemes of the future.

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## Appendix A: Sample Preparatory Material

*This preparatory material has been designed to be answered in as little as an hour, but please take all the time you need. Feel free to draw graphs, sketches or use point-form and expand on your answers in any way you like.*

*A follow-up dialogue, structured to clarify and explore fully the meaning of your answers, will compose a second step in this critical thinking study.*

*First, some descriptive questions A-D. Please answer them in the space provided.*

**A) List three major areas of your responsibility:**

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**B) Priorities your most important management functions:**

*overseeing personnel, planning, controlling etc ... ..*

**i) daily?** \_\_\_\_\_

**ii) monthly?** \_\_\_\_\_

**iii) yearly?** \_\_\_\_\_

**C) Number of years with this company:** \_\_\_\_\_

**D) List management positions you have held in this company over the last three years:** \_\_\_\_\_

*The next page contains 10 "guideline" questions. Feel free to add questions and answers of your own creation if you like.*

- 1) What does the term critical thinking mean to you as it applies to your business situations?**
  
- 2) List examples of critical thinking you have used in your business over the last three months:**
  
- 3) Describe your job in terms of its critical thinking elements, activities or skills:**
  
- 4) List any critical thinking skills you believe essential in employees under your supervision:**
  
- 5) List key critical thinking skills exhibited by your supervisor:**
  
- 6) What kinds of business environments are conducive to critical thinking activities in your business?**
  
- 7) What critical thinking skills would increase the likelihood of success for an employee-applicant in your firm?**
  
- 8) Describe opportunities you have to learn critical thinking skills:**
  
- 9) What critical thinking skills do you want business graduates to have?**
  
- 10) Please make suggestions, thoughts, or comments, on critical thinking and its importance to business:**

## Appendix B

### Sample of Letter Accompanying Questionnaire

Dear co-researcher:

Once again thank you for agreeing to be a co-researcher in my study about “critical thinking” for Business Education. I will be collecting your responses to the attached preparatory material as well as doing follow-up dialogues with each of you to clarify and further delineate your collective attitudes and thoughts on the importance of critical thinking definitions and practices in the local business community. I will be using the data collected as part of my MA thesis at the University of Victoria.

It is my hope that the results will help establish an information base for educators about the kinds of ongoing and changing critical thinking skills that might be viewed as important now and in the future by local business employers. This resulting information should assist students in focusing on learning specific thinking skills and activities in their business studies. I also believe it will help educators in considering some critical thinking skills that could be taught and practiced in Business Education classes.

The preparatory material I am asking you to complete is intentionally open-ended. It has been designed to elicit your thoughts and ideas about the definition and importance of critical thinking skills as they apply to local businesses.

Be assured that the authorship of all individual responses will be kept strictly confidential. No individual participants or their companies will ever be identifiable to any other person but myself. Finished preparatory materials and dialogue notes will be kept in a locked drawer and destroyed after compilation. This should allow you to express yourself without concern that others might be able to ascertain the origin of any individual responses.

I’ll be calling back after receiving and collating all the data to arrange a feedback dialogue during which I should be able to discuss a summary of my preliminary findings with you.

Any additional comments regarding the study, its purpose, or its methods are welcome. As I mentioned during our telephone conversation, I’ll be calling again to arrange a meeting, at a mutually convenient time, to further discuss your responses.

Once again, thanks for participating. I look forward to our next meeting.

Yours truly,  
Niall Macnaughton

**Please do not fax your responses.  
Phone 744-2621 for pickup within the week.**

## Appendix C:

Consent Form for Participation in The Study  
“Critical Thinking and Business Education”

I understand that this research project is gathering information and thoughts about the practice of critical thinking in the local business community of Victoria. I understand that a preparatory material will be distributed and collected by Niall Macnaughton and that he will do follow-up dialogues to further delineate and discuss the data results with me, within several weeks of first contact.

I understand that my participation is completely voluntary and that I can withdraw from the study at any time, without explanation.

I understand that any data collected in the study will remain confidential and that individual dialogue results and preparatory materials will be kept in a locked cabinet, and after compilation will be shredded. Furthermore, I understand that my name will not be attached to any published results, and that my anonymity will be protected by using code numbers to identify the results obtained from individual subjects.

I understand that my dialogue will not be audio taped or videotaped and I understand that I can participate in the study by completing the preparatory material alone.

I understand that whether I participate or choose not to participate will have no bearing on my employment status and that my employer will not have access to any of the information collected in this study.

Date: \_\_\_\_\_

Signature of co-researcher: \_\_\_\_\_

Signature of experimenter: \_\_\_\_\_

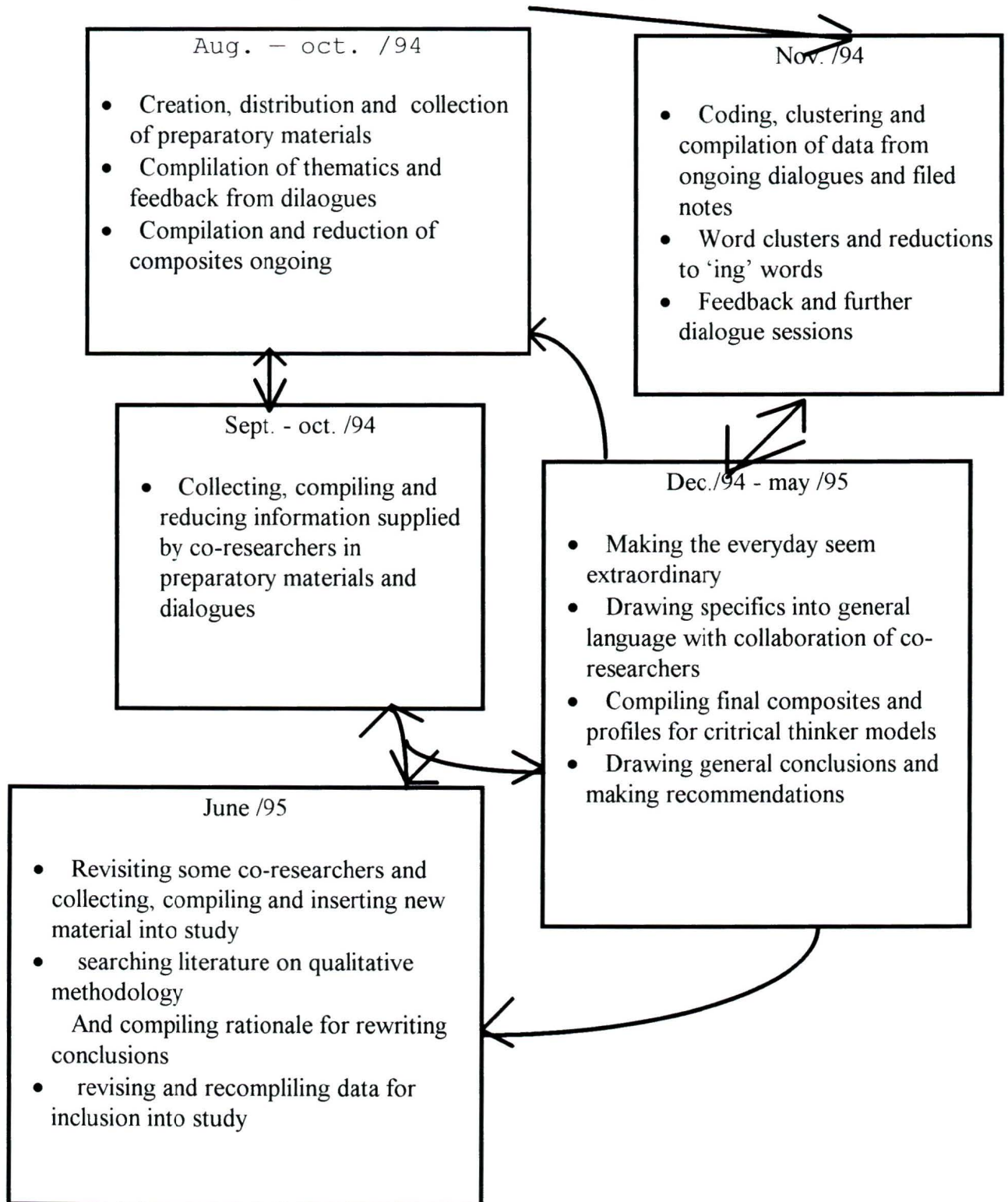
## Appendix D

## A Model Of The Intellectual Processes Of Thinking (Hyde &amp; Bizar 1989, P.17)

SCHEMA - using prior knowledge, relating ideas to experience, integrating the old and the new	
	<ul style="list-style-type: none"> <li>• relating information to oneself</li> <li>• using tacit knowledge</li> <li>• looking for assumptions</li> <li>• interpreting</li> <li>• finding analogies, metaphors, and similes</li> <li>• criticising and evaluating</li> </ul>
FOCUS - Breaking things down, analysing, encoding, representing, deciding what is relevant and what are the key elements to focus on	
	<ul style="list-style-type: none"> <li>• identifying key aspects, attributes, features, characteristics</li> <li>• observing events, phenomena, creatures, things</li> <li>• comparing and contrasting</li> <li>• collecting, recording, and contrasting</li> </ul>
PATTERN - Combining, putting together, synthesising, seeing patterns, forming concepts, conceiving of the whole entity	
	<ul style="list-style-type: none"> <li>• organising information</li> <li>• classifying and categorising</li> <li>• summarising</li> <li>• inferring and concluding</li> <li>• predicting and hypothesising</li> </ul>
EXTENSION - Using what is known to understand and act upon increasingly complex problems	
	<ul style="list-style-type: none"> <li>• Decision making</li> <li>• problem solving</li> <li>• conducting investigations and inquiries</li> </ul>
PROJECTION - Diverging from the known to create new and different understandings or forms	
	<ul style="list-style-type: none"> <li>• imagining</li> <li>• expressing</li> <li>• creating</li> <li>• inventing</li> <li>• designing</li> </ul>
METACOGNITION - Thinking about one's own thinking; using executive/control processes	
	<ul style="list-style-type: none"> <li>• planning or strategizing</li> <li>• monitoring or checking</li> <li>• regulating</li> <li>• questioning</li> <li>• reflecting/reviewing</li> </ul>

## Appendix E

## Interaction &amp; collaboration with co-researchers



## VITA

Surname: Macnaughton

Given Names: Niall Forrest

Place of Birth: Toronto, Ontario, Canada

### Educational Institutions Attended:

University of Victoria	1993 to 1995
Wilfrid Laurier University	1965 to 1968

### Degrees Awarded:

B.A.	Wilfrid Laurier University	1968
M.A.	University of Victoria	1995

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Title of Thesis:

**Critical Thinking and Business Education**

Author:

  
Niall Forrest Macnaughton  
July 12, 1995