Carleton University

Does Discipline Matter? Pedagogical Approaches to Critical Thinking in English for Academic Purposes (EAP) and Economics

Ann Evers

School of Linguistics and Applied Language Studies

Carleton University, Ottawa

January, 2007

A thesis submitted to the Faculty of Graduate Studies and Research

in partial requirements of the degree of Master's of Arts

ABSTRACT

Although there are many pedagogical approaches to teaching English for Academic Purposes (EAP), most share the objective of preparing second language (L2) learners to engage in academic study. One of these EAP approaches, the Sustained Content-based approach, includes the explicit teaching of critical thinking as part of course design. This study compared definitions of critical thinking across two disciplines, within: 1) a university-level EAP program that used the Sustained Content-based approach, and 2) within the same university's Economics Department. Economics was chosen as a contrast because it promotes *thinking like an economist* throughout its program of study and many of the EAP students planned to enroll in Economics for their degree program. In order to gain an understanding of how critical thinking is facilitated within each of these disciplines, six case studies were developed from interview and questionnaire data with three Economics professors and three EAP instructors. A mismatch was found between the discipline-specific definitions for critical thinking, calling into question whether critical thinking as operationalized within the Sustained Content-based EAP approach is useful. Results were triangulated with questionnaires from Political Science. Implications for teaching EAP and critical thinking are considered and potential program alternatives are discussed.

ACKNOWLEDGMENTS

I would like to thank my family and friends for lending me their support over these past years and the professors who always offered words of wisdom and encouragement. A big thank you goes to my parents, Jana and Chris for always picking up the phone, and Tony and Moira for great dinners at times of need. I also could never have finished without the help from my friends. Thanks to Josh for showing me the ropes, Christine for the walks, Meghan and Jane for the talks and everyone for the laughter that rang loud during the good times. Lastly, I would like to say thank you to my supervisor Dr. Fox for her support during this process as well as Dr. Wood and Dr. Young for listening to my ideas.

TABLE OF CONTENTS

FIGURES

TABLES

ABBREVIATIONS

EAP	English for Academic Purposes
ESL	English for Specific Purposes
EFL	English as a Foreign Language
ESP	English for Specific Purposes
ELT	English Language Teaching
LSP	Language for Specific Purposes
CRC	Critical Reading Commentaries
PRC	People's Republic of China

CHAPTER ONE

Introduction

The number of English as a second language (L2) speakers, international students or new immigrants is continuing to rise in English-speaking countries (Fox, Berman, Cheng, Song and Myles, 2006) and has resulted in an increased awareness of skills that are needed in an academic environment. This has created a "multimillion dollar business" (Hamp-Lyons and Hyland, 2002) in teaching English for Academic Purposes (EAP). However, there is little consistency and a great deal of variety in EAP program offerings (Fox et. al., 2006). Many North American universities have designed their own unique language programs. For example, some offer concurrent study programs whereby students can take courses in their disciplines of interest while they are enrolled in EAP. This was true of the EAP program that was considered in this study.

This EAP program has three levels: introductory, intermediate and advanced. There is an additional English for Specific Purposes (ESP) course at the advanced level for language learners who are taking first-year engineering courses. Additionally, a unique element of this program is that language learners are able to acquire credits that can be used towards their degrees while taking language courses. For example, students taking an advanced EAP course could concurrently be enrolled in a first year course, in their discipline of choice. The credits they receive in from both EAP and disciplinary courses can be used towards their degrees.

Many of the International students come to this university with the expectation of completing a degree in International Business, Business or Economics (Fox, Personal Communication, 2006). All are offered within the Faculty of Public Administration and

Management. However, many International students are not accepted into the Business school and therefore a larger than expected proportion opt to enter Economics. As a result, many International students begin their university careers in Economics.

Another of the unique characteristics of the EAP program considered in this thesis is the overall approach used for teaching language. This approach, known as the Sustained Content-Based Approach, aims to foster critical thinking along with academic language, arguing that critical thinking is key to academic performance (Pally, 1999, 2001). The approach focuses on explicit teaching of critical thinking. Critical thinking has long been debated within higher education (Barnett, 1997) and subsequently two theoretical perspectives have emerged: a cognitive scientific perspective (Ennis, 1962) and a social constructivist perspective (McPeck, 1992, Atkinson, 1997). This debate provides essential background for the study. Critical thinking is often thought of as a slippery term, one that has either been ill-defined or defined so many times that the 'true' meaning is lost (Kuhn, 1999). Adding to this confusion are the debates on how to teach critical thinking. The literature overflows with arguments for the explicit teaching of critical thinking (Ennis, 1962) and its subsequent *generalizability* across-the-curriculum as a result (Norris, 1992). And yet there are also numerous arguments that critical thinking is implicit or situated within social and cultural contexts (Mcpeck, 1992).

Although the Sustained Content-based approach is only one of many EAP approaches, because it aims at fostering critical thinking, it creates a whole new set of questions that need to be addressed. What is critical thinking? Is critical thinking specific to each discipline? If so, then what is it in Economics? Is it a generalizable skill, one that can be generalized across the disciplines? Should it be taught explicitly or implicitly?

Interestingly, critical thinking is also a concern within the discipline of Economics where *thinking like an economist* is a key and repeating organizational framework for the program (Siegfried, Bartlett, Hansen, Kelley, McCloskey and Tietenberg, 1991). Therefore, this study examined the ways in which critical thinking is defined and operationalized within these two disciplines. More specifically this study asked the questions:

(1) What are the definitions of critical thinking, according to Economics professors and EAP instructors?

(2) How do their varying definitions of critical thinking influence their teaching?

(3) How do their courses facilitate critical thinking? Is it either explicitly or implicitly?

(4) Is there a gap between the definitions of critical thinking in Economics and EAP? If so, does this gap undermine the Sustained Content-based approach as it is practiced in the EAP program considered here?

In chapter two pedagogical approaches to teaching English for Academic Purposes will be discussed along with the definitions of critical thinking as defined in the Sustained Content-based approach. The third chapter will present critical thinking as it is defined within Economics and compare and contrast the discipline's definition with the definition of critical thinking in EAP. Additionally, Nelson's Framework (Thoma, 1993) is presented and discussed. This framework provides a continuum of developmental stages in critical thinking within higher education. The fourth chapter discusses the methodology and the various procedures and instruments used in the study. The fifth chapter presents case studies of six participants, three professors of Economics and three

instructors of EAP. The definitions of critical thinking provided by these participants and their explanations of how it is facilitated within their courses and compared in relation to the literature. Subsequently, these definitions are discussed in relation to Nelson's Framework, and located within the development stages of his continuum of critical thinking. This allowed me to examine the alignment (or misalignment) between the two disciplines.

CHAPTER TWO

English for Academic Purposes (EAP)

Within language teaching, there are many abbreviations for specific language teaching approaches. This study is informed by the following definitions:

- EAP: along with an emphasis on academic skills development, the definition of EAP applied in this thesis incorporates additional aspects such as general academic English register, a formal academic style and proficiency in language use (Jordan, 1997).
- ELT: refers to the overall category wherein ESL, EFL and ESP are included (Hutchinson and Waters, 1987).
- ESL: refers to teaching English to language learners in a predominately English-speaking country (Hutchinson and Waters, 1987).
- EFL: refers to teaching English to language learners whose native language is not English in a context where English is not the *lingua franca* of the general population (e.g. English in Japan; China etc.) (Hutchinson and Waters, 1987).
- ESP: makes use of the underlying methodology and activity of the discipline it serves, where language, skills, discourse, and genres are central in activities (Dudley-Evans and St. John, 1998).
- LSP: is used in this study as an approach that is consistent with other Content-based approaches which is designed for a specific occupation or discipline (Brinton, Snow and Wesche, 1989).

Interest in English for Academic Purposes (EAP) is a relatively new trend that emerged from the branch of English for Specific Purposes (ESP). EAP has slowly outgrown its

limited use as a ‘study skills’ course and now incorporates additional aspects such as: general academic English register, a formal, academic style and a proficiency in language use (Jordan, 1997). Furthermore, it is taught through a variety of approaches, which are a reflection of the various ways instructors’ view, the needs of their students and therefore how they choose to teach their classes. In order to understand the broad range of approaches it is helpful to investigate how EAP has become a multi-million dollar enterprise (Hyland and Hamp-Lyons, 2002; Hamp-Lyons, 2001).

Historically, English Language Teaching (ELT) only included: English as a Second Language (ESL), English as a Foreign Language (EFL) and English for Specific Purposes (ESP) (Hutchinson and Waters, 1987). The one main difference between ESL and ESP was that while ESP became a ‘specialized’ language teaching approach, ESL remained a general approach to teaching language. Moreover, ESP was sub-divided and then further categorized into: science and technology (English for Science and Technology), business and Economics (English for Business and Economics) and social sciences (English for Social Sciences) (Hutchinson and Waters, 1987; Flowerdew and Peacock, 2001). The main difference between ESP and ESL was the focus on the different needs of students.

In the 1960’s and 1970’s the primary focus in English for Specific Purposes was on teaching students register analysis which centered around identifying lexical and grammatical features in the area that students were studying (Hutchinson and Waters, 1987). For example, if a student needed to communicate as an electrical engineer then they would learn how to speak like an electrical engineer and not like a biologist. They needed to learn the appropriate language and terminology that they would have to use in

order to communicate with other electrical engineers. English for Specific Purposes developed to meet specific needs of the language learner as well as making use of the underlying methodology and activity of the discipline it served, where language, skills, discourse and genres were central in activities (Dudley-Evan and St John, 1998).

However, some teachers began to realize that by looking at language at such a micro level, they were not fully addressing all of the future language that their students would need to be successful communicators in their chosen field. This is because as language speakers we do not operate within a bubble and we must communicate with various people at different times for different purposes. This is to say that even though an electrical engineer does not need to know biological terminology, they may still need to know how to use English in specific situations such as ordering food in a restaurant. There are specific discourses, both written and spoken, that are appropriate in particular social contexts.

In response, a more macro-level study the sentence and beyond began, in both writing and speaking, and discourse analysis. (Hutchinson and Waters, 1987) By looking at the 'bigger picture' teaching English became less localized and looked at more abstract, social and cultural structures (Riggenbach, 1999). Discourse analysis emphasizes cohesion and coherence at the text level (Flowerdew, 2001) and places a strong focus on the need for authentic text (Riggenbach, 1999). It had become evident that language learners did not benefit from repeated practice of English at the sentence level but needed to become more familiar with ways in which to use English in specific situations (Hutchinson and Waters, 1987). In order for a teacher to teach the elements of English that the language learner would be expected to use, they needed to find out more

about the needs of the language learner. Munby (1978) provided a tool to meet this need when he published a model called the *Target Situation Analysis*.

The *Target Situation Analysis* was a multi-dimensional model and marked a change in ESP because it allowed the instructor to specify the uses of language that the learner might encounter in specific situations (Flowerdew and Peacock, 2001). The model provided a framework to look at learners needs in a systematic way and take into account variables that affect communication needs. The model organized these variables as parameters in a dynamic relationship with one another (Munby, 1978). The variables were then divided into 'a priori' and 'a posteriori' parameters. The 'a priori' parameters were: purposive domain, setting, interaction and instrumentality. The 'a posteriori' parameters were: dialect, target level, communicative event and communicative key (Munby, 1978). These parameters were then organized into the *Communication Needs Processor* (CNP) which was used to identify the target language needs of any group of learners (Hutchinson and Waters, 1987).

It soon became apparent to teachers and researchers that the methods of the past, register analysis and discourse analysis, were lacking a solid framework and did not seem to address what the language learner needed (Hutchinson and Waters, 1987) or address the needs of the language learner of the time, who came to an English speaking country for education. This focus on needs analysis and looking at the language learners needs has left a lasting mark on ESP and more recently on EAP, as educators realize that they must examine what is needed in academia to support language learners success in university.

However, Munby's *Target Situation Analysis* has not escaped criticism, and is believed by some to be too simple (Hutchinson & Waters, 1987). Flowerdew and Peacock (2001) argue that more than just the target use of language needs to be addressed when conducting a needs analysis. What the language learner *lacks* as well as their *needs* should be addressed, as Flowerdew and Peacock (2001) state,

> ...what they actually require, taking into account what they already know- and their *wants*- what they themselves wish to learn; target situation analysis may discover that learners need to be able to read academic textbooks, but learners, on the other hand, may feel that grammatical accuracy is what they need, or want to improve their social English. (p. 178)

In these past debates and research, language learners needs have remained central to EAP course developers and practitioners (Johns, 1981, 1988; Woodward-Kron, 2002). In response, Dudley-Evans and St John (1998) created an 8-part model that was designed to include a broader range of language learner *needs* as well as taking into account their *lacks*. This model combines a *target situation analysis* of their professional information as well as their personal information such as factors that may affect the way they learn or cultural information. Additionally, the model includes a *present situation analysis of* their current skills and language use, together with addressing what the gap or lack may be between their current skills and their professional needs. Finally, the model includes effective ways of learning the skills and language or their learning needs, their knowledge of the language and skills used in the target situation, what is wanted from the course and information about the environment in which the course will be run or a *means analysis*.

Furthermore, in addition to this focus on the language needs of their learners a considerable amount of energy has been devoted to examining 'what' needs to be taught in an EAP classroom (Todd, 2003). This includes 'content', questions pertaining to the

four skills (listening, speaking, reading, writing) that are frequently used to divide language learning, as well as if some of these skills are discipline specific or if they are weighted equally across the curriculum (Johns, 1981). Yet, researchers in EAP have hardly examined the 'how': how can we best teach our language learners in preparation for a successful university career (Todd, 2003). According to Todd (2003), the 'what' takes precedence when designing a syllabus because it has been informed by needs analysis and research findings but there is a only a small amount of thought given to 'how' to teach in order to address those needs.

Therefore, Todd (2003) believes that instructors need to consider the 'process' of reaching the goal as well as the content that needs to be addressed as part of a course syllabus. According to Todd (2003), EAP is based on a set of six global practices: (1) focusing on inductive learning, (2) using process syllabuses involving task-based and project-based learning, (3) promoting learner autonomy, (4) using authentic materials and tasks, (5) integrating technology in teaching, (6) using team teaching techniques such as adjunct classes. All of these six global practices tend to overlap each other in a syllabus and are not mutually exclusive of each other.

Despite these six global practices which focus on the 'process' of language teaching, and longer periods of study, language training is often sought after by those who are in a rush and only want to or can devote a small period of time to learning a language. According to Turner (2004), this has been the trend that has been occurring in EAP since the 1960's and 1970's when language learners' success in learning English was tied to 'aid' in their countries of origin. More specifically, English for Science and Technology which focused on the development of technology and not the global

economy of higher education. Turner (2004) suggests that this trend has marginalized teaching English and has resulted in a low status. Additionally, teaching English is seen as a service and "has accepted its role as an economic and intellectual short-cut" (Turner, 2004. p.96).

While short, intensive courses do remain in EAP, many other pedagogical approaches, which will be discussed below, are situated in, and focus on, the 'process' of language learning as well as placing more emphasis on what happens outside of the classroom.

Pedagogical Approaches in EAP

Currently there are four prevailing pedagogical approaches to teaching EAP and most of these programs and courses have overlapping aspects of all of these approaches. The first is a skills-based approach (Dudley-Evans and St John, 1998) and then a strategy-based approach that emerged after the field gained a better understanding of the language learner (Rubin, 1975). The third approach is a genre-based approach (Swales, 1990) that emerged from a realization that a macro level, beyond the sentence needed to be recognized and taught to language learners. The last approach is a content-based approach (Brinton, Snow and Wesche, 1989), from which the sustained content-based approach emerged as an extension in EAP. Sustained content-based (Pally, 2001) pedagogy requires the content to be taught over a longer period of time so as to foster critical thinking in the learner. While each of these approaches acknowledges that the main pedagogical focus is to teach academic skills, each one has a unique perspective on how to do this successfully.

Skills-based approach

The skills-based approach, according to Dudley-Evans and St John (1998), is an approach that teaches five skills: reading, listening to monologue, listening and speaking, speaking, and writing. These are considered to be macro-level skills that do not exist in isolation and thus are taught in an integrated manner. Whereas another set of skills, such as coherence and cohesion of a text, are considered to be micro-level skills, and are taught in combination with the macro-level skills.

This approach evolved in ESP because it was believed that the teaching of language alone was not sufficient for tertiary level students because students where being asked to perform specific tasks other than language ability. Thus, there seemed to be a need to address the thought processes that underpin language use as well as language work (Dudley-Evans and St John, 1998).

Strategy-based approach

The strategy-based approach is a reflection of the field of language teaching evolving and slowly beginning to realize the importance of the language learner in the learning process. Rubin's article, *The Good Language Learner* (1975) summarized six strategies or techniques that good language learners use to be successful: (a) willingly and accurately guess, (b) want to communicate, (c) are uninhibited about mistakes, (d) focus on both structure and meaning, (e) take advantage of all practice opportunities, (f) monitor their own speech and that of others. While these strategies were an initial source for teaching language through a strategies-based approach in language teaching, additional research has been conducted in understanding how learners choose the

strategies they choose and some problematic areas with teaching strategies to learners (Oxford, 1994).

As Rubin illustrated in her list, good learners are characterized by certain strategies which work best for them so they can have successful results, however as our understanding of teaching methods evolved, researchers have begun to realize that Rubin's list was overly simplistic. This is illustrated in Oxford's (1994) list of external factors that affect language learners' choices in strategy use. She found that motivation, gender, cultural background, attitudes and beliefs, type of task, age, learning style and tolerance of ambiguity all affect learners' choices. Oxford's list illustrates that the strategies learners use in their learning and the reason for their choices are very complex.

While some researchers have focused on the learner and their choice of strategies, other researchers have looked closely at the strategies themselves and identified new issues (Cohen, 1995). Cohen (1995) has identified five issues surrounding strategies and suggests that specific terms need to be clarified.

1) The distinction among strategies, sub strategies, techniques and tactics. The term strategy is used in the literature as a general term and often lumps all of these distinctions together.

2) The question of conscious or unconscious strategies: Do learners need to be conscious of a strategy in order for it to be a strategy? He suggests that if they are unaware of the strategy then it becomes a process and not a strategy.

3) Many different criteria are applied in classifying language learning strategies and therefore there is a mismatch in taxonomies and inconsistencies.

4) There is a need to broaden the concept of strategic competence. According to Bachman (1990: as cited in Cohen, 1995) strategic competence is where the speakers set communicative goals and there is a planning component. In this planning component they retrieve relevant items from their language competence.

Cohen suggests that these strategies are compensatory and that language learners may perform specific language tasks differently than those laid out in the model. For example, some language learners start talking immediately with no planning component whereas others may have pre-planned the specifics of their utterances.

The final issue Cohen raises (relates to the third point he made) is in regards to the classification of language learning strategies and the subsequent mismatch in taxonomies. Specifically, his issue involves linking learning strategies to learning styles and other personality-related variables. Learning strategies are linked to learning style, personality related variables as well as sex, age and ethnicity, but not many studies have gathered, analyzed or reported on these factors because studies have mainly focused on the cognitive and meta-cognitive strategies (Cohen, 1995).

These issues and concerns that Cohen raises (1995) regarding learning strategies and learning styles reflect the on-going recognition of the importance of the learning process within language teaching and learning. Moreover, with questions like those that Cohen (1995) raises, it is evident that more research needs to be conducted in language learning and the strategies-based teaching approach.

Having examined the strategies-based approach the next section will examine two other approaches found within English for Academic Purposes: Genre- based approaches and Content-based approaches.

Genre-based Approach

A genre-based approach focuses on teaching linguistics elements that exist within texts from a specific genre. Therefore, this approach teaches about genres and incorporates genres into educational programs where Swales demonstrates in Create a Research Space (C.A.R.S) model (Swales, 1990). In his model, Swales addresses learners' difficulties in writing an academic article (Hammond and Derewianka, 2001). The model summarizes structural moves and steps to identify the regular and predictable ways in which introductions are organized in an academic article.

The genre-based method considers four aspects: analyzing cultural context, the target situation, models of specific genres and recurring grammatical patterns. The first aspect takes into account the relationship between culture and genre in which genre is located in the social process (Hammond and Derewianka, 2001). The second consideration in the genre-based approach is that the teacher and the student need to analyze language demands of situations relevant to the student's life and educational goals (Hammond and Derewianka, 2001). Thirdly, the learners are given opportunities to analyze examples of genre before they attempt their own writing. Lastly, learners are expected to focus on grammatical patterns that characterize a particular genre. This aspect can draw from systemic linguistic descriptions of register and functional grammar (Hammond and Derewianka, 2001).

Content-based Approach and Sustained Content-based Approach

The content-based approach is an integration of content with language teaching aims. The main focus is on learners acquiring information through a second language

while developing academic language skills (Brinton, Snow and Wesche, 1989). In a content-based classroom curriculum, the language learner's needs are at the centre of the course. This means that the teaching methodology, the materials and especially the content reflects the language learner's needs (Widdowson, 1983: as cited in Brinton, Snow and Wesche, 1989).

There are three types of content-based approaches: language-across-the-curriculum, language for specific purposes and immersion education. In language-across-the-curriculum there is an underlying notion that there is a reciprocal relationship between language learning and content learning (Brinton, Snow and Wesche, 1989). This belief in a reciprocal relationship pushes teachers to encourage learners to 'write to learn' and to 'read to learn'. In addition, this method fills the needs of multi-level learners and allows them to refine and develop their skills that are required for specific academic content.

According to Brinton, Snow and Wesche (1989) another approach is language for specific purposes (LSP) which is designed for a specific occupation or discipline. This approach looks at the bigger picture, is less localized and looks more at abstract, social and cultural structures (Riggenbach, 1999). LSP also utilizes discourse analysis which emphasizes cohesion and coherence at the text level (Flowerdew, 2001) and places a strong focus on the need for authentic text (Riggenbach, 1999). LSP relies heavily on the content it is teaching as well as on needs analysis.

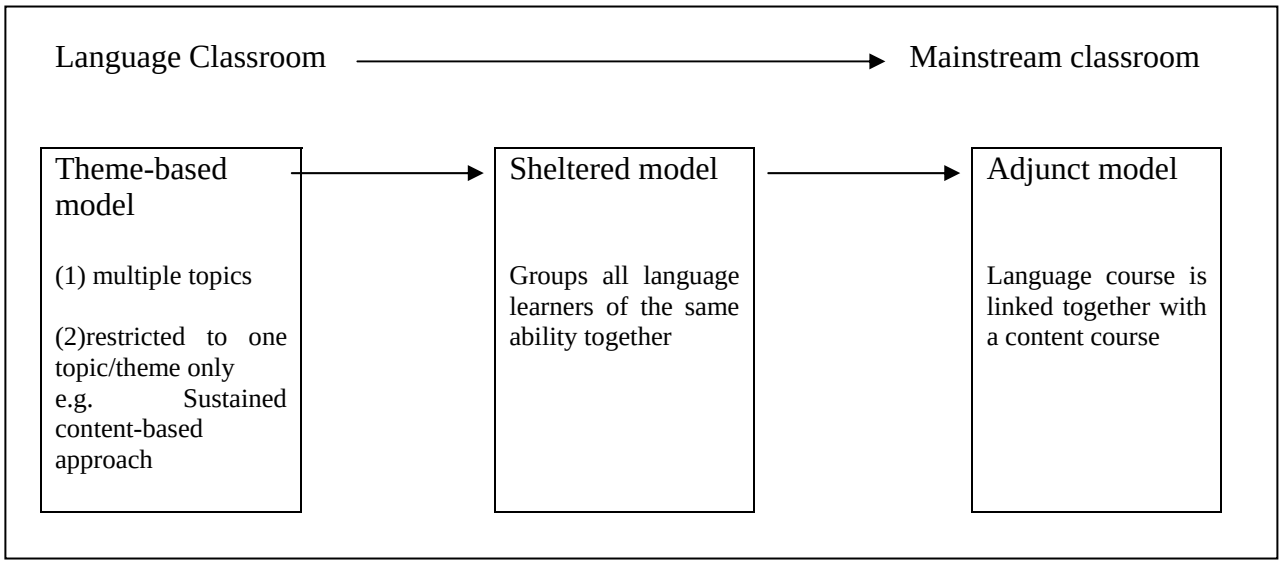
Immersion education is the third kind of content-based approach. This approach requires intensive exposure to the target language, typically at a young age and language

is incidental (Brinton, Snow, and Wesche, 1989). In many ways, it mimics a first language school but can offer some focus on rules and form.

Models to teach a Content-based approach

Within Content-based, LSP and immersion approaches, there are also three models that have been developed that assist teaching these approaches in a university. Sustained content-based pedagogy is actually one of these models within content-based pedagogy. The different models can be placed on a continuum.

Figure 1 Continuum of Language Classroom Models



The continuum spans from the language classroom to the mainstream classroom situation and each of the three models operates either within the language classroom or the mainstream classroom. The following discussion begins with the model that exists without any subject specific content as would be found within a mainstream class.

The first model is the theme-based model which structures language around themes or topics. Generally, this model is operationalized in 2 ways. Firstly, the topics are restricted to a single activity and the choices of topics are adapted from outside

sources. Secondly, in a similar way that it also uses a theme or topic but different because the curriculum for the course is organized around one theme only (Brinton, Snow and Wesche, 1989). This is where sustained content-based pedagogy lies.

The sustained-content based method integrates one topic area into a language class over an extended period of time, such as one semester, and is created to simulate a university course "but also provide explicit instruction in language and academic skills" (Pally, 1999, p.2).

> The central tenet of content-based ESL is that students learn language when they use it to study something else in a sustained way (Pally, 1997, p.298).

According to Pally (1999), her students "were not lacking in vocabulary or sentence-level accuracy for the most part but they lacked analytical and critical thinking skills" (Pally, 1999, p. 2; Pally, 2000; Murphy & Stoller, 2001; as cited in Stoller, 2004). Pally (2001) divides these two forms of thought into analytical thinking and critical thinking, and then defines them categorically in relation to what language learners can expect to learn in a sustained content-based curriculum.

Table 1 Critical thinking in Sustained Content-based Approach in EAP: Analytical Thinking & Critical Thinking

1) Analytical Thinking	a) grasping the claims or perspectives of readings and lectures b) understanding the methods of proof used to support those claims/perspectives c)synthesizing claims and support from a range of sources
2) Critical Thinking	a) noting the social, economic and political contexts of claims and support b) questioning or challenging them c) evaluating them d) using one's understanding, synthesis, and questions as a basis for formulating ideas of one's own e) presenting (orally and in writing)ideas/positions of one's own using appropriate rhetorical conventions

Therefore, as Pally (2001) states, language learners need what we are not giving them, which offers support for Flowerdew and Peacock's (2001) argument that needs analysis should also include what the language learner 'lacks' not only their needs. Thus, this approach has been created as a result of language instructors noting a 'need' or perhaps the 'lack of' analytical and critical thinking specific to academic study and therefore the 'need' for their students to learn explicitly, how to think analytically and critically in their second language. According to Pally (2001) this ability to think develops best within a Sustained Content-based approach in a progressive sequence of learning activities that build on concepts and information that have been previously learned. Pally (1997, 1999) believes that this approach mimics a real university course in both content as well as the length of time. A longer length of time is provided so that students can understand the material, take a position on a subject and support it (Pally, 2001).

The second model is called the sheltered model and falls in the middle of the language classroom to mainstream classroom continuum. This model attempts to put all learners of the same kind or ability together in hopes to alleviate high anxiety. Sheltered courses are similar to the immersion approach where it is believed that learning occurs best as in an environment that mimics a first language classroom. This is realized by exposing the language learner to native speaking professors, listening to regular lectures, reading regular readings and participating in discussions (Brinton, Snow and Wesche, 1989).

The third model is the adjunct model. This model is the closest to the mainstream classroom on the continuum because it requires the learners to be enrolled concurrently in both a language-focused and a content-focused course. The two courses are linked. They are organized to complement one another, share content and coordinate assignments. The language course is sheltered, but the content course is integrated, where native speakers and language learners attend lectures together (Brinton, Snow and Wesche, 1989).

The Sustained Content-based, sheltered, immersion and adjunct models are all consistent with the new rhetorical theoretical framework (Freedman and Medway, 1994). Whereas the genre-based approach is more focused at the linguistic and textual levels, the new rhetoric is more focused on the situation and looks to interpret the situational context. In other words, it focuses on the social and cultural contexts in which genres occur (Hammond and Derewianka, 2001). According to Freedman and Medway (1994), the most striking difference between the two approaches is that the genre-based approach views genre as being static, while new rhetoric "emphasizes the dynamic quality of genres" (p.9). In addition, Miller (1994: as cited in Freedman and Medway, 1994) argues

that genres evolve, develop and decay. Furthermore, these genres, which are typified actions, exist within a socio-cultural context (Freedman, 1999).

Content-based approaches are defined in a way that they seem to provide a broader foundation in the academic milieu than the use of strategy-based approaches or genre-based approaches that are taught alone (rather than in combination). They also seem to give the instructors a wider variety of choice when designing their syllabus in terms of topics or content and even which kind of model to use. However, instructors' choice of model is usually out of their control as it is usually a program decision and is based upon or reliant on the type of funding the program receives from the university. Additionally, there are a number of other issues surrounding this approach.

According to Snow (1998) there are three, main 'on-going challenges' to the Content-based approach. The first is the role of language teaching and its relation to course content, specifically in relation to roles and status. The discussions surrounding this issue often talk about learner empowerment (Kinsella, 1997) and 'critical' needs assessment (Benesch, 1996). The second challenge is regarding content teachers and 'up-grading' their skills to include language sensitive content instruction (Snow, 1998). The last challenge is the content itself and what constitutes the 'content' in content-based methods (Snow, 1998). According to Pally (2001), the 'content' in a Sustained Content-based approach should include first year courses in specific disciplines such as: Introduction to Psychology, Sociology, Health, Language Learning, Contrasting Languages and Cultures, amongst others.

The Issue of Transferability

Regardless of the many types of pedagogical approaches presented here, it is important to remember that at the core of them all remains the goal: to teach academic skills to language learners and thereby supporting their success in university. Therefore, in order for language learners to be successful in mainstream classes there is an expectation that language learners will learn the skills that their EAP courses are designed to teach and that these skills will then transfer over to their mainstream courses. This is a widely discussed issue and lots of speculation surrounds it. According to Swales (1990), "We still have difficulty in identifying those linguistic and rhetorical skills that are usefully transferable to a range of academic contexts, and separating such skills from those that are only needed in narrow disciplinary situations" (Swales, 1990, p. 218). Additionally, Johns (1988) suggests that more empirical research needs to be conducted in order to discover which skills, in particular, are transferable and how, if there are many different forms of genre in academic writing. For example, the results of one study that investigated summary writing within the genre of academic writing, and concluded that there are two types of summary writing and that they may in fact be discipline specific (Ratteray, 1985). This increasing awareness and subsequent questioning is echoed by Freedman (1999), when she explains that:

> Even though genres facilitate and constrain communicative choice, genre rules do not create a binding constraint. Instead, human agents continually enact genres, and during such enactment they have the opportunity to challenge and change genres, thereby opening the possibility for resistance and subversion (Freedman, 1999, p.765).

Rhetorical genre studies recognize that texts are socially constructed and explain text types as typified actions that react to recurring social contexts (Freedman, 1999).

As a result, rhetorical genre studies raise some serious questions about the teaching practices in EAP such as:

> Can English for academic purposes (EAP) or composition teachers elicit business memos or sociology papers in the context of an EAP or composition class? Or must teachers acknowledge that they inevitably operate from within their own rhetorical and social context and that, consequently, whatever genres are elicited in their classes will function, first and foremost, as responses to the exigencies of a specific teacher within an ESL class? (Freedman, 1999, p. 766).

While this question will not be answered in this study, it is important to realize that language is not used in a bubble, nor should it be taught in a bubble leaving out the social and cultural aspects. As Kramsch (1993) states, "Culture in language learning is not an expendable fifth skill, tacked on, so to speak, to the teaching of speaking, listening, reading, and writing" (Kramsch, 1993, p. 1). Thereby, it is important to recognize that cultural context is at the core of teaching, and allows text and context to interact dialectically (Kramsch, 1993). In an EAP setting, it is academic culture and the cultures of the discipline that are key.

The Product of a University Career

Critical thinking is a concept that professors and students alike believe is a fundamental defining concept of a Western university education (Barnett, 1997), but how they define it and subsequently teach or learn is as disjointed as the theories involved in the debate on critical thinking (Phillips and Bond, 2004; Curry, 1999). Moreover, critical thinking is increasingly being discussed in higher education and consequently invoking discussions in language teaching. This is especially affecting English for Academic

Purpose (EAP) language learning settings, where the goal of the instructor is to insure that their students will have acquired or learned all of the skills necessary to succeed in their university career. Thus, influencing researchers in language learning to examine critical thinking, to consider where it belongs in their curriculum and whether teaching critical thinking skills implicitly or explicitly is one of the best methods that might help their students across the disciplines.

The following section explores the definitions of critical thinking according to theorists who argue about it as a teachable skill, questioning whether it is one that can be explicitly taught or whether it is implicit and situated within a socio-cultural context.

Definitions of Critical Thinking

As previously discussed, there is a lack of agreement between theorists as to what critical thinking is. Critical thinking is defined from either the cognitive scientific perspective (Ennis, 1962) that aims to package critical thinking into an instruction and evaluation-based set of teachable guidelines, or the social constructivist perspective (Atkinson, 1997) which asserts that critical thinking is learned as a tacit set of social practices.

One of the earlier attempts to define critical thinking was situated in the psychological and educational disciplines, and evaluated critical thinking as being rooted in "the correct assessing of statements" (Ennis, 1962, p.83) and to be "reasonable reflective thinking focused on deciding what to believe or do" (Ennis, 1989, p.4). According to Ennis (1962), critical thinking consists of three dimensions: logical, criterial and pragmatic. The logical dimension refers to judging the relationship between words

and statements. The criterial dimension involves knowledge of the criteria for judging statements and the third dimension, the pragmatic, covers the impression of the background purpose on the judgment as well as the decision as to whether the statement is good enough for the purpose. Furthermore, Ennis (1962) outlined twelve aspects of critical thinking and the objective of these aspects is to guide pedagogy and to avoid the pitfalls that can occur in assessment. Ennis (1962) focused on critical thinking as an isolated set of argumentative structures that are all learnable and teachable but he did not take into consideration the construction of arguments, creative thinking, the social context of the issue, or the sociocultural situation of the thinker (Curry, 1999). Rather, teaching is seen as a vehicle to impart the required skills, abilities and proficiencies that students will need to succeed (Phillips and Bond, 2004, p. 279).

This has sparked some debate among researchers (Gieve, 1998; Atkinson, 1997) who disagree with Ennis' list of decontextualised cognitive skills and argue that the most important part of critical thinking is in the 'context'. While Ennis (1962) does not advocate that these skills be imparted explicitly or implicitly, he does state that instruction of critical thinking should be taught with, and complemented by, evaluation. By outlining the twelve points of what qualifies as critical thinking, Ennis' list creates a possibility for teachers to evaluate their students against this criterion.

An example of a step-by-step approach to explicitly teach critical thinking was designed by Thompson (2002). She proposed an in-class activity designed for an EAP class. Her five-step approach was aimed at encouraging students to evaluate their own cultural beliefs and assumptions, and "expose cultural bias and generate discussion about the sociopolitical implications of ignoring cultural values that may be very different from

one's own" (Thompson, 2002, p.16). While in part this was an example illustrating Ennis's step-by-step approach where the teacher can have a virtual check list of critical thinking skills that they can tick off as they teach. Thompson's (2002) in-class activity also illustrates the complex needs of the language teacher who operates in a culturally diverse classroom. The fact that Thompson's (2002) systematic approach to 'how to teach critical thinking' incorporates elements of social practice and cultural awareness demonstrates that Ennis's (1962) definition of critical thinking, whilst displaying aspects of generic skills, seems to neglects cultural importance if it is to be used in a language classroom.

Other definitions of critical thinking disagree with Ennis (1962; 1989) and regard critical thinking as something that is more tacit and inclusive of social practices and cultural awareness. According to McPeck (1992) a person's ability to think critically is fostered when they are familiar with the subject matter being discussed. Thus, McPeck (1992) argues, critical thinking is subject-specific and not generalizable. Conversely, critical pedagogues and critical theorists view critical thinking as a comprehensive concept that allows us to be a critical being as we look at the world and our knowledge of the world (Benesch, 1993; Pennycook, 1994).

These definitions move away from the notion of critical thinking as a set of decontextualised cognitive skills (Ennis, 1962) that can be taught explicitly and move towards a more socially situated definition of critical thinking. Moreover, this change in theories has informed the shift from explicit methods of teaching to an implicit and embedded approach (Atkinson, 1997).

According to Atkinson (1997), critical thinking is a social practice and is not a generic skill (Ennis, 1962) that can be explicitly taught. Instead, Atkinson (1997) draws from social theorists such as Vygotsky and his learning theory to illustrate an alternative teaching method known as the cognitive apprenticeship model. In this model, the teacher-learner relationship shifts to become an expert-novice relationship, thereby focusing on the socialization of the novice and introducing the expert's worldview.

This is reflected in Atkinson's definition of a social practice which he states as:

> The kind of behaviour in which the individual is automatically immersed by virtue of being raised in a particular cultural milieu and which the individual therefore 'learns through the pores' (Atkinson, 1997, p.73).

Atkinson examines critical thinking through a cultural lens and in doing so explores several cultural assumptions that show discontinuity between Western and non-Western modes of thought and expression. Firstly, he considers the opposing notions of relations between the individual and the social system. Secondly, he considers the contrasting norms of self-expression across cultures, whereby different cultures express themselves in different ways and based on different criteria. Lastly, he explores the divergent perspectives on the use of language as a means of learning.

While there are common cultural differences that are often commented on by instructors in language learning classrooms, Atkinson's (1997) argument is drawing conclusions in relation to Western notions of thought and expression. He is including these culturally relative assumptions in his argument but by highlighting these disconnections between cultures, Gieve (1998) claims that he is contradicting his reasoning for choosing a 'culturally blind' model in the first place. Therefore, if these differences do exist, you cannot ignore them.

While Atkinson's initial assertion that critical thinking is a social practice and not a generic skill gives a solid context in which Atkinson (1997) argues for adopting Vygotsky's 'pan-cultural' model, his argument loses validity when he ends his argument based on the 'how' and 'why' cultures differ. Fox (1994) provides further support for Atkinson's (1997) argument, stating that cultural differences do play a large and an important part in language teaching.

Therefore, a 'pan-cultural' model tries not to focus on the cultural differences but it is important in language teaching to recognize these cultural differences even within the 'pan-cultural' model as critical thinking is taught from teacher to learner as a social practice.

Language Learners' Cultural and Background Knowledge

An integral part of teaching language learners is recognizing the cultural knowledge and background knowledge that language learners bring into a language classroom but many times their background knowledge is not considered valuable, as illustrated in EAP textbooks where critical thinking is included because of a perceived deficit that language learners have in this skill (Curry, 1999). In an effort to recognize the importance of language learners' background knowledge, Mohan (1986) designed a framework known as the *knowledge framework* which aims to assist those who develop materials, so that they can design activities that foster critical thinking skill within content.

The *knowledge framework* focuses on two types of knowledge: specific and general. The first type of knowledge is a practical or specific knowledge which is

situated in action, the practical and particulars. In other words, it exists at a particular time and place. General or theoretical knowledge, on the other hand, includes background knowledge and universals, and is timeless. Then he further reduces the theoretical knowledge into three aspects: classification, principles and evaluations (Mohan, 1986).

The most important part of the knowledge framework is that it takes into account language learners' background knowledge to the language classroom and this because, as Mohan (1986) further explains, "their learning occurs between people, through social interactions, not in isolation." Furthermore, learning in the classroom or 'a community of practice' where learners are apprenticed into (Hawkins, 1998) may be seen as a kind of apprenticeship where learners are apprenticed into full participation in the university community.

Critical Thinking: Student Perceptions and Higher Education

In university, students learn from the knowledge that is imparted to them from their professors. If critical thinking were truly a fundamental skill that is taught in university then it would stand to reason that the students would learn what it is and be able to identify critical thinking. This however, has been found to be false in a recent study conducted in an undergraduate Management course that taught critical thinking skills through vignettes, problems and case studies (Phillips and Bond, 2004). The study focused on students' experiences and perceptions of critical thinking and found that students failed to distinguish between the process of being critical and the problem that was being critiqued.

These findings beg these questions: How are professors defining critical thinking? Does the lack of a common definition in the literature effect how students are being taught critically thinking? Furthermore, if critical thinking is perceived to be the cornerstone of the Western university, but the students' are not able to identify what critical thinking is, then is this a case of 'rhetoric versus reality' (Phillips and Bond, 2004), where there is a mismatch between the rhetoric and the reality of university teaching (Barnett, 1997)

The results from another study involving students' perceptions of EAP writing instruction and writing needs across the disciplines (Leki and Carson, 1994) indicated that students did not rank thinking skills highly in relation to other skills and strategies that they wished they would have learned better in their ESL writing classes. Instead, they ranked them in declining order: language skills (31%), task management strategies (28%), rhetorical skills (13%), thinking skills (4%) and other (24%).

The relatively low percentage and rank placement of thinking skills indicates that students do not consider that learning these skills better would have helped them more in their content course. This could be because the students believe that they do not need to use them in their content courses or it could be the same reason as Phillips and Bond (2004) found in their L1 study, where students failed to recognize and identify critical thinking skills.

According to Barnett (1997), this lack of an agreed upon definition or recognition of critical thinking, as is reflected in these studies, is more complex than just the professors not agreeing upon a common definition. Barnett (1997) discusses critical thinking being caught in the middle of the changing nature of higher education itself and

how the trend today is moving away from the 'mediaeval university' where critical thinking was included in all studies and the elite professions such as Law and Medicine that it housed, towards newer forms of study which include non-professional programs such as health services, estate management and film studies. Barnett (1997) suggests there is an element of the 'non-critical' in these newer studies. Therefore, it is not realistic to say that to teach critical thinking in sociology is what is needed in a program for midwifery.

Furthermore, Barnett (1997) points out, that the "modern concept of critical thinking derives from its anchorage in the disciplines" (p.78) and that each discipline's notion of critical thinking differs based on a set of objectives or criteria particular to that discipline. Therefore, it does not make sense to teach critical thinking as a general, explicit course across the academic community within a university because learning will be minimal.

Critical Thinking: Professors' Perceptions and Higher Education

While there has been a considerable amount of research conducted on students' experiences of higher education upon completion, there were relatively fewer studies of professors' goals in the classroom and their perceptions of their role (Angelo and Cross, 1993). Angelo and Cross (1993) conducted a study in which they created a questionnaire that included a list of 51 teaching goals, grouped into six clusters. The aim was to examine professors' teaching goals, the importance they placed on the goals, and what they perceived their role as a teacher to be.

The six clusters of teaching goals are:

- Personal development
- Work and career preparation
- Liberal arts and academic values
- Discipline-specific knowledge and skills
- Basic academic success skills
- Higher-order thinking skills

The questionnaire was sent out to full-time faculty members from fifteen community colleges and seventeen private four-year colleges across the United States. The questionnaire responses of 2824 college instructors (65% response rate) were analyzed.

Firstly, findings indicated that there was a considerable amount of consensus between the college professors in that they considered the most essential goal to be developing their students' abilities to apply principles and generalizations to new problems and situations. When the results were divided statistically into the six clusters, two clusters rated the highest: emphasizing higher order thinking skills and discipline specific knowledge.

According to Angelo and Cross (1993), an important finding that resulted from this study was that "faculty teaching priorities are related more to the academic discipline than to any other factor" (p. 366). This finding is particularly relevant to this thesis, when it is considered in relation to the responses recorded to the last question on the Angelo and Cross questionnaire: "In general, how do you see your primary role as a teacher?" (Angelo and Cross, 1993). The two highest rated answers were: (1) developing higher order thinking skills and, (2) teaching the facts and principles of the subject matter.

Moreover, they found that *what* is being taught is related to *how* it is being taught. This was illustrated best when they looked at the individual goals that were listed within the clusters and compared them to the disciplines. For example, within the cluster of higher-order thinking skills, the first individual goal on the questionnaire for the college professors to rank as either 'essential', 'very important', 'important', or 'unimportant' was, developing their students' abilities to apply principles and generalizations to new problems and situations.

This goal, as was previously stated, received a high degree of consensus amongst the college professors in the basic skills, social sciences, business, medicine and science disciplines. However the data showed that college professors from the sciences and pre-professional fields primarily ranked this goal as 'essential', whereas the data from the college professors teaching the humanities indicated that they focused on developing their students' ability to think for themselves.

Therefore, according to results of the Teaching Goals inventory questionnaire (Angelo and Cross, 1993) it seems that while college professors do believe that higher-order thinking skills and disciplinary knowledge are 'essential', the importance placed on the type of thinking may itself vary according to the discipline of the college professor.

This chapter explored the historic roots of English for Academic Purposes, and the resulting pedagogical approaches that are utilized in the field. Although the variety of pedagogical approaches illustrated the breadth available within EAP, it also demonstrated why there is some confusion over which approach is the best. In the following chapter the definition of critical thinking, as found within the discipline of Economics, is discussed and then compared to the definition of critical thinking as found within the Sustained

Content-based approach (Pally, 2001) in EAP. Finally, the description of the Nelson's Framework (Thoma, 1993) is presented.

CHAPTER THREE

In this chapter I will discuss critical thinking within the discipline of Economics. First the chapter discusses what it means to *Thinking like an Economist* and then through a diagram of Nelson's Framework, the chapter will illustrate and discuss the teaching of different developmental stages of critical thinking in Economics.

Critical thinking within Economics: Thinking like an Economist

When Economists are asked what distinguishes Economics from other disciplines, many Economists and professors of Economics reply, "To think like an Economist means to…" (Siegfried, Bartlett, Hansen, Kelley, McCloskey & Tietenberg, 1991).

According to Siegfried et al., (1991), to *think like an Economist* is the overarching goal of Economic educators, to insure that their students will use chains of deductive reasoning in conjunction with simplified models.

Yet, to *think like an Economist* does not end with that simplified explanation. In fact, Siegfried et al., (1991) have divided 'thinking' into two sections and then described the two sections separately according to distinguishing features.

Table 2 Thinking like an Economist in Economics: Problem Solving & Creative Skills

1) Problem solving	a) emphasize reasoning using the techniques and principles of Economics as a result the students learn to understand economic behavior and improve their ability to predict the consequences of changes in economic forces
2) Creative skills	a)help determine how to frame questions b) what tools and principles to apply to particular problems c) what data and information are pertinent to those problems d) how to understand or explain surprising or unexpected results

There are several distinguishing features of both problem solving and creative skills (Siegfried et al., 1991).

Problem Solving:

A) There is an emphasis on deductive reasoning. This refers to the insights that can be derived logically from a set of premises.

B) Most Economics problems are complex and deductive reasoning is limited in its capacity to examine many forces simultaneously, therefore there is an emphasis on parsimonious models—models that focus on the more important behavioral relationships in our complex world.

C) The fundamental principles of Economics are thought to be universal.

D) The Economic approach emphasizes decision-making techniques, perspectives on how choices are made, and the consequences of these choices.

E) While all Economic problems involve normative issues, a strong bias exists toward an analytical approach that abstracts from or downplays "value" issues.

Creative Skills:

A) Identifying Economic issues and problems, framing them in ways other people do not see, devising novel policy proposals for dealing with problems, analyzing both the intended and unintended effects of policies, and devising innovative methods to estimate the magnitude of these effects—all are as central to the discipline as is the development of logically coherent theories.

B) Understanding complex problems can require considerable abstraction, or at least, decomposing problems into manageable components.

C) Isolating important feedback and interrelationships that can alter the analysis of outcomes and predictions. The most coveted Economic analysis is that which challenges conventional wisdom, or, in the policymaking context, isolates unintended outcomes.
D) The specification of "constraints" and the articulation of a strategy to manage best within those constraints that involve creative judgment.

These detailed descriptions of what it means to *think like an economist* (Siegfried et al., 1991) illustrates that this definition is held together by an underlying notion of general human reasoning, as discussed by VanSickle (1992). He implies that knowledge of Economics itself, the content, is necessary to learn how to reason with Economic concepts and principles in order to solve Economic problems. According to VanSickle (1992) there are six types of knowledge that experts use to solve problems. The six types of knowledge are divided into either: Domain-Specific knowledge or Meta-cognitive knowledge.

Table 3 Types of expert knowledge

Domain-specific knowledge	Declarative knowledge Procedural knowledge Schemata knowledge
Meta-Cognitive knowledge	Conditionalized knowledge Strategy knowledge Cognitive self-management strategies

Therefore, according to VanSickle (1992), “An effective instructional problem-solving program should teach domain-specific knowledge and procedures in the context of solving problems” (VanSickle, 1992, p. 61).

Comparing and contrasting the definitions of critical thinking

The definitions of critical thinking in Economics and English for Academic Purposes (EAP) as outlined by Siegfried et al., (1991) and Pally (2001) do not completely match, although when they are divided into two sections the descriptors for creative skills (Siegfried et al., 1991) and critical thinking (Pally, 2001) are similar.

Table 4 Comparison of *Thinking like an Economist* to the Sustained Content-based Approach

Economics	EAP
1) **Problem solving** a) emphasize reasoning using the techniques and principles of Economics as a result the students learn to understand economic behavior and improve their ability to predict the consequences of changes in economic forces	1) **Analytical Thinking** a) grasping the claims or perspectives of readings and lectures b) understanding the methods of proof used to support those claims/perspectives c)synthesizing claims and support from a range of sources
2) **Creative skills** a) determine how to frame questions b) deciding what tools and principles to apply to particular problems c) deciding what data and information are pertinent to those problems d) learning how to understand or explain surprising or unexpected results	2) **Critical Thinking** a) noting the social, economic and political contexts of claims and support b) questioning or challenging them c) evaluating them d) using one's understanding, synthesis, and questions as a basis for formulating ideas of one's own e) presenting (orally and in writing)ideas/positions of one's own using appropriate rhetorical conventions

Firstly, there are significant differences between the descriptions of 'problem-solving' in Economics and 'analytical thinking' in EAP.

Table 5 Differences between problem-solving and analytical thinking

Economics	EAP
1) **Problem solving** a) emphasize reasoning using the techniques and principles of Economics as a result the students learn to understand economic behavior and improve their ability to predict the consequences of changes in economic forces	1) **Analytical Thinking** a) grasping the claims or perspectives of readings and lectures b) understanding the methods of proof used to support those claims/perspectives c)synthesizing claims and support from a range of sources

The description of 'problem-solving' emphasizes the use of 'reasoning' of the techniques and principles of Economics. The word 'reasoning' as defined by Dictionary.com is: the process of forming conclusions, judgments, or inferences from facts or premises and the reasons, arguments, proofs, etc., resulting from this process (Dictionary.com, November, 2006). Moreover, the American Heritage Dictionary adds to the definition: The capacity for logical, rational, and analytic thought; intelligence (Dictionary.com, November, 2006). The use and inclusion of the word 'reasoning', which also implies 'logic' is absent from Pally's (2001) definition which focuses mainly on understanding, supporting claims made and synthesizing.

Furthermore, the second part of problem solving (Siegfried et al., 1991) involves a notion of a predictive nature within the Economics context that is also absent from Pally's (2001) analytical thinking section as well as the critical thinking section.

Therefore, there is a definite a mismatch between the first two sections of both definitions. However, the second sections seem to have a few more aspects in common although arguably not directly linked.

Table 6 Similarities between creative skills and critical thinking

Economics	EAP
2) **Creative skills** a) determine how to frame questions b) deciding what tools and principles to apply to particular problems c) deciding what data and information are pertinent to those problems d) learning how to understand or explain surprising or unexpected results	2) **Critical Thinking** a) noting the social, economic and political contexts of claims and support b) questioning or challenging them c) evaluating them d) using one's understanding, synthesis, and questions as a basis for formulating ideas of one's own e) presenting (orally and in writing)ideas/positions of one's own using appropriate rhetorical conventions

Links could be drawn between the descriptor "to determine how to frame questions" from the creative skills category (Siegfried et al.,1991) and Pally's (2001)

descriptor of “using one’s understanding, synthesis and questions as a basis for formulating ideas of one’s own.” In order to ‘determine’ anything on a subject, one must first synthesize and understand the material and the questions associated with the topic. Then they can continue to the second stage of ‘framing questions’ that lead to ‘formulating ideas’ by themselves. Therefore, ‘framing questions’ is a part of Pally’s (2001) broader descriptor.

This descriptor from Pally (2001) is also a necessary process to know: “what data and information are pertinent to those problems and how to understand or explain surprising or unexpected results” (Siegfried et al., 1991).

The last similarity between the two sections connects Pally’s (2001) descriptor: “presenting (orally and in writing) ideas/positions of one’s own using appropriate rhetorical conventions” and the creative skills descriptor, “what tools and principles to apply to particular problems” (Siegfried et al., 1991). Although in Economics, the reference to ‘principles’ refers to discipline-specific knowledge such as models: in this context ‘principles’ and ‘tools’ are considered to be simply theory. This connection between ‘models’ and ‘theory’ is not considered a direct link, however the content or theories that are taught in a course and the subsequent final research paper that is required of the language learners illustrates a course developed to teach a variety of complimenting or opposing theories and a resulting product used to demonstrate an understanding of the ‘tools’ or ‘principles’ taught during the course. This may not be the case in EAP.

In this study the differences between the discipline-specific definitions of critical thinking are examined before they are considered in relation to the framework as was

proposed by Nelson (see Thoma, 1993). In the next section, this framework will be presented and discussed.

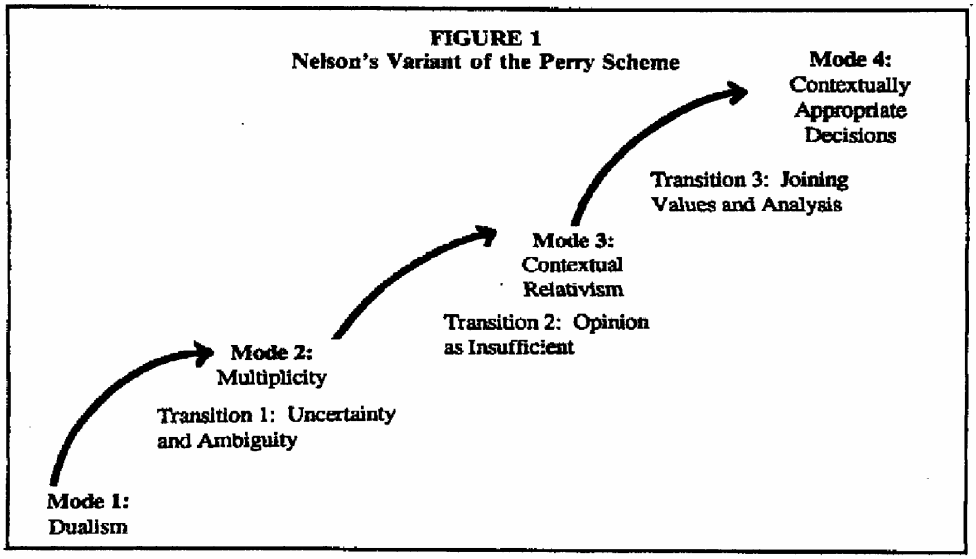
Conceptual Framework

Due to the number of different definitions of critical thinking (Ennis, 1962; Mcpeck, 1982; Atkinson, 1997) and the variety of opinions of how it should be taught, a framework was chosen for this study that would allow an investigation of how critical thinking is actually taught within Economics and EAP. This framework was designed in the Economics discipline, for Economics professors, to use as a guideline but it also displays general properties, not just specific to Economics, which might allow this framework to be applicable in other disciplines too.

It is not to be used to teach general critical thinking courses but rather is context specific (Thoma, 1993: Van Sickle, 1992). Thereby, it operates on the premise that context is needed and that the context will provide an environment that will foster, guide and generate critical thought over four distinct modes of thinking (Thoma, 1993).

Perry first created the basis for the framework in 1970 (Thoma, 1993) but the framework used in this study was Nelson's simplified version of the Perry Framework (Thoma, 1993). Nelson's Framework is a newer, modified framework includes transitions 1, 2, and 3 that serve to enrich, the four original modes of thought: Dualism, Multiplicity, Contextual Relativism and Contextually Appropriate Decisions (Thoma, 1993).

Figure 2 Nelson's Framework



Additions to the model were made so that the model would be more useful for Economics professors and include teaching tactics so that they can foster cognitive development within the discipline.

However, while this model is used to foster critical thinking in Economics, it does not have to be restricted to Economics. It could be used in other disciplines too despite the fact that disciplines are teaching different subject matter.

Therefore, both disciplines Economics and EAP were investigated with Nelson's Framework (Thoma, 1993) because of the frameworks' general attributes. It became an important component since it provided a foundation on which to create questions for the participants in the current study and allowed two very different disciplines to be examined through one framework.

Nelson's Framework

1) Dualism

Dualism is the lowest mode for students to grasp. At this mode it is expected that students hold a black and white view of the world and have little tolerance for uncertainty or ambiguity. During this mode students assume that knowledge is absolute, it is either right or wrong, and that learning is just a transmission of facts and truths from the teacher to the student.

In language programs, this first mode of thinking would be reached in an English for General Purposes or English as a Second Language (ESL) program at the lower level.

1a.) Transition 1: Recognizing uncertainty and ambiguity

It is during this transition that students begin to realize that there is a level of uncertainty that exists in knowledge and thinking, and by doing so, they come to realize that different points of view exist and that even experts disagree.

2) Multiplicity

Multiplicity is the second mode of critical thinking and is described as the developmental stage when students work on their cognitive development and grow to accept the reality of uncertainty. They begin to adopt the views where uncertainty lies, and realize that knowledge and truth are essentially subjective and personal. This can be illustrated by statements such as: "In my opinion…" , "Well I think that …" These introductory statements are often said by language learners in a English as a Second Language (ESL) Program and are used by language learners to express their thoughts.

This is to say that Dualism has perhaps been learned and the first transition from Dualism to Multiplicity has been successful. Economics students and language learners

alike now recognize other's opinions, and life is not seen in absolutes, but at this level they are only able to agree or disagree with the theories or opinions that are taught.

2a.) Transition 2: Recognizing opinion as insufficient

In the second transition, students continue to progress within the framework by realizing that not all opinions and theories are equal, and more importantly that these opinions and theories can be evaluated. This means, "criteria exists for evaluating the relative usefulness and validity of competing views" (Thoma, 1993, p. 131).

Transition 2 is the stage where methodology and criteria should be presented to the students in order for them to discriminate among theories and policies (Thoma, 1993). By criteria, it is outlined as: logical consistencies, explanatory power, empirical evidence, and the ability to predict. Furthermore, students need to be helped to become familiar with these criteria so that they can address Economic issues through comparisons, analysis, and then evaluate the different positions that exist on that issue.

This notion of criteria, but more specifically, criteria that is used within a discipline to understand and explain theories, was used as a basis for designing a course (Borg & Borg, 2001). The course was unique because it took two disciplines and through the discipline-specific criteria of each discipline, it attempted to teach students to think critically.

The course combined History and English Literature together and students were shown how 'facts' can seem different depending on the perspective, lens, or discipline-specific criteria that one uses to address the same event from a period in time.

3. Contextual Relativism

In the third mode of thinking, Thoma (1993) explains how different disciplines use various criteria as critical standards and that these standards are used to make choices among the competing views and theories. Moreover, it is important to impress upon students that this criteria exists so that when uncertainty does arise and choices are made among hypotheses, that these are not arbitrary.

3a.) Transition 3: Joining Values and Analysis

This transition preludes the fourth and final mode of thinking and thereby starts to force the students into realizing how to join values and analysis. This transition requires students to reflect on the second transition where they realized that uncertainty exists in the real world and that evaluation and analysis of hypotheses or theories is possible. However, the third transition urges the students to go one step further and apply these methods outside of the context of the classroom. This is a critical aspect of this transition leading up to the fourth mode of thinking and begins to divide thinkers into novices and experts (VanSickle, 1992).

According to VanSickle (1992), novice problem solvers tend to skip general analysis of a problem's context or identify sub-problems, and they do not address larger issues underlying these sub-problems. In contrast, expert problem solvers take aspects from various aspects of life and experience and combine it with theory. This involves the highest development in cognitive ability and maturity. VanSickle (1992) refers to this type of knowledge as schematic knowledge. Therefore, the more life experience a person has then the more schemata one has to draw upon and can apply this in outside the classroom.

Both Transition 3 and the fourth mode of thinking are not normally achieved until graduate level studies.

4. Contextually Appropriate Decisions

In this final developmental stage, students can accept the uncertainty of reality and are able to make and commit to choices of ideas and action independently. These choices are based on certain discipline-specific methods and criteria that are in context of the student's values. Overall, once a student reaches this level they can make their own choices, have responsibility for their choices and moreover, their choices must be based on joining personal values with the criteria or appropriate disciplines.

In conclusion, there is no match between problem solving (Siegfried et al., 1991) and analytical thinking (Pally, 2001) but there are similarities between creative skills in *thinking like an Economist* (Siegfried et al., 1991) and critical thinking according to the Sustained Content-based approach. However, even though conclusions can be drawn from the definitions of critical thinking within these two disciplines, it is important not to remain at the literature level but to ask the Economic professors and EAP instructors, how they define critical thinking and furthermore, what do they believe is essential when teaching critical thinking.

The next chapter presents the methodology that was used in the study. The six participants, three Economic professors and three EAP instructors, are introduced along with the instruments and analysis that were used in order to answer the original research questions, namely:

(1) What are the definitions of critical thinking, according to Economics professors and EAP instructors?

(2) How do their varying definitions of critical thinking influence their teaching?

(3) How do their courses facilitate critical thinking? Is it either explicit or implicit?

(4) Is there a gap between the definitions of critical thinking in Economics and EAP? If so, would this challenge the Sustained Content-based approach?

CHAPTER FOUR

Methodology

In order to investigate the research questions, a case study (Yin, 1989) approach was used. Six participants were interviewed, three from Economics and three from EAP. In addition, each completed a questionnaire.

This qualitative study aimed to both explain and explore the definitions and teaching of critical thinking within Economics and English for Academic Purposes. The study explains the responses from the participants to the definitions of critical thinking as defined within the disciplines and contrasts their responses across the disciplines. Finally, the study explores the level of teaching critical thinking according to the framework, Nelson's Framework (Thoma, 1993).

Participants

Six participants graciously volunteered their time to be interviewed and complete the questionnaire. Three participants were Economics professors and three participants were English for Academic Purpose (EAP) instructors. They all indicated their interest to participate in my study by responding to a generic email that I sent around to all Economics professors who teach first year courses and all EAP instructors whose names were on a list that was provided by the EAP coordinator. However, despite the fact that the intention was to contact and then interview professors who only taught first year courses, I ended up with a group of professors who taught a range of courses from first year courses to graduate level courses in the department.

The reverse is true for the EAP instructors who responded to the email. I had intended to contact and then interview those instructors who taught the higher-level EAP

course, however only one of the participants taught at the advanced level, whereas the other two taught the introductory level and intermediate level.

Ideally, it would have been beneficial for the study if I had had the opportunity to interview three instructors who taught the final higher-level, as it would also have been beneficial to have interviewed three Economics professors from first year courses only; however the sample is representative of the random selection process.

Procedures

For this study I chose to investigate notions of critical thinking in the English for Academic Purposes (EAP) program and the Faculty of Public Affairs and Management at Carleton University. Over the past 10 years, Carleton has steadily increased the student enrollment in the Faculty of Public Affairs and Management, resulting in this faculty having the largest undergraduate population at Carleton (Carleton University website, 2005). This has had a subsequent effect on the increasing number of International students and subsequent language learners who are choosing to study in this faculty at Carleton (Fox, personal communication, 2006). For the purpose of this study, I narrowed my scope to Economics and Political Science. I chose Economics as the primary discipline to investigate due to the large number of EAP students who aim to enter the program (Fox, personal communication, 2006). Additionally, I chose to include Political Science for triangulation.

The data was collected from interviews that focused on disciplinary perspectives of critical thinking, and questionnaires including Political Science for triangulation.

The interviews were a voluntary one-hour verbally recorded interview after which I left a copy of the questionnaire with each of the three Economics and three EAP participants. The semi-structured interviews (Brown, 2001) allowed me to ask pivotal questions that I constructed based on the developmental learning of critical thinking as set out in Nelson's Framework (Thoma, 1993). However, I chose to use a semi-structured interviewing style so that the interview was flexible and designed to be supportive of any additional anecdotes or particular stories that they wished to share with me.

The last part of the interview was the ranking task which was followed by the questionnaire. A copy of the questionnaire was left with each participant. The ranking task involved a piece of paper with several pedagogical goals written on it. I gave them a few minutes to read over them and then rank them on the piece of paper. Then we went over how they ranked the goals and what they thought of these goals. These responses were also verbally recorded.

At the end of the interview, I left the questionnaire with each of them and asked them to fill it out at their leisure. Additionally, I asked them to write their definition of critical thinking on the back of the questionnaire.

At a later date, the interviews were transcribed and the responses were analyzed according to the questions asked during the interview. They were then compared within the discipline and across the disciplines in order to record any significant patterns or repetitions that indicated if 'analytical generalizations' could be made (Yin, 1989).

The questionnaire was distributed to the Political Science department as well as the Economics department and all EAP instructors. It was distributed electronically and

while it did not include the previously mentioned parts of the questionnaire, it did include an additional question: In your opinion, how do you define critical thinking? In order for the questionnaire to be accessed a link was provided as well as a password.

Instruments

There were three different instruments used to collect data during the study. The first instrument was a list of interview questions, followed by a ranking exercise and lastly, a questionnaire.

Interview questions

I created two sets of questions for the interview process, one set for the EAP instructors and one set for the Economics professors. The interview was designed to begin with introductory questions that led into their definitions of critical thinking and final questions about their course design. Several of the questions overlapped each disciplinary group but some were specific to either only Economics or English for Academic Purposes.

Introduction

1) How long have you been teaching?

2a) Why did you decide to get into this profession? (directed towards the Economics professors)

2b) What is your disciplinary background? Has your disciplinary background influenced your choice of topics/content? (directed towards the EAP instructors)

3) Has your teaching changed overtime?

4) Have you noticed any changes in your students' overtime?

Definitions of Critical Thinking

1) What is your definition of critical thinking?

2a) What do you think an Economic student needs to do (or focus on) in first year?

2b) What do you think a student needs to succeed in a first year mainstream class? (directed towards the EAP instructors)

3) What do you think it means to 'think like an Economist'? (directed towards the Economics professors)

Course Design

1) Do you think that your assignments facilitate the teaching of critical thinking? How?

The last question was designed to elicit responses that would guide the conversation, if it had not already gone there, towards their teaching. This question specifically targeted aspects of their course such as topics, content (Economic models etc), and how they presented subject matter.

The responses to this last question created a nice segue into the final section of the interview stage which concluded with the participants ranking their personal teaching goals.

Ranking exercise

For this task I provided a list of teaching goals:

A) Personal development
B) Work and career preparation
C) Liberal arts and academic values
D) Discipline-specific knowledge and skills
E) Basic academic success skills
F) Higher-order thinking skills

Each participant was asked to finish this task and then talk about why they ranked their choices the way they did. This approach led to discussions regarding these teaching

goals and how a few participants thought that something should be added to the list or opinions on some goals that they thought had little relevance. Finally, at the end of the interview, the participant was left with the questionnaire which was divided according to the same six teaching goals from the task they had just completed.

Questionnaire

The Teaching Goals Inventory questionnaire was chosen for this study due to the established teaching goals and the way each goal was then teased apart to investigate within the teaching goal (Angelo and Cross, 1993). (See Appendix 2 for the questionnaire). The questionnaire was posted on an online survey site as well as handed in paper form to the interview participants. The questionnaire was important in this study to determine how the participants viewed their primary role as a teacher and how, if at all, this role manifested itself through their teaching. This was illustrated through a self-assessment task at the end of the questionnaire. This task required them to add the number of 'essential' goals they aimed to teach in their courses as indicated by the questionnaire. Thus, an example would be, if they circled 'Teaching students facts and principles of the subject matter' as their primary role as a teacher; yet when they added the 'essential' column during the self-assessment task, they may have indicated through response to the individual aims, that they in fact teach more towards the 'Providing a role model for students' teaching goal. Therefore, this would indicate that their perceived role as a teacher might be different than what they consider as an 'essential' goal that they always try to achieve in their course.

The question asked the participants to circle: How do you see your primary role as a teacher?

1) Teaching students facts and principles of the subject matter
2) Providing a role model for students
3) Helping students develop higher-order thinking skills
4) Preparing students for jobs/careers
5) Fostering student development and personal growth
6) Helping students develop basic learning skills

Analysis

This study uses a case approach (Yin, 1989) to explore critical thinking within the two disciplines and includes four components: research questions, the participants in this study, the logic linking the data to the research questions and the criteria for interpreting the findings.

The research questions guided the study and according to the properties of a research study, this study was both *explanatory*, explaining 'how' critical thinking is taught, and *exploratory*, exploring 'what' critical thinking is (Yin, 1989). As a result, the case studies are used to explain the 'how' through examining patterns that emerge in the interview and questionnaire data.

Then the exploratory 'what', as in 'what is critical thinking' within Economics or English for academic purposes, is linked to the definitions of thinking within the specific disciplines.

Finally, the data collected from the interviews and questionnaires that supported the definitions of critical thinking as defined within Economics and EAP were used to create links to the modes and transitions of thought development as suggested by the Nelson's Framework (Thoma, 1993).

CHAPTER FIVE

Findings and Discussions

In this chapter the results of the interviews and questionnaire[1] data are presented in three parts. The first part presents the six cases and their responses to questions in regards to their teaching methods, the facilitation of critical thinking within their course and what is deemed necessary for a first year economic student to be successful. This section synthesizes the participants' accounts and attempts to find answers to two of the research questions: do their courses facilitate critical thinking and do their definitions of critical thinking then influence their teaching.

The second part examined the definitions of critical thinking both within the disciplines and across the disciplines. This part includes the responses given by the participants from the online questionnaire. All of the responses were discussed in relation to the definitions of critical thinking described by Pally (2001) and Siegfried et al (1991), in order to determine if there are any similarities or differences between the definitions recorded.

Finally, the study examined the differences between analytical thinking or problem-solving skills as found within the interview data and the discipline specific definitions (Siegfried et. al., 1991; Pally, 2001). Subsequently, the differences between the definitions of critical thinking are discussed and then aligned along Nelson's framework (Thoma, 1993).

[1] The questionnaire helped explain how critical thinking is viewed by different disciplines: Economics, EAP and Political Science. Results are integrated here; however they are summarized in Appendix 3.

I. Case Studies

The following six case studies examine the three Economic professors and three EAP instructors' views on: backgrounds, teaching methods, critical thinking in their courses and academic success for a first year Economics student.

The six participants' were divided into two disciplinary groups and their responses were compared and discussed according to patterns that emerged across the disciplines and within the disciplines. They were then considered in relation to the research questions.

Firstly there was an examination into how the participants perceived their teaching methods and if they thought they had changed over the years. The purpose of this category was to gain a greater understanding of critical thinking in their course and if it was one of their teaching goals. In other words, if they were doing anything special to make sure that their students were learning how to think critically. This first category was designed to provide further support for answers that were given in the second category. The second category is a collection of accounts that participants gave regarding critical thinking and if they believe that it was fostered in their course.

The third category examined the needs for academic success in a first year Economics course as perceived by the six participants. This category was designed to illustrate how much is known by these specialists about what is required of students in specific disciplines.

Backgrounds of Economics professors and EAP instructors

In addition to the breadth of courses my participants taught, the number of years of teaching experience they had at the university level also varied. Whereas the Economics professors varied greatly in their reasons for teaching at a university, the EAP instructors varied in their backgrounds. Table 7 highlights these differences.

Table 7 Participant background information

Economics	**Tom**	**John**	**Bob**
Years of teaching experience	4 years	12 years	28 years
Reasons for becoming a Professor	Enjoys research and the latitude to research whatever you want	Interested in and enjoys teaching	Enjoys Economics, teaching and the freedom to do research
EAP	**Michelle**	**Jen**	**Liz**
Years of teaching experience	3 years	24 years	5 years
Disciplinary backgrounds	Undergraduate degree in Languages and a Bachelor of Education EFL teacher Completed a Teaching English as a Second Language certificate Taught in an Intensive ESL Program Master's with emphasis on teaching methodology Doctoral degree Teaches in the credit-EAP Program	Undergraduate Bachelor of Arts degree Completed a Teaching English as a Second Language certificate Taught in an Intensive ESL Program Teaches in the credit- EAP Program	Undergraduate degree in Languages and a Bachelor of Education Completed a Teaching English as a Second Language certificate Master's with emphasis on Genre Theory and Critical Discourse Analysis Teaches in the credit- EAP Program

The range of years that the participants' had been teaching varied greatly and split the group into two ranges: three of the participants had only taught between 3 to 5 years, while the other three participants had taught between 12 to 28 years. While all of the

participants displayed a varied level of enjoyment of teaching, the most surprising comment came from the participant who had taught for 28 years, who said that "It doesn't get boring. I like it. It's a new challenge every year" (Interview, Bob, 2006).

Furthermore, the Economics professors gave different reasons for why they chose to work at a university. Two of the Economic professors said that they didn't really plan on becoming professors and Bob said that, "[I] didn't know what else to do." (Interview, Bob, 2006) while John said that, "it was assumed that since I was a good student, I would go to a Ph.D program." (Interview, John, 2006). Bob even joked that if you're "good at school, they let you stay on, and if you're really good, they never let you leave!" (Interview, Bob, 2006). However, all joking aside, both professors (Interview, John, 2006; Interview, Bob, 2006) expressed their genuine interest in teaching; including the interaction with students and the freedom they have to do research on almost anything they like. Additionally, John expanded this point by saying, "I think the teaching is more central to my career than to some professors. There are some professors who are interested in their research. They have to teach that's why they do it. I guess I'm interested in teaching and I enjoy teaching." (Interview, John, 2006)

This contrasted Tom's response when I asked him the same question. He said university provides "a good opportunity to 'do'" (Interview, Tom, 2006), and that you have more latitude to do whatever you want in terms of your research. He also chose his current position at the university based on the fact that it has a Ph.D program which he said is "definitely appealing to people who are interested in research…there are grad students around so you could (A) supervise them or (B) use them for your own research, which makes for a more lively environment." (Interview, Tom, 2006)

Contrary to a content-course, such as Economics, instructors in an EAP program often complete an undergraduate degree in an unrelated discipline and then usually continue on to graduate studies in Applied Linguistics or programs related to Second Language Teaching. This is due to the fact that unlike Economics, there are no undergraduate degrees in "How to teach English for Academic Purposes". Therefore, I found it beneficial to ask about their individual disciplinary backgrounds and how they came to teach EAP.

Not surprisingly, the three instructors all focused on different disciplines in their undergraduate studies but since they completed their undergraduate degrees, they continued to educate themselves in post-secondary studies. One common element amongst all three participants was their focus on teaching as reflected by Michelle and Jen (Interview, Michelle, 2006; Interview, Jen, 2006). They both completed a certificate in Teaching English as a Second Language (TESL) and Liz completed a Bachelor of Education degree. In fact, Michelle continued after the TESL certificate to a Masters degree which focused on Methodology and then finally onto her Ph.d. Liz also went on to complete her Masters degree after her Bachelor of Education (Interview, Liz, 2006).

However, it is equally important to recognize the additional teaching experiences that the instructors gained in the intensive, non-credit ESL program as well as in the credit, EAP program. This is especially true since this is where all three instructors began teaching, either while they were in the Master's program or after they graduated from the TESL certificate program.

Overall, the three EAP instructors enjoyed teaching their students as much as the Economics professors, except they seemed to actively strive to better their pedagogical approaches and engaged in research that would inform their syllabus design.

Economics

Case study #1

Tom

Tom was the youngest of the participating Economics professors and compared to the two other professors had taught for the shortest period of time. During the 2 years he had taught at this university he said that he had not noticed any changes in the students in his classes but did mention that he had changed his teaching method over the years. He switched his teaching methods according to the size of the class that he was teaching at that moment. For example, when he was a doctoral student at another university he used to have an average of 220 students but now his class sizes averaged 90 students. Thus, his method of teaching had changed from an auditorium style of turning overhead slides and working from a textbook, to what he refers to as, 'chalk and chat' (Interview, p 2).

According to Tom, "chalk and chat' was the process of presenting a problem and then do it in 'real time' which allowed students to take more detailed notes. Therefore, this method allowed him to show the students the process and model it for them. As Tom said, "pedagogically it's much easier for students to kinda walk them through it."

He coupled this approach with a study guide and the textbooks, called "Principles of Microeconomics" and "Principles of Macroeconomics" (Mankiw, Kneebone, McKenzie & Rowe, 2004). The study guide allowed the students to do extra work on problem solving and Tom stressed, "you really have to do it yourself. Sort of learning, by doing it"(Interview, p.2).

This focus on *learning by doing* is reflected in the changes that Tom made to his marking and weighting scheme. When he began teaching, his courses were designed in relation to others in the department.

> When I first did it, I followed others where the midterm was 40% and the final was 60% with no assignments, instead to learn the material you have to follow and talk in class and then try the study guide questions and then you'll be tested on it (Interview, Tom, p. 2).

However, Tom found that this system relied heavily on student self-motivation to complete the questions from the study guide. The midterm was meant to be a tool that would show if the students knew the material. Tom said that the students did poorly because they did not do the study guide questions by themselves and therefore, they only knew how to do a problem in theory, "they hadn't actually tried for themselves, just understood how it worked" (Interview, p. 2).

As a result, he began the 'chalk and chat' approach, assigned grades to assignments and noticed that their grades went up as a result. He added, "if you ask people to do a little bit more, then they do respond to doing it and they *rise to the occasion*" (Interview, p. 4).

Tom's teaching focused mostly on the application of the models and said that it begins in first year where students form the basis for the analytical thinking which comes about in second year, "only when you really understand a lot of the theory and the method can you begin to be critical of these thing" (Interview, p. 9). Tom believed a first year course is a survey course and while students were expected to enter the course knowing a few terms and concepts such as *monopoly* and *demand*; he did not expect them to know economic-specific knowledge or terminology. For example, he expected them to

know what *demand* was but he did not expect them to know about a *demand curve* (Interview, p. 4).

> They will do a broad range in the first year with micro-economics and macro-economics and then the second year is to actually narrow, in a way because you take concepts that you've learned in the first year and then look into them a lot deeper (Interview, p. 4).

Tom explained that the focus in the following years is not on breadth but depth and in the first year he wanted students to know that "the concepts that are discussed in Economics actually have a sort of real world application to them" (Interview, p. 8)

Case Study #2

John

John came to be in Canada as a result of the recession and the Thatcher government. At that time, the Thatcher government did not fund people who wanted to return to university for a second Master's. Since John had already completed a Master's in Soviet and Eastern European studies and would not receive more funding, he decided to leave England to pursue a second Master's in Economics. John had only intended to stay in Canada for no longer than one year but ended staying longer, with the added encouragement and recommendation from a professor whom John met while doing his Master's, he continued to complete his Ph.D.

Besides a few temporary jobs over the years and an acknowledgement of the many opportunities in the private sector with higher salaries, John said that he preferred academia because he liked teaching and interacting with the students and research. He said, "I think the teaching is more central to my career than to some professors…I guess I'm interested in teaching and I enjoy teaching" (Interview, p. 1).

John said his teaching has improved and his delivery has become smoother. Furthermore, he described himself as being more at ease. He explained that he is more at ease because of "the material you're teaching, imparting the knowledge, having the confidence that you know the material well, in an interesting way that excites your students" (Interview, p. 2).

John described himself as being "a pragmatic, optimistic kinda person. I mean if I have to be there for three hours, I may as well do this well, and enjoy it, and make the students enjoy it" (Interview, p. 2). John said that he enjoyed teaching his students and he was also aware of his students and the type of student drawn to Economics. He believed that the changes in student populations were interrelated to the economy itself. He said, "If the economy is bad, then students want to look for a discipline with a job at the end" (Interview, p. 4). John believed Economics is a marketable discipline and commented on International students in Economics.

> Using models to analyze problems, even if you don't understand what the professor is saying. International students in general, especially Southeast Asia, East Asia tend to be extremely well trained in mathematics compared to Canadian students. They learn the basics of math really well, because it's in part rote (Interview, p. 5).

He also said that if an International student does not understand a question on an exam then it is not because of a lack of intelligence or training, but that it is because they don't understand the question itself. This is most likely a result of the students' lack of language knowledge and John said that this affects the way he writes exam questions. He said that it helps that his first language is English but some of his non-native English speaker colleagues have a more difficult time. By talking to students, John said he found out that "sometimes (International) professors present exams to their students that are

actually illiterate, or they don't make sense, or they're not quite logically taught" (Interview, p. 5).

One technique that John has implemented in an attempt to avoid language issues has been to tell the students the exam question about a week ahead of time. An example of a question is, "How should you use, and define a regression model? And integrate it all, and decide which should be a good model which shouldn't be a good model." (Interview, p. 6) John said that his goal for the students, when he asked them to answer a question like this, was for them to reflect upon and consider the whole course when they decided which model to use. He preferred that they sat and thought about the question. (Interview, p. 6)

John primarily taught Econometrics and used this type of approach in his upper level classes to facilitate thinking, while still encouraging the basic Economic principles which are taught in first year courses. According to John, in first year courses students learn the "twelve ideas, rules that lead you to make more sensible decisions, and if you know those rules, they help you with the particular models that you learn in the first year classes and if you apply them, then you can apply them to any problem anywhere." (Interview, p. 7) Therefore, in John's opinion, first year students gained a "complete understanding of how Economists look at the world and I think that is to sort of look at any issue and try and identify salient features and important aspects, you know how to approach the problem." (Interview, p. 8) He ended by saying that, in the following years, students are expected to build upon that knowledge and it becomes more rigorous.

Case Study #3

Bob

Out of all six participants, Bob had taught for the longest time and his enthusiasm for teaching was encapsulated in his own words when he realized just how many years he had been teaching for. He had taught for 28 years and said, "It doesn't get boring, I like it. It's a new challenge every year" (Interview, p. 1). He contributed a part of what keeps 'it fresh', to teaching the first year course because these students have little previous background in Economics and therefore "they've not been trained to ask selected questions- they can ask any questions outta anywhere" (Interview, p. 1). He added that "it's fresh because of the things they think about, what's topical, what's relevant to their own experience" (Interview, p. 1).

Over the years Bob had paid attention to the types of students who entered his first year courses and he had seen a change in his students. Specifically, Bob said, there had been an increase in their abilities over the past 10 years and he said that "they've gotten better" (Interview, p. 9). He contributes this to the university raising their entrance standards which had also resulted in a relatively high number of A+'s that he handed out as a final mark. However, he pointed out that of the six A+'s that he handed out as a final mark; none were in the Economics department.

Bob continued to elaborate and added some information to a discussion that concerned the International students on this universities' campus.

> So you can tell from the names…my guess is that a lot of these students are English as a Second Language, probably Visa students. They wanted to be in Commerce but couldn't get the grades to get into commerce, so 'well Economics, it's sort of the same', and they weren't let in Commerce. Their grades aren't good enough. They're not motivated because it's not really Commerce (Interview, p. 9).

Bob truly enjoyed the teaching part of his job and said that over the years he had become a better teacher. He expanded upon this, "I now know I didn't have the experience so I couldn't anticipate the problems, the difficulties that students would have, the confusions that happen in Economics. Now after all these years, I've heard almost everything." (Interview, p. 2) Bob simply summarized these 'difficulties and confusions' as, "it's what we call analytical problems" (Interview, p. 2).

However, Bob acknowledged that 'analytical' can mean different things to different people, so he explained his use of the word in an Economic context, "We model, we construct formal abstract models of the economy" (Interview, p. 3). Even though he said that Economics tried to hide this from students in the first year, he described a first year course as building an artificial construct. 'Analytical' then, as defined by Bob, means "trying to use abstract reasoning to understand and model a real life event" (Interview, p 6). According to Bob, his course did not facilitate critical thinking, in fact Bob continually used the word analytical rather than critical.

In order to accomplish this and help his students to begin to look at problems analytically, he taught theory. "There are times where we have competing theories. We present about four or five (depends on how you divide it) different approaches to explain the natural rate of unemployment. You don't spend much time arguing about it though" (Interview, p. 12) which is one area that Bob wished he could have focused on more in his introductory classes but said there was not enough time. Even though the new textbook is smaller and thinner it is still dense and still contains the 10 principles of what it means to *think like an Economist*. Despite these time constraints, Bob was focused on teaching his students all the content that he could within the time period allotted, and

"understanding something about how the economy works, or at least what we think we understand about how the economy works" (Interview, p.10).

English for Academic Purposes

Case study #1

Michelle

Michelle had taught EAP for the least amount of years compared to the other two EAP instructors and her teaching was influenced by her schooling in Europe where she began her teaching career as a teacher of English as a Foreign Language. Since Michelle came to Canada she has gained many years of teaching experience, both during and after completing her Masters and Doctoral studies. Michelle studied about particular methodologies prior to her latest position at this university where she now teaches critical thinking within a Sustained Content-based approach. In her thesis she focused on the communicative approach to teaching language (Interview, p. 1). After completing her Master's thesis, she returned to teaching and was forced to give more thought to teaching within a Sustained Content-based approach. Michelle began "to see how things could be connected" (Interview, p. 1) such as,

> All the different activities, the topics and how the actual assignments and activities and the topics that you do in class facilitate the development of critical thinking. Seeing the main points, how they can be analyzed, how they can be added to and then how they can be brought together as a synthesis in the end (Interview, p. 1).

She believed that her course, as it was designed, facilitated critical thinking because "the main focus is really on understanding the main ideas, main concepts, phrases, within that reading and really making sense of that concept, and somehow

finding a link between the concept and their own prior knowledge."(Interview, p. 2) Therefore, by focusing on the theme, *Intelligence*, critical thinking was produced through a series of activities and tasks. First, the language learners listened to a lecture about "Sustained Content-based teaching and what is really the aim, the goal of this teaching approach: it develops deep learning, it's developing analytical thinking and obvious analyses and then synthesis" (Interview, p. 3).

After the lecture her language learners understood how the course was designed and the purpose of learning through this method. Next, two main learning approaches were presented and they had an accompanying worksheet to work through as they read the texts.

The worksheet "helps them to focus on the main points in the text, and then fill in the worksheet. Out of this reading they really have to get a definition of surface and deep learning, and then the five stages of development of student understanding and the two different teaching styles that be linked to the learning style"(Interview, p. 4).

Once they had completed the worksheet then the language learners had to analyze their own language learning approach. Michelle wanted the language learners to "try to contrast and compare their experiences of learning back home and that of here in Canada" (Interview, p. 4). This step ended in a very informal, free writing assignment.

Another writing assignment that language learners were expected to complete was a discussion paper which she specifically calls a discussion paper and not an essay. This is because Michelle wanted her language learners to think first about what it was they wanted to say and then the content of what they wanted to say could shape the form of their writing. They had to "elaborate on the concepts or theories or ideas from these texts

that we've been discussing and the prompt as well in these assignments, focuses on the how and why element (Interview, p. 4). In other words, "showing relationships not just the description of the pure, idea or theory or concept." (Interview, p. 4) Thus stressing "the connections and showing relationships between ideas either from texts or between texts" (Interview, p. 4) instead of focusing on the amount of paragraphs they have to have in order to make it a good essay.

According to Michelle, making connections was part of critical thinking but 'is dependant on their discipline and varies in the first year" (Interview, p. 10). Michelle elaborated, "Because it's not possible to satisfy everyone's needs along disciplines so there are many different groups of students from different disciplines. According to Michelle, she tries to teach them the general academic skills that can be transferred then into their own disciplines such as: be able to write or develop their writing in an academic format, be able to express their feelings in writing as well as in speech, build up their papers or presentations in a logical manner, develop note-taking skills, develop analytical and analytic skills, able to synthesize ideas (Interview, p. 10).

However, when asked about what first year Economic students were required to do in their first year, she responded with "Good question! I don't know to be honest. I've never had the chance to go over there and figure out what it is that they expect their students to do" (Interview, p. 11).

Case study #2

Jen

Jen enjoyed teaching and had worked in both programs. Jen said that she had hoped that over the years she had broadened her knowledge and learned about language learners needs but that she did not think that she had changed her teaching approach.

According to Jen, "students come into this Western context with their own learning…they've been conditioned in a certain way, and our expectations here are different in terms of approach (in ESL), and even in other classrooms" (Interview, p. 3). Jen explained her teaching approach by comparing the Western approach to other cultures. According to Jen, the Western approach is, "There's the point, support it. There's the point, support it. There's the point, support it" (Interview, p. 3). Whereas in different cultures this is not how material or information is presented, so when language learners are taught by the Western approach they are not expecting it and they also do not produce their work in this way. Therefore, Jen (Interview, p. 3) believed that what language learners needed the most in order to succeed in university is to learn about the structure and rhetorical organization of English However, she added self-confidence to this list of needs and said that it does "not matter what class, I'm always aware and always working to develop this in students" (Interview, p. 6).

In order for her language learners to develop a sense of self-confidence she advised them to "buy the Economist and it covers the world. One page articles. Practice CRC's (Critical Reading Commentaries) at home and I'll give you feedback. Formative rather than summative. Reinforcing reading strategies" (Interview, p. 6). A CRC was a commentary that should not be a summary of the entire text but should outline the author's main argument and the student's impression or reaction to this argument. Whether the language learner agreed or disagreed, their opinion should be supported. She expected the students to discuss what they understood of the concept or idea and what they thought of it and why (Jen, course outline, 2006).

The Critical Reading Commentaries (CRC) were an important component in Jen's course because "generally texts for CRC's will relate in some way to the sustained content focus of this course" (Jen, course outline, 2006). Jen said that the CRC helped to facilitate critical thinking in her course but added that recently she was not satisfied with the quality of her language learners CRC's.

The topic used in this specific Sustained Content-based course was "the United Nations and the concept of Multilateralism in the 21st century as discussed by Stephen Lewis in his book 'Race Against Time'" (Jen, course outline, 2006). Jen said that her disciplinary background in Sociology influenced her choice of topic "without a question" (Interview, p. 3) and added that Sociology also assisted her in the challenge of teaching to a wide variety of student interests (Interview, p. 3).

The topics varied from time to time because she was constantly searching for things that excited her and one of her main sources were the Massey Lectures. These lectures were posted on the CBC Radio website (2006) and provided Jen with a number of topics. She created three distinct courses from titles of books such as: "The Short History of Progress" by Ronald Wright, "Technopoly: the surrender of culture to technology" by Neil Postman, and "Dark age ahead" by Jane Jacobs.

The last book made a strong statement on society which Jen summarized as, "If we don't watch it, we're going to advance ourselves right off the planet!" (Interview, p. 4) and it divides society into 'the five pillars of society'.

Jen explained the book as,

> Each chapter is dedicated to one of these, she (Jacobs) talks about how cities, at a point, the city provided a bosom of the family, the local grocer, etc. A sense of community and now with this spreading of cities we have lost community. And the secondary notion that runs through this is that everyone is becoming a specialist
> (Interview, p. 4).

Furthermore, Jen choose this book's content because, "these are areas and issues of importance, at least from my perspective…especially now, when you know, 90% of our students are from P.R.C and these young people are going back and they are going to be part of China, you know now it's coming out…how much, what, the emissions that are going to be produced by China are going to be produced in the future" (Interview, p.5).

However, even though Jen was happy with her choice of content and reasons for choosing the topic, she was not happy with the assignments produced using this content and it seemed that her course might not have facilitated critical thinking, which is the main focus of Sustained Content-based pedagogy. While reflecting upon the course Jen said,

> We may have gotten a little bit too carried away with the ideological aspects of our focus this term because we are talking about a continent who within another 10 years is going to be completely different. Not cultural change but the social structure of this continent is going to be unlike anywhere else in this world…and for CRC's, what I have used were lectures, but talks like Lewis. I've really stuck to Lewis but I'm not going to do that again. I really need to bring in counter arguments (Interview, p. 5).

Jen considered the CRC's to be a very important component to foster critical thinking, which was reflected in her beliefs regarding what language learners need to master in their first year Economics classes. She said, "they have to be very good

readers, learn how to read Economic texts" (Interview, p.7). Jen herself took an Economics class and remembers it to have been a challenge to get through all the material and to understand it. She also said that by 'understanding' the material you can know how it [the content] is applied and what is applied. So it's a challenge for the students in first year Economics to read the text, get through the content and read the content (Interview, p. 7).

Conversely, Jen believes the content in EAP as,

> An opportunity for students to develop their language in a relevant context, by that I mean, one where there is thinking and questioning, learning and pursuing and researching. And all those kinds of things that are part of an academic context. Developing their language and so that they can use this language when they want to use this language (Interview, p. 8).

Case study #3

Liz

Liz had a very strong background in languages and language teaching; she even completed a degree in Education. All of which had influenced her teaching, yet she did not believe that her disciplinary background influenced her topic selection. This is because Liz had created 4 main criteria that she used as a guide when choosing a topic.

Firstly, a topic had to be something that the language learners could relate to on an experiential level at the beginning. Secondly, the topic had to be somehow connectable to their discipline. Thirdly, it needed to be somewhat interdisciplinary where it could be approached through different angles. Lastly, the topic had to be interesting to her and provide enough relevant academic texts or readings. Liz structured her course around 2 or 3 core readings (Interview, p. 3).

Liz explained that the topics she chose had to be, "something that allows them to approach it. That's academic and introductory at the same time, because it can't be Sociology as it is in the discipline of Sociology because we have to keep within the constraints" (Interview, p. 3).

Moreover, Liz described the topic as providing a situation where language learners can "develop their language in ways that replicates the kind of language they have to use in their discipline" (Interview, p. 2). Thus, Liz takes a theory and analyzes something. Liz said that this method is a common method found across the disciplines, where language learners learn a new theory, model or formula and then apply it in new situations. Yet, even though this is an *across the discipline* approach, Liz said that "a lot of our students are in Economics and a lot of them are going to end up in some economic based thing" (Interview, p. 3). However, Liz did not feel that even though she realizes that there are a large number of economic bound language learners that she knew what they require in Economics or for that matter in any mainstream classes.

Liz stated that she did not think that she could give them what they need to be successful in their first year mainstream class (Interview, p. 10). She could only give them "general practice in these kinds of situations, modeling, how theories concepts terms are used in new situations" (Interview, p. 10). For example, she could not prepare them for all of the situations that they will encounter as they go through university such as working in a biology lab with a partner.

Moreover, Liz said that she does not know discipline specific content or terminology nor does Liz know what students will need to succeed in first year Economics (Interview, p. 10). She guessed, "they deal with a lot of texts and concepts,

like supply and demand. Understand graphs, charts and figures, often represented in both language and models. They have to know the systems. How the world is depicted through economic systems. They have some multiple choice and short answers on tests" (Interview, p. 11).

Additionally, Liz said that "I can't give you [students] the terms that you will need in your field, in your discipline" (Interview, p. 8). As an alternative she said she taught rhetorical vocabulary and structures that are usable in any discipline. Liz also said that she doesn't "dwell on sentence structure due to time constraints" (Interview, p. 2). Instead any language problems were addressed on an individual basis during office hours.

Liz reflected on what she expects for her language learners in her course and how her course is laid out. She said that the course begins with the language learners' reflecting on their personal experiences of learning. Then they draw upon their own learning experiences from the past and she proceeds to teach them the different theories of learning such as Behaviourism and Communities of Practice. An example from Liz's intermediate credit course, which was designed to give students the *tools* they need so that they can then *apply* it to their particular problem.

Course Format:

> Throughout the course, activities will centre on pair work, group work, lectures, independent research and workshop techniques. The course material will focus on the broad theme of **Learning Theory**. We will begin with a more general understanding of learning and move toward academic theories. In this way, we can develop a shared set of academic vocabulary and skills, while at the same time develop knowledge and skills specific to our varying disciplines. Throughout the course, the research project will play an important role in helping you to connect course material to content that is relevant in some way to your discipline (Liz, intermediate course outline, 2006).

By learning these theories she wanted her language learners to start to use an anecdotal "I" in their writing and become more reliant on the 'team'. By 'team' Liz referred to a group of theories and said that "The 'I' is important but the 'I' that is backed up with some theory or experience or research or something" (Interview, p. 9). Therefore, the language learners learned about learning theory but from two different angles and they determined which one was better than the other in order to apply in their own research of their discipline.

According to Liz, they determine which theory is valid by the application of the theory in the final research report, where they are expected to analyze learning, how things go on in their own discipline, how they learn, what strategies they need and what is going to be displayed as learning in that discipline. They also analyze course outlines and assignments (Interview, p. 5).

Additionally, Liz described the language her students used in the final research, as something that "rises to the occasion" (Interview, p. 7), and that by working through the tasks over the 10 weeks of the semester their language comes together nicely. According to Liz, some people in the department thought that this approach is "too heavy of a cognitive load" (Interview, p. 7) but Liz believed that it is good to go deeper into a theory, because terms and concepts are found in the readings, discussion/lectures and in the language learners own writing.

Discussion

The following section synthesizes and discusses the responses that emerged as a result of the three main issues that were investigated: teaching methods, critical thinking in their course and success in Economics for a first year student.

Teaching Methods

All of the Economic professors said or implied that over the years their teaching had gotten better, smoother and more focused. Moreover, this had all occurred as a result of the students, whether it was due to class size, difficulties for students' to analyze problems, or a change in the goals of the students. These findings are further supported by the responses given on the questionnaire by the three Economic professors. Tom and Bob ranked "Teaching students facts and principles of the subject matter" as the most important role they play as a teacher and John ranked "Fostering student development and personal growth" as most important. Tom also ranked "Helping students develop higher-order thinking skills" as equally important.

In Bob and John's case, their teaching methods over time changed due to their years of teaching experience and their increased awareness of students' problems over the years. For example, Bob said that he can now predict where or what analytical problems his students may encounter. Whereas John said that as he became more familiar with the content he taught, he became smoother and more at ease, thereby able to excite his students about Economics. This matches John's belief that his role as a teacher was "Fostering student development and personal growth" (John, Interview).

Tom also demonstrated through his change in teaching method that he believed his role as teacher to be "Teaching students facts and principles of the subject matter" (Tom, Interview). By changing his method of teaching to what he refers to as 'chalk and chat' his focus was to impart the knowledge and application of Economics and walk his students through a problem in real time.

The teaching methods of the EAP instructors did not change in the same way as the Economics professors. Besides the fact that they taught completely different content than the Economic professors, the background education that these instructors had was heavily situated in education and pedagogy. These instructors were highly aware of teaching methods. For example, Michelle studied the communicative method for teaching English as a Second Language and was very aware of changing to the Sustained Content-based Approach.

As well, Jen spoke of the Western approach and explicitly described it while relating it to teaching language learners from other countries. Whereas Liz created a set of criteria to choose a topic, that even though it specifically outlines how to decide upon a topic it is still fairly open-ended so that she could focus on different aspects, either critical thinking or a specific language component such as terminology, and weight each component differently depending on the topic.

For example, the 2 or 3 core reading that Liz chose to base the class on could be full of discipline-specific terminology, if she chose to narrow the field for point two of her criteria. Conversely, she could have broadened the topic and thus the content of the readings, if she focused on the third point that contains the option for a more interdisciplinary look at a topic and could be approached through different angles. While this does not allow for the entire approach to change because she would still be using a sustained content-based approach, the topic and content itself would change the focus of the course.

Critical thinking in their courses

Each of the three Economic professors demonstrated through examples that they do include a 'thinking' process in their courses. However, to say that this 'thinking' is critical thinking would not be exact. Rather, these professors often refer to it as, analytical thinking. In fact, Bob said a flat 'no' when asked if his assignments facilitate critical thinking (Interview, p. 14). Instead Bob focuses on teaching a model and constructing formal abstract models of the economy in his first year classes.

The responses provided by Tom and John echoed each other when talking about the focus on 'analytical' thinking when teaching models and the application of models. Critical thinking seems to be viewed as a final product in Economics, which is only attained after one fully understands the theory and the method.

However, the interviews with the EAP instructors and their review of their courses proved to illustrate a different picture. Unlike the Economics professors, the EAP instructors all believed that their course facilitated the learning of critical thinking and explicitly said what aspects were included in their course to do so.

All of the EAP instructors agreed that by focusing on one theme throughout the whole course the activities and tasks facilitated critical thinking. Michelle reviewed several activities and tasks she implements in her course, including the reading worksheets and the discussion papers. According to Michelle these activities facilitated critical thinking because they forced the language learners to make connections and show relationships between ideas either from the texts or between the texts.

Jen's description of how her course or assignments facilitate critical thinking differs slightly from Michelle's because Jen focuses on the reading, more specifically,

Critical Reading Commentaries (CRC). The description of the CRC from Jen's course outline focused on the student's impression or opinion of the author's argument and to support their opinion. However, Jen realized that for her language learners to produce a more satisfying CRC, she needed to bring in counter arguments and not just focus on one person's opinion, even if it is that opinion that she agreed with.

Liz also said that her course facilitated critical thinking and is produced in the final research paper. According to Liz her course taught language learners about two different theories of learning and through learning about one topic from different angles language learners could determine which one is better and then apply these theories to their own research of their discipline.

Despite the heightened awareness of critical thinking as facilitated in their assignments the EAP instructors' did not agree with each other about how they 'see their primary role as a teacher' or their final clustering of goals, which was designed in the questionnaire to indicate which teaching goal they believe is essential.

Table 8 Comparison of EAP instructors' perceptions of their primary role as a teacher before and after taking the questionnaire

Participants	**Primary role of teacher (initial belief before doing the questionnaire)**	**Essential teaching goals (outcome of the questionnaire)**
Michelle	Helping students develop higher-order thinking skills	Work and career preparation
Jen	Fostering students development and personal growth	Higher-order thinking skills
Liz	Helping students develop higher-order thinking skills AND Helping students develop basic learning skills (Academic English and Values)	Basic academic skills

Therefore even though Michelle and Liz indicated in their perception of what their primary role is that 'Helping students develop higher-order thinking skills' is number one; they did not seem to actually focus on this in their teaching goals was illustrated by the outcome of the questionnaire. Conversely, Jen does not think that her primary role is 'Helping students develop higher-order thinking skills', yet when asked to rank specific descriptors as essential, important, unimportant or not applicable, the outcome stated that she believed 'Higher-order thinking skills' to be essential.

According to the responses from the questionnaires (2006), the Economic professors also differed from their opinion on what their primary role as a teacher was and their final outcome as summed up by their rankings of the descriptors on the questionnaire.

Table 9 Comparison of Economics professors' perceptions of their primary role as a teacher before and after taking the questionnaire

Participants	**Primary role of teacher (initial belief before doing the questionnaire)**	**Essential teaching goals (outcome of the questionnaire)**
Tom	Teaching students facts and principles of the subject matter	Higher-order thinking skills AND Discipline specific knowledge and skills
John	Fostering student development and personal growth	Higher-order thinking skills AND Work and Career preparation AND Personal development
Bob	Teaching students facts and principles of the subject matter	Discipline specific knowledge and skills

As is illustrated in table 9, Bob neither believes that it is his primary role as a teacher or includes higher-order thinking skills as essential to his teaching goals. Moreover, none of the Economics professors believe that their primary role is 'Helping students develop higher-order thinking skills', but in Tom's and John's responses to

specific rankings of the descriptors on the questionnaire, they do include it as partly essential in their teaching goals.

Success for a first year Economics student

According to the three Economic professors, it was unanimous that for a student to be successful in their first year they must be able to show that based on the basic economic principles they can work through problems. Tom said that he stressed this through the application of the models and John added that in first year, students gain an overall understanding of how Economists look at the world and deductively approach a problem. Bob, who taught only first year courses, agreed that he tried to teach his students to use abstract reasoning to understand and model real life events.

Bob, like most other teachers, suffered from the same ailment: lack of time. He said that he presents about four or five different approaches to explain a problem but never has enough time to argue about it. Moreover, he said that the new textbook they used was smaller and thinner but that it was still as dense and contained the same 10 economic principles of how to *think like an Economist*.

Conversely, although it did not come as a surprise, the three EAP instructors did not know what was expected of a first year Economics student or what happens in a first year Economics course. Michelle said that this is because she had not had a chance to go over there and figure out what they expected from their students. Whereas Jen did hazard a guess based on an Economics class that she took during her undergraduate studies. She thought that reading was the most important aspect in order for students to succeed in

their first year Economics course. More specifically, reading the textbook to understand the content and how to apply the content.

Liz simply said that she did not know what was expected of them and guessed that they dealt with lots of texts and concepts. She also thought that they needed to understand charts and graphs.

Even though Liz and Michelle did not know and could only try guessing at what a student may require to be successful in their first year Economics studies, Michelle did outline several points that she tried to teach her students as general academic skills, such as: be able to write or develop their writing in an academic format, be able to express their feelings in writing as well as in speech, able to synthesize ideas, build up their papers or presentations in a logical manner, and develop note-taking skills, analytical and analytic skills.

In conclusion, these findings from the interviews of the six participants lead to a conclusion that Economics courses do not facilitate critical thinking but EAP courses do and this is primarily due to the influence of how they define critical thinking in their teaching.

The findings indicate that the Economics professors place more importance on and teach analytical thinking through assumptions and models that they work through with their classes. This is opposite to the findings from the EAP instructors who present a topic that they have chosen, and the language learners use this topic to complete various activities and tasks to demonstrate their critical thinking skills, as it relates to the language learner. Therefore, the EAP instructors create tasks and assignments that are meant to facilitate critical thinking as opposed to the Economic professors who do not.

II. Definitions of Critical Thinking: Economics and EAP

The following section discusses critical thinking as defined by the participants in interviews and the questionnaires. The definitions of critical thinking as given by the participants from Economics and Political Science are presented and then the trends that emerged from the data are discussed, followed by a comparison of the definitions within the data and the definition of *Thinking like an Economist* Siegfried et al., (1991).

Secondly, the definitions of critical thinking are presented according to the EAP instructors and then a closer look is taken at the definitions given by the participants in comparison to the definition provided by Pally (2001).

Finally, there is a comparison of the definitions' of critical thinking from both disciplines in order to analyze if there was a match between the two definitions provided by the participants and within the literature. Subsequently, in the next section these findings are examined in relation to Nelson's Framework (Thoma, 1993).

Critical thinking according to Economics

During the interviews, the Economics professors were asked two key questions: What is your definition of critical thinking and what does it mean to *Think like an Economist*? Additionally, the questionnaire data gathered from the Political Science department granted a peek into critical thinking from another department's perspective and thereby addressed the question of discipline specific critical thinking. Also during the interviews, a noticeable trend began to emerge regarding the differences between analytical and critical thinking which was additionally supported by the responses collected from the questionnaires.

Question: What is your definition of critical thinking?

The first question elicited a number of elaborate and wordy responses. It is not an easy question to answer and definitely requires more than a one-word answer. As a result, Tom and John resorted to talking about how it is manifested within a course, whereas Bob initially shared his thoughts on critical thinking as an analogy but at the end of the interview he added some additional thought regarding critical thinking.

During the interview, Tom and John responded directly after the question was asked. Tom said, "Critical thinking is actually kinda a term that encapsulates many smaller terms…critical thinking is synonymous with logic." (Interview, Tom, p. 4), and he continued to summarize what he did to teach it in class.

> So I'll build a model, I'll work through the model, the model will come up with certain predictions, and then I'll have to ask myself, are these predictions, gathered with this model consistent with A) empirical facts and B) the way we intuitively think of the way people behave (Interview, Tom, 2006).

John echoes Tom's response in a similar explanation,

> I try all the way along to teach them how to think for themselves. How to look at a model, to dissect it, to deconstruct it. I guess. [And] how to change the model in different situations, how they apply an idea to this area to that area (Interview, John, p. 6).

In summary, both responses focused on the use of models and assumptions to make predictions especially if the model is used in different situations.

Bob's responses were slightly more unique and humourous but by the end of his analogy and explanation he touched upon some of the same main points that Tom and John had also made when explaining their definitions.

His analogy was about a used car and taking it to a mechanic for a critical overlook or a full look over. (Interview, Bob, p. 6) He uses this analogy because "he (the

mechanic) knows how cars work, he knows what can go wrong with them, he knows what can go right with them, and he's checking all those things. At the end of it he says it's a crap car, don't buy it, or it's a great car, buy it, or this is what it's worth. That's a critical evaluation of a car" (Interview, Bob, p. 6).

He continued with the same analogy but framed it within an economic context:

> When I ask my students to do critical thinking and when I do critical thinking. It's similar to when I ask my mechanic to look at a car, except we're not looking at cars, we're looking at theories, policies or policy proposals (Interview, Bob, p. 6).

Then at the end of the interview Bob offered his final thoughts on critical thinking by saying, "What would be really awful, really awful is if we started out teaching critical thinking in Econ 1000" (Interview, Bob, p. 15).

When I asked: "Why so?" Bob responded, "Because they wouldn't actually learn anything to be critically evaluative of" (Interview, Bob, p. 15).

Then I asked, "So critical thinking is along the lines of just being able to argue?" Bob responded, "No, there's more to it than that, but if you don't know how to model something, you don't understand how the theory works, it's useless" (Interview, Bob, p. 15).

His response reflected his belief that students need to learn the content first and only "then you can add and subtract things, and critically think your way through things" (Interview, Bob, p. 15; Questionnaire, Bob, 2006).

Therefore, "If you're going to evaluate a car, you got to know how a car is supposed to work" and, "until you actually understand how the models work, you've got nothing to criticize you know" (Interview, Bob, p. 15; Interview, Bob, p. 14).

The responses from Tom, John and Bob were slightly different from the two participants from Political Science who gave their definition on critical thinking.

Table 10 Questionnaire responses defining critical thinking from the Political Science participants

Political Science Questionnaire data	Definitions of critical thinking
Participant #1	Analyzing events and data from an **impartial perspective**; thinking about what meanings may lie behind the writer's overt presentation of an argument; thinking about all angles of a situation
Participant #2	Critical thinking is the ability to develop **independent judgments** regarding materials, arguments, or situations. Development of these judgments would involve a self-conscious application of one's normative values, of analytical categories and logical reasoning, and of methods for assessing the validity and relevance of information and arguments.

The most important differences that both definitions had in relation to the definitions given by the Economics professors, were the notions of "impartiality" or "independent judgments". Neither of these notions was found within the responses given in the interviews nor from the questionnaire participants from Economics.

Moreover, the participants from the questionnaire indicated through the number of 'essential' categories they circled, that they consider higher-order thinking skills to be the most important skill that they try to impart on their students.

Table 11 Ranking of teaching goals according to Political Science participants

Participant	Higher-order thinking skills (8 *Qs*)	Basic Academic success skills (9 *Qs*)	Discipline specific knowledge & skills (8*Qs*)	Liberal arts & academic values (10 *Qs*)	Work & Career Preparation (8*Qs*)	Personal Development (8*Qs*)
#1	**6**	2	2	1	2	1
#2	**5**	2	3	2	1	4

These numbers presented here are the number of *Essential* questions that were circled on the questionnaire and *Qs* represents questions.

The results from the two Political Science questionnaires differed a lot from the results from the Economics department and the EAP program. Four of the six participants from the Economics department indicated that higher-order thinking skills was 'essential' to teach their students but only one of those participants indicated higher-order thinking skills as the most 'essential'. The others equated it equally with other categories.

Table 12 Ranking of teaching goals according to Economics participants

Participant	Higher-order thinking skills (8 *Qs*)	Basic academic success skills (9 *Qs*)	Discipline specific knowledge & skills (8 *Qs*)	Liberal arts & academic values (10 *Qs*)	Work & Career Preparation (8 *Qs*)	Personal Development (8 *Qs*)
#3	**6**	0	0	0	1	0
#7	**1**	0	0	0	1	4
#5	**2**	1	1	2	0	2
John	**5**	3	4	1	5	5
Tom	**2**	0	2	0	0	1
Bob	**0**	0	1	0	0	0

These numbers presented here are the number of *Essential* questions that were circled on the questionnaire and *Qs* represents questions.

The results from the questionnaire from the EAP participants were also different from the Political Science questionnaires. They were similar to the results from the Economics participants where only three of the five participants considered higher-order thinking skills as 'essential' for them to teach but of those three only one participant ranked it the highest and only 'essential' category to teach. The other participants gave higher-order thinking either an equal amount of importance in relation to the other categories or not near as important as the other categories.

Table 13 Ranking of teaching goals according to EAP participants

Participant	Higher-order thinking skills (8 *Qs*)	Basic Academic success skills (9 *Qs*)	Discipline specific knowledge & skills (8 *Qs*)	Liberal arts & academic values (10 *Qs*)	Work & Career Preparation (8 *Qs*)	Personal Development (8 *Qs*)
#4	**7**	4	1	5	4	7
#6	**6**	6	2	0	0	0
Michelle	**3**	0	0	0	5	3
Jen	**8**	3	2	3	1	5
Liz	**2**	5	4	2	1	1

These numbers presented here are the number of *Essential* questions that were circled on the questionnaire and *Qs* represents questions.

Therefore, from this data and the comparisons drawn across the disciplines, there did not seem to be an agreement upon the 'essential' ranking of higher-order thinking in either EAP or Economics. There seems that there might be a non-relationship or a discipline specific dependence on notions of critical thinking and the importance placed on critical thinking in relation to the role of the teacher.

Trends

Multiple uses of 'Analytical' and the low importance placed on thinking creatively

The use of the word 'analytical, analytical thinking, analyses' (Tom, John, Bob, participant #3, participant #5, participant #7) was a trend that continually emerged during each interview and re-occurred in the definitions that were submitted by Economic professors in the questionnaire.

For example, Tom used the word 'analytically' when he was discussing the way in which Economists look at problems (Interview, Tom, p. 6) and John also used of the word 'analytical' when defining Economics as opposed to Business (Interview, John, p. 5).

I asked, “How do you define Economics?”
John, “It’s the study of mankind and the everyday business of life”
I asked, “Business. Is it the same as business?”
John, “It’s a bit more abstract…I think Economics is more **analytical**, tends to stand back more and analyze how the world works.” (Transcript, p.5)

In Bob’s case, ‘analytical’ came up more than once throughout the interview. A couple of examples included when he said that “Economics is very different from most of the Bachelor of Arts subjects… [because] it’s **analytical**” (Interview, Bob, p. 3), and it was also at the centre of the example he used to demonstrate what an ‘analytical’ process is that would be required to complete an exam question.

The question the student chose to answer was:

> Suppose Canada cuts Government expenditure, and runs a budget surplus. With the aid of diagrams, carefully explain the LONG RUN impact of this surplus on: the rate of interest, national savings, investment, Net Capital Outflows, the real exchange rate, and net exports. Would this be a good policy for the Government of Canada to follow? Explain.

Bob talked about how the student displayed this process of working through the problem by using diagrams (Interview, Bob, p. 3). Bob further gushed over the students’ work and said, “Look at all this reasoning. Look at the chain of reasoning. He’s explicit. (Interview, Bob, p. 4) and “A student like this is very strong analytically” (Interview, Bob, p. 4).

Yet, as he continued to review the student’s answer with me Bob faltered at the incompleteness of the students’ response to the question, “Would this be a good policy for the Government of Canada to follow?” Bob said, “Yeah, he didn’t make much sense from that last bit, must have been burned out at the time” (Interview, Bob, p. 4).

The lack of importance that Bob seemed to place on this ‘explanatory’ part of the question raised some red flags for me, because he seemed to focus on the ‘analytical

thinking' and 'chain of reasoning' that occurred in the first part of the answer but seemed to mumble and overlook the lack of the students ability to answer the second part. So I probed a little further.

> I asked Bob, "Why would a student stop? Could it be test fatigue?"
> Bob responded, "It could be test fatigue, more likely he just wasn't very good at the other stuff."
> I asked, "Well what is the other stuff? Would you call that critical thinking, where you have to defend and evaluate?
> Bob responded, "No, no, well that is critical thinking but ummm maybe…but it's useless to have all those abilities to defend and evaluate if you can't understand the model in the first place."
> I asked, "But you think he understood the model in the first place?"
> Bob responded, "Absolutely, because he didn't know the answer in the first place. He worked through it."

This exemplified the variety of ways in which the word 'analytical' was being used to describe the kind of 'thinking' within their course as well as the way it was being produced in the assignments they designed for their students. It seemed to become evident that there was a perceived difference between the two terms "analytical (thinking)" and "critical thinking".

The use of the word, and the relative importance placed on this term was further supported by the data collected from the questionnaires of all six Economics participants. It seemed that there was more than just a notable differentiation made between these two terms and that there was also a stronger emphasis being placed on "analytical (thinking)" as was supported by the responses to question #2 on the questionnaire.

The second question within the 'higher-order thinking skills' section asked the participants to rank the teaching goal 'develop analytical skills 'as either 'essential', 'very

important', 'important', or 'unimportant' according to the degree of importance they place on it within each course. The responses are seen below.

Table 14 Importance placed on developing analytical skills

Question 2: Develop analytic skills	Participants	Responses
	#3	Essential
	#5	Essential
	#7	Essential
	Tom	Essential
	John	Essential
	Bob	Very important

While this was an important finding that offered further support that 'analytical' thinking is important within Economics, the findings from question #7 on the questionnaire revealed what they did not indicate as an 'essential' skill to teach within the 'Higher-order thinking skills' section.

In Question #7 on the questionnaire, participants were asked to rank if they believe developing students' ability to think creatively is 'essential', 'very important', 'important', or 'unimportant'.

Table 15 Unimportance placed on developing the ability to think creatively

Question 7: Develop ability to think creatively	Participants	Responses
	#3	Very important
	#5	Important
	#7	Important
	Tom	Unimportant
	John	Essential
	Bob	Important

From these results it seems that while all Economics professors thought that it is 'essential', 'very important, or 'important' for their students to learn how to think creatively, except one who believed that it is 'unimportant'.

Therefore, this evidence leads to the conclusion that even though not all Economics professors believe that students' creative skill development is the most 'essential' higher-order thinking skill for them to teach; they do believe strongly that their courses should teach their students to develop analytical skills.

Question: Thinking like an Economist

The results from questions #2 and #7 are significant when they are further compared to the interview responses from the three Economics professors, who were asked what they believed it meant to *think like an Economist.* Their responses and the previous findings supported one another and indicated a stronger importance being placed on analytical thinking in their courses. This relationship between 'analytical' thinking became more evident when the data was compared to the definition of *thinking like an Economist* (Siegfried et al., 1991).

Table 16 Thinking like an Economist: Problem Solving and Creative Skills

1) **Problem solving**
a) emphasize reasoning using the techniques and principles of Economics as a result the students learn to understand economic behavior and improve their ability to predict the consequences of changes in economic forces
2) **Creative skills**
a) determine how to frame questions
b) deciding what tools and principles to apply to particular problems
c) deciding what data and information are pertinent to those problems
d) learning how to understand or explain surprising or unexpected results

The interview data was examined and the responses were compared to the two questions: (1) "What is your definition of critical thinking and (2) what does it mean to *think like an Economist*?" There were many similarities and patterns that emerged across the two questions.

This was exemplified by the responses of the participants from the online questionnaire. There was no question on the questionnaire referring to *thinking like an Economist*". They responded to the question, "In your opinion, what is critical thinking?"

Table 17 Questionnaire responses defining critical thinking from the Economics participants

Economics Questionnaire Data	Definitions of critical thinking
Participants #3	The ability **to understand, analyze and solve problems** as well as the ability to understand how **solutions depend on assumptions** that are being made.
Participants #5	**Ability to use principles** forward to **apply in new situations, and to see alternate lines of reasoning and modes of thought.**
Participants #7	The ability to formulate a **logical** argument in support of a theme thesis or hypothesis, to construct a logical argument, to **marshal evidence logically** to support or not to support the argument, to **weigh the validity and reliability of empirical evidence**, to balance the evidence and arrive at a conclusion

All of these responses contained words such as, analyze, solve problems, reasoning, logical, logically which all could be substituted for the beginning of the descriptor under 'problem solving' in the first section of the definition of *Thinking like an Economist* where it begins "Emphasize reasoning…" (Siegfried et al., 1991).

The following are examples of substitutions of these words within the definition for 'problem-solving'.

Table 18 Substitution of the word *Reasoning* in the Problem Solving descriptor

1) **Problem solving** a) emphasize ***reasoning*** using the techniques and principles of Economics as a result the students learn to understand economic behavior and improve their ability to predict the consequences of changes in economic forces
1) **Problem solving** (substitutions) a) emphasize ***logical/logically*** using the techniques and principles of Economics…
1) **Problem solving** a) emphasize ***problem solving*** using the techniques and principles of Economics…

Moreover, these definitions include words such as, assumptions, principles, and weigh the validity and reliability of empirical evidence. These too are found in the rest of the descriptor given for problem solving under *thinking like an Economist* (Siegfried et al., 1991). The following are examples of substitutions of these words within the descriptor for 'problem-solving'.

Table 19 Substitution of the phrasing of the descriptor for Problem Solving

1) **Problem solving** a) emphasize reasoning using ***the techniques and principles of Economics as a result the students learn to understand economic behavior and improve their ability to predict the consequences of changes in economic forces***
1) **Problem solving** (substitutions) a) emphasize reasoning ***the techniques and assumptions of Economics …***
1) **Problem solving** a) emphasize reasoning *the techniques and principles of Economics as a result the students learn to understand economic behavior* ***and weigh the validity and reliability of empirical evidence*** *and improve their ability to predict the consequences of changes in economic forces*

Additionally, these words were all found in the responses given by Tom, John and Bob during the interviews, as an answer to 'what does it mean to *Think like an Economist*?

Table 20 Economics professors' responses to *thinking like an Economist*

Tom	So 'thinking like an economist means-- **being sort of reasonably deductive in your thinking**, like saying **'let's look at a problem sort of analytically'**, and let's say sort of to some extent check our preconceptions or baggage at the door if you will, that doesn't mean that we have to trash our preconceptions. Let's step outside of ourselves for a moment and look at a **problem, objectively**. (Interview, Tom, p. 6)
John	Economists think in **frameworks and models** and they tend to think of optimizing agents. (Interview, John, p. 7) You have to appreciate in life there are some things that **make sense to analyze** in this **objective framework.** ..but **you have a model and objectives to reach a goal, explicitly** (Interview, John, p. 7)
Bob	That's the economic way of thinking, it's **methodologica**l, **rational**, **individual** (Interview, Bob, p. 7) But they (the students) haven't realized that that one **assumption** is the one key thing is getting the results out. And that's why **if you change the assumption** a little, you get different results (Transcript, p., 7)

Even though when the interviewed Economics professors were asked directly to define what it means to *Think like an Economist* they provided a more in-depth definition that required a longer time to explain, but they still consisted of the same underlying qualities as were mentioned in their initial responses to the question, "What is your definition of critical thinking?"

Problem-Solving vs. Creative Skills

The interview data and the definitions of critical thinking that were gathered by the questionnaire seem to illustrate a relationship between Economics professors' definitions of critical thinking and what it means to *Think like an Economist*. However there only seemed to be a relationship with the 'problem-solving' section of *Thinking like*

an Economist and not the 'creative skills' section of the *Thinking like an Economist* (Siegfried et al., 1991) definition.

Table 21 Thinking like an Economist: Problem Solving

1) **Problem solving** a) emphasize reasoning using the techniques and principles of Economics as a result the students learn to understand economic behavior and improve their ability to predict the consequences of changes in economic forces

The 'problem solving' section emphasizes the reasoning that Bob was explaining through his student's exam question (Interview, Bob, p. 4) and knowledge of economic techniques (models) and economic principles or assumptions that all six participants had described either through their definition for critical thinking or *Thinking like an Economist*. The six participants did not include any elements of the creative skills part of the definition *thinking like an Economist* (Siegfried et al., 1991).

Table 22 Thinking like an Economist: Creative Skills

2) **Creative skills** a) determine how to frame questions b) deciding what tools and principles to apply to particular problems c) deciding what data and information are pertinent to those problems d) learning how to understand or explain surprising or unexpected results

This lack of the inclusion of the 'creative skills' section in the definitions given by the six participants was further supported by the questionnaire data from question 7: Develop ability to think creatively. This teaching goal was the only teaching goal in the higher-order thinking section on the questionnaire to receive an 'unimportant' response and all of the responses varied greatly from John saying that it 'essential' to Tom's response of 'unimportant'.

In conclusion, the data supported that *Thinking like an Economist* proved to be more a prevalent answer when the interviewees where asked to define critical thinking, this might be linked to the importance they placed on 'analytical skills', as was found in their responses to question 2 on the questionnaire. Moreover, the data supported a lack of focus on the creative skills element of the definition, and focused almost exclusively on problem solving through analytical thinking, using Economic models and assumptions to predict certain outcomes.

Critical thinking according to English for Academic Purposes

During the interview, the EAP instructors were asked: What is your definition of critical thinking? The following section examined those definitions for critical thinking that they gave during the interviews and from the questionnaires, in relation to the definition of critical thinking as found within Sustained Content-based approach (Pally, 2001). Finally, these results are discussed in relation to *Thinking like an Economist* (Siegfried et al., 1991).

Critical thinking as defined by the Sustained Content-based approach

According to the Sustained Content-based teaching approach (Pally, 2001) for English for Academic Purposes (EAP) the definition of critical thinking is divided into two sections: analytical thinking and critical thinking.

Table 23 Sustained Content-based Approach: Analytical thinking and Critical thinking

1) **Analytical thinking** a) grasping the claims or perspectives of readings and lectures b) understanding the methods of proof used to support those claims/perspectives c) synthesizing claims and support from a range of sources
2) **Critical thinking** a) noting the social, economic and political contexts of claims and support b)questioning or challenging them c) evaluating them d) using one's understanding, synthesis, and questions as a basis for formulating ideas of one's own e) presenting (orally and in writing)ideas/positions of one's own using appropriate rhetorical conventions

All five of the definitions of critical thinking that were given by the EAP instructors, display elements of the five points (2a-2e) as described under the 'critical thinking' section but they did not include any of the 3 points (1a-1c) described under 'analytical thinking' (Pally, 2001).

Table 24 EAP participants' definitions of critical thinking

EAP Interview and Questionnaire Data	**Definitions of critical thinking**
Participant #6	"It's the basic ability to question **(2b),** do some analysis, some synthesis**(2d)** and some evaluation**(2c)** rather than simply accepting & memorizing information"
Participant #4	"…the ability to assess **(2c)** a piece of text (or utterance) with a number of questions **(2b)** regarding source, author credibility, context of text and of content, purpose, audience, intended effect (and affect), kinds of lexical choices**(2e)**, and perspectives within a wider world view**(2a)**"
Liz	"…it's using language and concepts **(2d)**, concepts presented in language to distinguish**(2b)** , to find relationships and often to display analyses using the appropriate tools **(2e)** , discriminating what tools are appropriate for them **(2e)**"
Jen	"…more than anything else I want students to think and to question **(2b)** and to make connections**(2d)**, all the things that are not memorizing and regurgitating therefore the more they are learning...the way things are in the world**(2a)**...the way how X is influenced by Y...it become like an X dot for example"
Michelle	"...ask them to analyze ideas, make connections and synthesize **(2d)** the ideas"

In addition, Liz included in her definitions that she uses a theory to make it more objective (Interview, Liz, p. 9).

Another pattern that emerged from the interviewees was their wish for their students "to make connections" (Interview, Jen, p. 8) and "to find relationships (in concepts)" (Interview, Liz, p. 8). Michelle expanded upon her explanation about making connections and relations while defining her definition of critical thinking:

> I think critical thinking is really the developing your own perspective and understanding of how you interpret what you read or what you hear and how you can make links between your new knowledge, or how it fits into your existing understanding (Interview, Michelle, p. 8).

After which she concluded by stating "each of these components asks them to analyze ideas, make connections and synthesize the ideas" (Interview, Michelle, p. 8).

These two concepts of 'making connections and synthesizing ideas' really tends to straddle the differences between the 'analytical section' and the 'critical thinking' section as defined within this definition for EAP.

Table 25 Illustration of the differences between the word *synthesis*

1) Analytical thinking: c) **synthesizing** claims and support from a range of sources
2) Critical thinking: d) using one's understanding**, synthesis**, and questions as a basis for formulating ideas of one's own

The only difference between the two descriptions under each section is that point (2d) in 'critical thinking' is using **synthesis and questions as a basis for formulating ideas of one's own**; whereas "synthesis" in point (1c) in 'analytical thinking' is used to **synthesize claims that are meant to be supported from a range of sources**.

Therefore, the difference between the two points is that (1c) is using a range of sources which, in this case would be academic sources such as articles, texts and lectures; compared to (2d) that is relying on the language learners to draw from their own experience and understanding of the issue.

Point (2d), is the type of 'synthesis' that is utilized in the final project (Interview Liz, p. 6; Interview, Michelle, p. 7), in which the students are responsible for researching their own discipline and then describing which Learning theory they found within their discipline.

Additionally, point (1c) mentions that a range of sources are needed and while Michelle and Liz gave at least one additional source as is required in point (1c), it is not program-wide, because Jen does not make available more than one source to her language learners. Jen discussed in the interview how she chooses her topic or content and then teaches that one topic. However, she added to her thoughts on this process during the interview, and addressed the issue of the poor quality of the Critical Reading Compositions assignments she had been receiving lately. This led to admit that teaching only one perspective on any issue may be the reason for the poor quality of assignments (Interview, Jen, p. 5).

Furthermore, when Michelle used 'analyze, connect and synthesize' to sum up her definition of critical thinking, it was hard to know if Michelle used 'synthesis' to describe point (1c) in 'analytical thinking' or point 2(d) in 'critical thinking' (Pally, 2001). But after considering the way in which she used the words in the context, "how it fits into your existing understanding" indicated that her definition may be more aligned with point (2d) in 'critical thinking' as opposed point (1c) in the 'analytical thinking' section.

This finding indicates that according to the definitions that the EAP instructors gave, they operated within the boundaries of the descriptors of 'critical thinking' as according to Pally (2001) and their definitions did not include any aspects of 'analytical thinking' such as:

a) grasping the claims or perspectives of readings and lectures
b) understanding the methods of proof used to support those claims/perspectives
c) synthesizing claims and support from a range of sources

This focus on the 'critical thinking' descriptors was further supported by the questionnaire where the EAP instructors only agreed on two teaching goals that they considered to be 'essential' when teaching 'higher-order thinking' in their course.

The two goals were, (1) Develop ability to apply principles and generalizations already learned to new problems and situations and (5) Develop ability to synthesize and integrate information and ideas.

The description of the first goal included parts from all five of the descriptors under the 'critical thinking' section. Whereas the fifth goal included the word 'synthesize', followed by integrate information and ideas. Based on the use of 'synthesize' this could be considered a part of point (c) of 'analytical thinking' but is not, because as was previously discussed, the EAP instructors teach 'synthesis' as a tool for language learners to express their knowledge of an issue based on their own understanding instead of based on a range of sources.

Therefore, the pattern that emerged from the interview and questionnaire data from the EAP instructors resembled the pattern that emerged from the data collected from Economics professors. Both sets of data indicated that even though both discipline specific definitions of critical thinking were split into two sections, both groups of

participants placed importance on only one section of the two-section definition. The responses of the Economic professors' tended to focus on the 'creative skills' section of the *Thinking like an Economist* definition (Siegfried et. al., 1991) while the EAP instructors indicated that the 'critical thinking' section of Pally's (2001) two-part definition.

Table 26 The sections of the definitions of critical thinking that were found to be of the most importance in EAP and in Economics

Sustained Content-Based Approach in EAP	Importance placed on which aspect of thinking within EAP	Importance placed on which aspect of thinking within Economics	*Thinking like an Economist* in Economics
1) Analytical Thinking	Low importance	**High importance**	1) Problem solving
2) Critical Thinking	**High importance**	Low importance	2) Creative skills

Furthermore, an argument could be made that the 'critical thinking' section, as defined by Pally (2001), is similar to the 'creative skills' section as it is described in the *Thinking like an Economist* definition (Siegfried et al., 1991).

Table 27 Comparison of Thinking like an Economist to the Sustained Content-based Approach: Similarities between Creative skills and Critical thinking

Economics	EAP
2) **Creative skills** a) determine how to frame questions b) deciding what tools and principles to apply to particular problems c) deciding what data and information are pertinent to those problems d) learning how to understand or explain surprising or unexpected results	2) **Critical Thinking** a) noting the social, economic and political contexts of claims and support b) questioning or challenging them c) evaluating them d) using one's understanding, synthesis, and questions as a basis for formulating ideas of one's own e) presenting (orally and in writing)ideas/positions of one's own using appropriate rhetorical conventions

While there was not always a one-to-one relationship found between these points there are multiple connections existing between the points. This may be because the definitions are not worded equally. The wording used in the *Thinking like an Economist* definition (Siegfried et. al., 1991) is more general compared to the words in the Sustained Content-based approach definition (Pally, 2001). Thus, while one point in 'creative skills' can encompass a broader meaning using one descriptor, there may be a combination of descriptors that are needed in the Sustained Content-based definition to convey the same meaning.

Thus, a link that could be drawn between 'creative skills' (2a) and 'critical thinking' (2e) because similarly, they require 'appropriate rhetorical conventions'.

Table 28 Comparison of descriptor (a) in Creative skills and descriptor (e) in Critical thinking

Economics	EAP
2) **Creative skills** a) determine how to frame questions unexpected results	2) **Critical Thinking** e) presenting (orally and in writing)ideas/positions of one's own using appropriate rhetorical conventions

However, the following connections are not a one-to-one relationship. For example, the 'creative skills' (2b), 'what tools and principles to apply to particular problems' could broadly encompass and include a combination of 'critical thinking' such as (2a), (2b) and finally (2d).

Table 29 Comparison of descriptor (b) in Creative skills and descriptors (a), (b) and (d) in critical thinking

Economics	EAP
2) **Creative skills** b) deciding what tools and principles to apply to particular problems	2) **Critical Thinking** a) noting the social, economic and political contexts of claims and support b) questioning or challenging them d) using one's understanding, synthesis, and questions as a basis for formulating ideas of one's own

Additionally, a link could be drawn between, 'creative skills' (2c) a combination of (2b), (2c) and (2d) from 'critical thinking' because the descriptors used in (2b), (2c) and (2d) are implied aspects of 'creative skills' (2c).

Table 30 Comparison of descriptor (c) in Creative skills and descriptors (b), (c) and (d) in Critical thinking

Economics	EAP
2) **Creative skills** c) deciding what data and information are pertinent to those problems	2) **Critical Thinking** b) questioning or challenging them c) evaluating them d) using one's understanding, synthesis, and questions as a basis for formulating ideas of one's own

Finally, connections could be made between 'creative skills' (2d) and a combination of all (2a) to (2e) descriptors of critical thinking (Pally, 2001). This is because all of these descriptors address individual aspects of the one descriptor from *thinking like an Economist.* The Sustained Content-based approach definition was just more descriptive and explicit in the use of descriptors. For example, it would contribute to a student's academic success if they are aware that they will sometimes need to look at other contexts such the social, economic and political contexts of claims and support to understand their results.

Table 31 Comparison of descriptor (d) in Creative skills and descriptors (a) to (e) in Critical thinking

Economics	EAP
2) **Creative skills** d) learning how to understand or explain surprising or unexpected results	2) **Critical Thinking** a) noting the social, economic and political contexts of claims and support b) questioning or challenging them c) evaluating them d) using one's understanding, synthesis, and questions as a basis for formulating ideas of one's own e) presenting (orally and in writing)ideas/positions of one's own using appropriate rhetorical conventions

Therefore, based on the definitions supplied by the EAP instructors these links and connections indicated that they were indeed teaching their discipline-specific definition of critical thinking. They were teaching from a Sustained Content-based approach and they were able to provide definitions and course designs that support teaching 'critical thinking' as described by the second section of Pally's (2001) definition of critical thinking within a Sustained Content-based approach.

Moreover, there was a relationship drawn between the *Thinking like an Economist* (Siegfried et. al., 1991) 'creative skills' section and the Sustained Content-based approach 'critical thinking' section (Pally, 2001). While it was not a direct one point to one point relationship, a definite relationship was examined. There was no relationship between the Sustained Content-based approach 'critical thinking' section and the *Thinking like an Economist* 'problem-solving' section. This is a problem.

This is a problem because after examining and analyzing the data from the Economist participants and finding that their definitions reflected the *Thinking like an Economist* definition closely and more importantly only the 'problem-solving' section. Then the finding that EAP instructors' definitions of critical thinking align closer to the 'critical thinking' according to Pally (2001) and the subsequent links that have been drawn between the descriptors of 'critical thinking' (Pally, 2001) and 'creative skills' (Siegfried et. al., 1991) leads to the conclusion that while they do match one section of 'thinking like an Economist', their definitions match the lesser important section of 'thinking like an Economist".

Therefore, based on the data collected through the interviews and questionnaires within and across the disciplines there is strong support to suggest that there is a mismatch of definitions of critical thinking between Economics professors and EAP instructors.

There is only a match between 'critical thinking' (Pally, 2001) and 'creative skills (Siegfried et. al., 1991), which is not even perceived to be 'essential' in an Economics course according to the Economic professors.

Table 32 The mismatch within the discipline-specific definitions of critical thinking between EAP and Economics

Sustained Content-Based Approach in EAP	Definitions of critical thinking	*Thinking like an Economist* in Economics
1) **Analytical Thinking**	mismatch	1) **Problem solving**
2) **Critical Thinking**	match	2) **Creative skills**

III. Analytical thinking in EAP and Economics

The previously discussed findings illustrated that there is a not an agreed upon definition of critical thinking across the disciplines of Economics and EAP. In this section the teaching implications of this mismatch of definitions of critical thinking between the Economics and EAP will be illustrated by using Nelson's Framework (Thoma, 1993). According to the definitions of critical thinking provided by the Economics participants, their definitions were strongly correlated to the definition of *Thinking like an Economist* (Siegfried et. al., 1991) and they emphasized that 'analytical skills' or 'problem-solving' were 'essential' in their course.

A trend similarly emerged from the data collected from the EAP instructors, where it was found that their definitions aligned strongly with the 'critical thinking'

section of Pally's (2001) definition of critical thinking as it exists within the Sustained Content-based approach.

Moreover, the mismatch occurred between the two disciplines because the EAP instructors defined critical thinking and subsequently taught critical thinking according to the 'critical thinking' section (Pally, 2001). The 'critical thinking' section matches with the 'creative skills' section of the *Thinking like an Economist* definition, but the 'creative skills', was not ranked as important by the Economics participants compared to the 'problem-solving' section.

Table 33 The high importance indicated by participants supported the mismatch of the discipline-specific definitions of critical thinking between EAP and Economics

Sustained Content-Based Approach in EAP	Importance placed on which aspect of thinking within the discipline	Definitions of critical thinking	Importance placed on which aspect of thinking within the discipline	*Thinking like an Economist* in Economics
1) **Analytical Thinking**	Low importance	*Mismatch*	High importance	1) **Problem solving**
2) **Critical Thinking**	High importance	*Match*	Low importance	2) **Creative skills**

Therefore, it would follow logic to say that if EAP instructors wished to teach the type of critical thinking that is valued as 'essential' by the Economics professors, then they should focus on how Economists perceive 'analytical'.

Therefore, this does not simply mean embracing and focusing on the 'analytical thinking' as outlined by Pally (2001) because it has the word 'analytical' in the title. The description of what it means to think analytically according to Pally (2001) does not match the *Thinking like an Economist* (Siegfried et. al., 1991) descriptors of 'problem-solving'. This is to say that Pally's (2001) definition of 'analytical thinking' focuses on different elements than does the 'problem-solving' section (Siegfried et al., 1991).

Table 34 Differences between Thinking like an Economist and the Sustained Content-based Approach: Problem solving and Analytical thinking

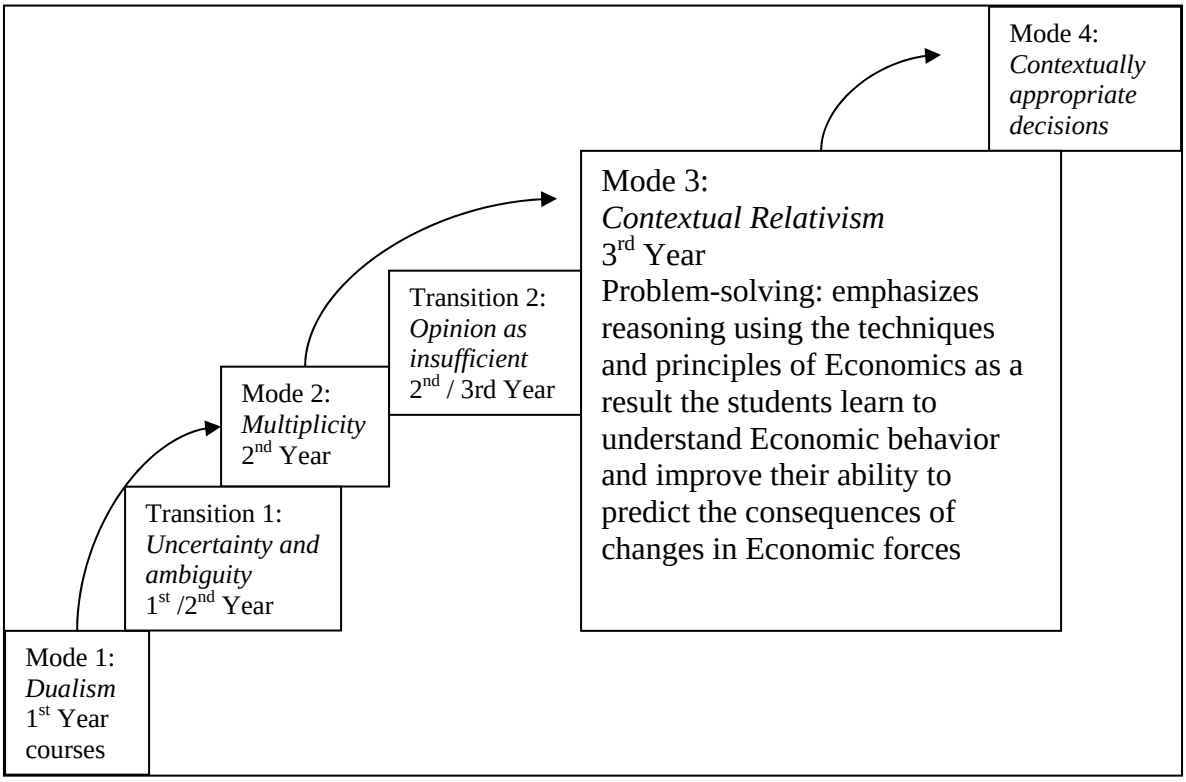
Economics	EAP
1) **Problem solving** a) emphasize **reasoning using** the **techniques** and **principles of Economics** as a result the students learn to **understand economic behavior** and improve their ability to **predict** the consequences of changes in economic forces	1) **Analytical Thinking** a) **grasping** the claims or perspectives of readings and lectures b) **understanding** the methods of proof used to support those claims/perspectives c)**synthesizing** claims and support from a range of sources

Economics and EAP according to Nelson's Framework

To better illustrate and discuss the problem of choosing to teach 'analytical thinking' as according to Pally (2001) in order to match the definitions of critical thinking within both disciplines, was to situate both definitions from the disciplines along the development stages in Nelson's Framework (Thoma, 1993). The description of 'analytical thinking' according to Pally (2001) is situated in modes 1 and 2; as opposed to the description of 'problem-solving' in Economics which is situated in mode 3.

The definition of 'problem-solving' in Economics is operating at an even higher level than may be needed in the first or second mode, which are also synonymous with first or second year in this context.

Figure 3 Economics along Nelson's Framework



The Economics professors all described the first and second year courses as 'building blocks' of knowledge (Interview, John; Interview, Tom; Interview, Bob). They stressed that the material such as basic principles and assumptions relative to Economics that are covered over the first year and are built upon in the following years.

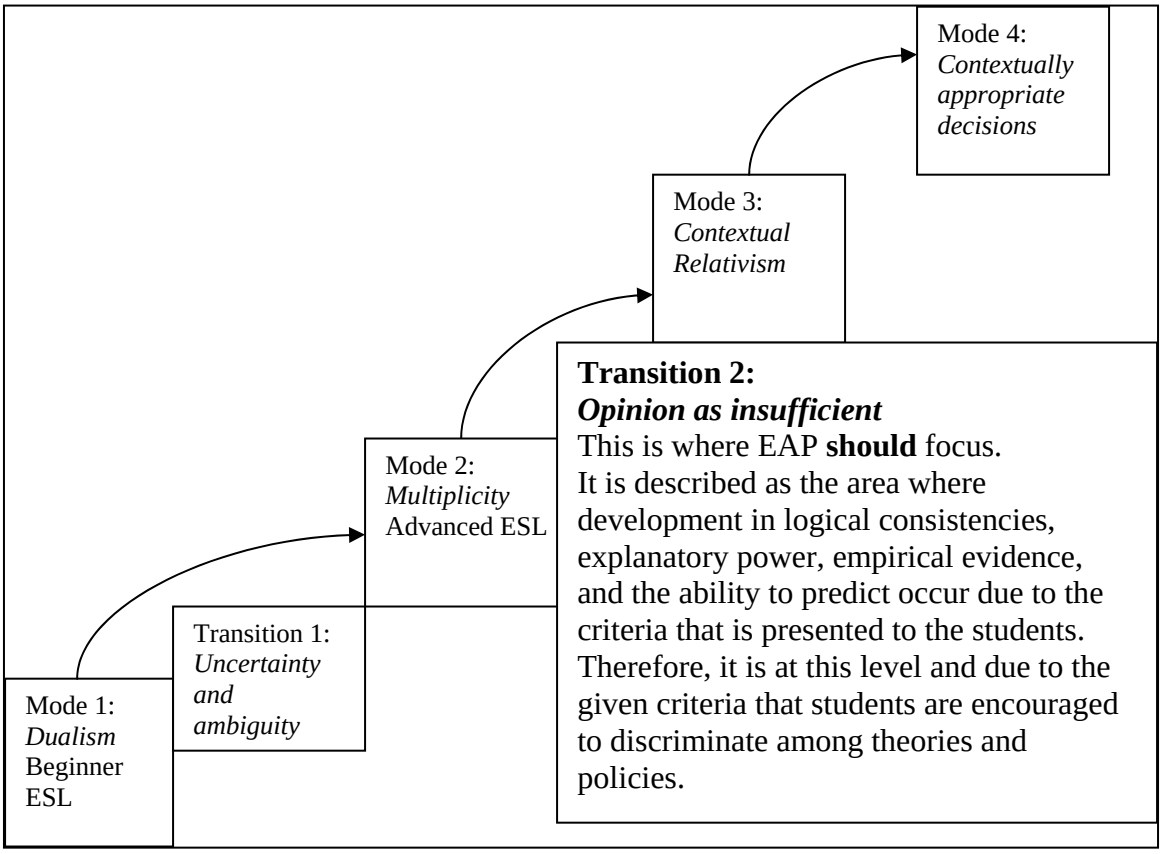
Then according the Economics professors, in the second year they teach their students additional models as well as gaining a deeper understanding of the ones previously learned. They teach their students that the model they used in first year was appropriate to use on a certain problem at that time because they only had limited knowledge of Economic models. Thus, second year students need to learn that the same problem can be understood in a different way by using a new model or that the previously learned model can be used in a deeper way to solve that same problem.

In the third year, they continue to increase their depth of knowledge rather than only breadth and learn to predict what happens if they slightly change one of the assumptions. By the fourth year, a student should be able to perform or express their "reasoning using the techniques and principles of Economics as a result of understanding Economic behaviour and predicting the consequences of changes in Economic forces", as is described in the definition of 'problem-solving' as a section of *Thinking like an Economist* (Siegfried et al., 1991). Therefore, the descriptions given by the Economics professors, of how they design or perceive Economics courses to progress, emphasize the structure that a student's knowledge is built upon in stages, or modes, from one level/year to the next.

Furthermore, the EAP instructors should do not try to match the 'problem-solving' section of *Thinking like an Economist* (Siegfried et al., 1991) because it is content specific and requires a specialist to teach the content.

The EAP instructor's definitions of critical thinking situated them within the second mode. This was a reflection of the definition of critical thinking according to the Sustained-Content-based approach (Pally, 2001).

Figure 4 Where EAP should be along Nelson's Framework



The definition of critical thinking as outlined in this teaching approach constrains the teaching of critical thinking to the first and second mode only and does not allow the type of critical thinking to be fostered which the Economics professors had deemed as 'essential'. Nor does the definition itself allow the instructors to teach at the transition 2 level which according to this framework would be the closest that an English for Academics Purpose program could come to the third mode without being content specific.

The EAP instructors demonstrated through their assignments that they design their courses so that they are facilitating critical thinking as they define it. They generally use the final project, or research paper as the instrument that will allow their students to demonstrate the critical thinking abilities that they have learned over the semester.

Liz summarized the final research project during the interview and described how the final project allows the language learners to display their knowledge of critical thinking skills.

> In the application of it, to go back to the research project that they have to do an ongoing thing that culminates in a research report and a presentation so that's one of the final things what they're doing. For example, what we just went through. They're analyzing learning, how learning goes on in their own discipline, how do they learn, what strategies do they need, they look at course outlines and assignments and analyze what is, what is going to be displayed as learning in that discipline (Interview, Liz, p. 6).

This description from Liz about the final project, illustrates that the final project contains elements from all five of the points that would be described as 'critical thinking' (Pally, 2001) but does not include elements of 'analytical thinking' (Pally, 2001).

Additionally, Liz uses the final project as a tool for her students to explore their disciplines or topics of choice on their own and relate it back to themselves. Jen and Michelle use the final project as for the same aim. Thereby, these instructors are operating at the second mode, which according to the framework (Thoma, 1993) is the mode when language learners begin to realize that other theories exist but an issue or theory is still examined in relation to themselves and their needs or understanding of the issue. Thus, the material is relating to the language learners in a subjective and personal way.

Instead, more attention might be given to creating a set of criteria that the language learners would use to discriminate amongst theories and policies. By providing a set of evaluative tools for the language learners to objectively analyze issues would then move the EAP course along Nelson's Framework (Thoma, 1993) from mode 2 into what Nelson calls, transition 2. Thus, this would result in the language learners receiving a better preparatory basis before they enter their content specific course.

CHAPTER SIX

Conclusion

This section concludes this research study by answering the research questions, acknowledging the limitations of this study and discussing its implications.

The research questions addressed by the study were:

> (1) What are the definitions of critical thinking, according to Economics professors and EAP instructors?
> (2) How do their varying definitions of critical thinking influence their teaching?
> (3) How do their courses facilitate critical thinking? Is it either explicitly or implicitly?
> (4) Is there a gap between the definitions of critical thinking in Economics and EAP? If so, does this gap undermine the Sustained Content-based approach?

In order to explore these questions, data were elicited from six participants in interviews and questionnaires. Subsequently, data were analyzed with regard to the literature in order to compare the discipline specific definitions of thinking within Economics and EAP. Finally, the alignment of these definitions was examined in relation to the developmental stages of thinking identified in Nelson's Framework (Thoma, 1993).

The study found that there were differences in the definitions of critical thinking between the two disciplines and that they did not match one another. Additionally, the data suggested that the way in which participants' defined critical thinking influenced how they taught their students and designed course assignments. This was evident in the responses from the Economics professors who emphasized analytical thinking. Their courses facilitated analytical thinking explicitly and not critical thinking. On the other hand, the EAP instructors designed their assignments and final research projects to explicitly facilitate critical thinking. This explicit teaching of critical thinking by the EAP

instructors is in opposition of the cognitive apprenticeship model (Atkinson, 1997) that focuses on the socialization of the novice and introduces the expert's worldview.

The mismatch that was found between the definitions of critical thinking was largely due to the importance that the Economics professors placed on problem solving as opposed to creative skills in operationalizing and facilitating the development of *thinking like an Economist* (Siegfried et. al., 1991). The explicit use of the word 'analytical' was used repeatedly by the Economics professors. This emphasis on analytical thinking was in direct opposition to the definitions of critical thinking that were provided by the EAP instructors. In other words, the data suggested that EAP instructors focused on a type of critical thinking, which was very similar to the creative skills descriptors that are found in the *thinking like an Economist* definition. Further confirmation of gaps between the disciplines was provided by the data elicited from Political Science. This triangulating move in the study suggests that this is a fruitful line of inquiry.

The question of whether or not this gap undermines the Sustained Content-based approach used within this EAP program still remains. I would argue that there is some evidence in this study to suggest that there are at least concerns with regard to the viability of this approach. The problem seems to be that the definition of critical thinking within EAP is too limited and too narrow. However, it is not just a simple matter to suggest to the EAP instructors that they need to include different types of thinking (i.e. analytical thinking) as well into their course design in order to 'match' the notions of critical thinking in Economics. This is because, the definition of 'analytical thinking' according to Pally (2001) does not include the elements necessary to mimic what will be needed for a first year Economics student, because Pally (2001) definition of analytical

thinking is restricted to mode 2 of Nelson's framework (Thoma, 1993). It does not include a focus on discipline specific thinking; instead it stresses understanding and synthesizing of multiple sources. It does not mention teaching the language learners any sets of criteria, principles or techniques that are usually discipline specific.

Therefore, based on the fact that the definition of critical thinking according to *thinking like an Economist* (Siegfried et al., 1991) is the outcome of disciplinary mastery in Economics, and operating at the mode 3 (Thoma, 1993) or at a level which requires discipline-specific knowledge, the current definition of critical thinking within the Sustained Content-based approach is insufficient. The EAP program seems to be more aligned with the instructors' backgrounds in social sciences and therefore aligned with Pally's (2001) description of critical thinking. Analytical thinking does not appear here and yet it is the key to the Economics professors.

However, even though this study has identified a gap between Economics and EAP and suggested that the definition of critical thinking as defined by the Sustained Content based approach (Pally, 2001) may be limiting, it is important to also recognize the limitations of this study.

Limitations of study

It is hardly fair to make sweeping statements about mismatches between definitions of critical thinking in Economics and EAP, with such a small sample size and the random recruitment process. There clearly needs to be further research to explore these findings. The study was very narrow and cannot be generalized. The study aimed to explore a localized issue; one which was appropriate to the university where both programs were housed. This is especially true of the EAP program that was considered

in this study, because the EAP participants were very interested in learning more about critical thinking and how it exists within other disciplines due to their explicit use of the Sustained Content-based approach. Therefore, one aim of the study was to inform the EAP instructors about critical thinking across the courtyard.

Additionally, the recruitment process was also a limitation. In other words, the reasons for the participants volunteering for the study are unknown, and when people and their opinions are central to the investigation their personal reasons and biases may influence the study.

Implications

This study does suggest that the EAP instructors were right in asking for more information about critical thinking within the Sustained Content-based approach. One implication may be to consider a different design for this EAP program. Further research of other disciplines may further solidify these findings, that critical thinking is indeed discipline-specific. If this is the case, an LSP approach may be more appropriate. Another alternative might be to develop a program where the language learner has the opportunity to work together with a language specialist as well as with a content specialist, on a one-on-one basis to address their individual needs. More important, this service could be accessed throughout their academic career because language learning should not be seen as a skill that can be mastered in an intensive twelve-week course.

Conversely, an alternative course of action may be taken that works within the EAP program as it is designed today but encourages the EAP instructors to use more of their own disciplinary background knowledge. Thus, the program might continue using the three levels introductory, intermediate and advanced as they presently exist, however

instead of creating a Sustained Content-based approach within each class by each instructor (e.g. Sociology in one class, Psychology in another) perhaps the content could be stretched across the three levels of the program. This would closely mimic the building of knowledge that happens within mainstream courses but is not disciplinary specific. Instead this program would include mode 1, mode 2 and transition 2 only. This would mean, for example that by the time the language learner completed the intermediate course which would operate at mode 2, they would be ready to enter the advanced course which would operate within transition 2. This would allow language learners to develop thinking over time and provide them a practice run of the learning stages they will encounter in university.

Therefore, English for Academic Purposes would benefit from more in-depth and longitudinal studies into the definitions of critical thinking in other disciplines. Of equal interest are the approaches that different disciplines take in facilitating the development of thinking as part of engagement with academic study. It may be, as this study suggests, that analytical thinking is more valued within the disciplines. The findings of this study suggest that critical thinking is only a slice of the academic language pie. The purpose of EAP is academic language development. It may well be, as the scholars of the New Rhetoric suggest (Freedman and Medway, 1994) that discipline plays a bigger role than is generally acknowledged by EAP approaches.

BIBLIOGRAPHY

Allison, D. (1996). Pragmatist discourse and English for Academic Purposes. *English for Specific Purposes* 15 (2), 85-103.

Angelo, T. & Cross, P. (1993). *Classroom assessment techniques*. San Francisco: Jossey-Bass.

Atkinson, D. (1997). A Critical approach to critical thinking in TESOL. *TESOL Quarterly*, 31 (1), 71-94.

Barnett, R. (1997). *Higher education: A critical business*. Buckingham: Society for Research into Higher Education and Open University Press.

Benesch, S. (1993). ESL, ideology, and the politics of pragmatism. *TESOL Quarterly* 27 (4), 705-716.

Benesch, S. (1996). Needs analysis and curriculum development in EAP: An example of a critical approach. *TESOL Quarterly* 30 (4), 723-738.

Borg, R. & Borg, M. (2001). Teaching critical thinking in interdisciplinary Economics courses. *College Teaching* .49 (1), 20-25.

Brinton, D, Snow, M & Bingham Wesche, M (1989) *Content-based second language instruction* Newbury House Publishers.

Brown, J. (2001). *Using surveys in language programs*. Cambridge University Press.

Carleton University. (2005). Retrieved on December 15 from http://www.carleton.ca/fpa/departments/index.html

CBC Massey lectures. (2006).Retrieved on November 20 from http://www.cbc.ca/ideas/massey.html

Cohen, A. (1995). Second language learning and use strategies: Clarifying the issues. R*esearch report*. Minnesota University.

Curry, M. (1999). *Critical thinking: Origins, applications and limitations for post-secondary students of English as a Second Language*. Paper presented at the Annual Meeting for the American Educational Research Association. 2-33.

Ennis, R. H. (1962). A concept of critical thinking. *Harvard Educational Review*, 32, 81-111.

Ennis, R. H. (1989). Critical thinking and subject specificity: Clarification and needed research. *Educational Researcher*, 18, 4-10.

Flowerdew, J. (2002). Genre in the classroom: A linguistic approach. In Johns, A. (Eds.) *Genre in the classroom, Multiple Perspectives.* Lawrence Erlbaum Assoc.

Flowerdew J & Peacock M.(2001) The EAP curriculum: Issues, methods and challenges. In J. Flowerdew & M. Peacock., *Research Perspectives on English for Academic Purposes.* 268-285. Cambridge: Cambridge University Press.

Freedman, A. & Medway, P. (1994). *Genre and the new rhetoric*. London: Taylor & Francis.

Freedman, A. (1999). Beyond the text: Towards understanding the teaching and learning of genres. *TESOL Quarterly* 33, (4), 764-767.

Fox, H. (1994). *Listening to the world: cultural issues in academic writing.* National Council of Teachers of English.

Fox J, Berman R., Cheng, L., Song X. and Myles, J. (2006). *Costs and benefits: English for Academic instruction in Canadian universities*. Carleton papers in Applied Language Studies. 23.

Gieve, S. (1998). Comments on Dwight Atkinson's "A critical approach to critical thinking in TESOL." *TESOL Quarterly*, 32, 123-129.

Hammond, J. & Derewianka, B. (2001). Genre. In Nunan, D & Carter, R. (Eds.), *The Cambridge guide to teaching English to speakers of other languages.* Cambridge: Cambridge University Press.

Hamp-Lyons, L. (2001). English for Academic Purposes. In Nunan, D & Carter, R. (Eds.), *The Cambridge guide to teaching English to speakers of other languages.* Cambridge: Cambridge University Press.

Hawkins, M.(1998). Apprenticing nonnative speakers to new discourse communities. *TESOL Quarterly*, 32, 123-129.

Hutchinson, T and Waters, A. (1987). *English for specific purposes: a learning-centred approach.* Cambridge: Cambridge University Press.

Hyland, K & Hamp-lyons, L (2002). EAP: Issues and directions. *Journal of English for Academic Purposes* 1, 1-12.

Kinsella, K. (1997). Moving from comprehensible input to "learning to learn" in CBI. In M. A. Snow & D. Brinton (Eds.), *The content-based classroom: Perspectives on integrating language and content* (pp. 46-57). White Plains, NY: Longman.

Kramsch, C. (1993). *Context and culture in language teaching.* Oxford University Press.

Kuhn, D. (1999). A developmental Model of Critical Thinking. *Educational Researcher* 28 (2) 16-26.

Johns, A. (1988). The Discourse Communities Dilemma: Identifying Transferable Skills for the Academic Milieu. *English for Specific Purposes*, 7, 55-60.

Johns, A. (1981). Necessary English: A Faculty Survey. *TESOL Quarterly* 15(1), 51-57.

Jordan, R. (1997). *English for Academic Purposes: A guide book for teachers.* Cambridge University Press.

Leki, I., & Carson, J. (1994). Students' Perceptions of EAP writing instruction and writing needs across the disciplines. *TESOL Quarterly,* 28(1), 81-101.

Mankiw, N., Kneebone, G., McKenzie, K., & Rowe, N. (2004). *Principles of Microeconomics*. Third Canadian Edition. Harcourt Brace. Canada.

Mankiw, N., Kneebone, G., McKenzie, K., & Rowe, N. (2004). *Principles of Macroeconomics*. Third Canadian Edition. Harcourt Brace. Canada.

McPeck, J. (1992). Introduction: The Generalizability Question. In Stephen P. Norris (Eds.), *The generalizability of critical thinking. Multiple Perspectives on an educational ideal.* 198-205. New York: Teachers College, Columbia University.

Mohan, B. (1997). *Language and Content*. Reading, Massachusetts. Addison-Wesley Publishing.

Munby, J. (1978). *Communicative Syllabus design*. Cambridge; New York: Cambridge University Press.

Norris, S.R. (1992). Introduction: The Generalizability Question. In Stephen P. Norris (Eds.), *The generalizability of critical thinking. Multiple Perspectives on an educational ideal.* 1-15. New York: Teachers College, Columbia University.

Online Questionnaire (2006) Retrieved on August 30 from http://freeonlinesurveys.com

Oxford, R. (1994). *Language Learning Strategies: An Update*. Digest University of Alabama. 1-6.

Pally, M. (1997). Critical thinking in ESL: An argument for sustained content. *Journal of Second Language Writing*, 6(3), 293-311.

Pally, M. (1999) *Sustained content-based teaching for academic skills development in ESL/EFL*. Paper presented at the Annual Meeting of the Teachers if English to Speakers of Other Languages. 1-23

Pally, M (2000). *Sustained content teaching in academic ESL/EFL: a practical approach* Publisher Boston : Houghton Mifflin.

Pally, M. (2001). Skills development in 'Sustained' content-based curricula: Case studies in analytical/critical thinking and academic writing. *Language and Education.* 15(4).

Pennycook, A. (1994). Beyond (F)utilitarianism: English as academic purpose. *Hong Kong papers in Linguistics and Language Teaching*, 17, 13-23.

Phillips,V & Bond, C. (2004). Undergraduates' experiences of critical thinking. *Higher education research & development*, 23(3), 277 -294.

Ratteray, O. (1985). Expanding roles for summary information. *Written Communication, 2*, 457-472.

Reasoning. *The American Heritage® Dictionary of the English Language, Fourth Edition*. Retrieved November 01, 2006, from Dictionary.com website: http://dictionary.reference.com/browse/reasoning.

Reasoning. *Dictionary.com Unabridged (v 1.0.1)*. Retrieved November 01, 2006, from Dictionary.com website: http://dictionary.reference.com/browse/reasoning.

Riggenbach, H. (1999). *Discourse analysis in the language classroom* University of Michigan Press.

Rubin, J. (1975). What the "good language learner" can teach us. *TESOL Quarterly*, 9, 41-51.

Siegfried, J., Bartlett, R., Hansen, L., Kelley, A., McCloskey, D., & Tietenberg, T. (1991) The status and prospects of the Economics *Major. Journal of Economic Education*. Summer 197-224

Snow, M.A (1998). Trends and issues in content-based instruction. In W. Grabe et al. (Eds.) *Annual Review of Applied Linguistics*, 18. Foundations of second language teaching. 243-267.

Stoller, F (2004). Content-based instruction: perspectives on curriculum planning. *Annual Review of Applied Linguistics*, *24*, 261- 283.

Swales, J. (1990). *Genre Analysis: English in academic and research settings*. Cambridge Applied Linguistics.

Thoma, G. (1993). The Perry Framework and tactics for teaching critical thinking in Economics. *Journal of Economic Education.* Spring. 128-136

Thompson, C. (2002). Teaching critical thinking in EAP courses in Australia. *TESOL Journal*, 11 (4) 15 -20.

Todd, R. (2003). EAP or TEAP? *Journal of English for Academic Purposes*, 2, 147-156

Turner, J. (2004). Language as academic purpose. *Journal of English for Academic Purposes* 3, 95-109.

Vansickle, R. (1992). Learning to reason with Economics. *Journal of Economic Education*. Winter. 56-64.

Woodward-Kron, R (2002). Critical analysis versus description? Examining the relationship in successful student writing. *Journal of English for Academic Purposes*, 1(2),121-43.

APPENDICES

Appendix 1: Ethics Certificate

Carleton UNIVERSITY
Canada's Capital University

Office of Research Services
1125 Colonel By Drive
Ottawa ON Canada K1S 5B6
Tel: (613) 520-2516
Fax: (613) 520-2521

Certificate of Ethics Approval

This is to certify that the Carleton University Research Ethics Committee has examined the application for ethical approval for the research project **An Investigation of Definitions and Teaching of Critical Thinking in English for Academic Purposes and Economics** by **Ann Evers, M.A. Candidate** in the **School of Linguistics and Applied Language Studies**, and under the supervision of **Professor Desmond Allison, School of Linguistics and Applied Language Studies.**

The committee found this project to met appropriate ethical standards as outlined in the *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans*, the *Carleton University Policies and Procedures for the Ethical Conduct of Research.*

This certification is valid for one year from the date indicated below.

Date: 22 February 2006

Leslie J. MacDonald-Hicks
Research Ethics Committee Coordinator
For the Chair of the Carleton University Research Ethics Committee
Prof. Antonio Gualtieri

Appendix 2: Teaching Goals Inventory

Exhibit 2.1. Teaching Goals Inventory, Self-Scorable Version.

Purpose: The Teaching Goals Inventory (TGI) is a self-assessment of instructional goals. Its purpose is threefold: (1) to help college teachers become more aware of what they want to accomplish in individual courses; (2) to help faculty locate Classroom Assessment Techniques they can adapt and use to assess how well they are achieving their teaching and learning goals; and (3) to provide a starting point for discussions of teaching and learning goals among colleagues.

Directions: Please select ONE course you are currently teaching. Respond to each item on the inventory in relation to that particular course. (Your responses might be quite different if you were asked about your overall teaching and learning goals, for example, or the appropriate instructional goals for your discipline.)

Please print the title of the specific course you are focusing on:

_____

Please rate the importance of each of the fifty-two goals listed below to the specific course you have selected. Assess each goal's importance to what you deliberately aim to have your students accomplish, rather than the goal's general worthiness or overall importance to your institution's mission. There are no "right" or "wrong" answers; only personally more or less accurate ones.

For each goal, circle only one response on the 1-to-5 rating scale. You may want to read quickly through all fifty-two goals before rating their relative importance.

In relation to the course you are focusing on, indicate whether each goal you rate is:

(5)	Essential	a goal you always/nearly always try to achieve
(4)	Very important	a goal you often try to achieve
(3)	Important	a goal you sometimes try to achieve
(2)	Unimportant	a goal you rarely try to achieve
(1)	Not applicable	a goal you never try to achieve

Rate the importance of each goal to what you aim to have students accomplish in your course.	*Essential*	*Very Important*	*Important*	*Unimportant*	*Not Applicable*
1. Develop ability to apply principles and generalizations already learned to new problems and situations	5	4	3	2	1
2. Develop analytic skills	5	4	3	2	1
3. Develop problem-solving skills	5	4	3	2	1
4. Develop ability to draw reasonable inferences from observations	5	4	3	2	1
5. Develop ability to synthesize and integrate information and ideas	5	4	3	2	1
6. Develop ability to think holistically: to see the whole as well as the parts	5	4	3	2	1
7. Develop ability to think creatively	5	4	3	2	1
8. Develop ability to distinguish between fact and opinion	5	4	3	2	1
9. Improve skill at paying attention	5	4	3	2	1
10. Develop ability to concentrate	5	4	3	2	1
11. Improve memory skills	5	4	3	2	1
12. Improve listening skills	5	4	3	2	1
13. Improve speaking skills	5	4	3	2	1
14. Improve reading skills	5	4	3	2	1
15. Improve writing skills	5	4	3	2	1
16. Develop appropriate study skills, strategies, and habits	5	4	3	2	1
17. Improve mathematical skills	5	4	3	2	1
18. Learn terms and facts of this subject	5	4	3	2	1
19. Learn concepts and theories in this subject	5	4	3	2	1
20. Develop skill in using materials, tools, and/or technology central to this subject	5	4	3	2	1
21. Learn to understand perspectives and values of this subject	5	4	3	2	1

Exhibit 2.1. Teaching Goals Inventory, Self-Scorable Version, Cont'd.

Rate the importance of each goal to what you aim to have students accomplish in your course.	*Essential*	*Very Important*	*Important*	*Unimportant*	*Not Applicable*
22 Prepare for transfer or graduate study	5	4	3	2	1
23. Learn techniques and methods used to gain new knowledge in this subject	5	4	3	2	1
24. Learn to evaluate methods and materials in this subject	5	4	3	2	1
25. Learn to appreciate important contributions to this subject	5	4	3	2	1
26. Develop an appreciation of the liberal arts and sciences	5	4	3	2	1
27. Develop an openness to new ideas	5	4	3	2	1
28. Develop an informed concern about contemporary social issues	5	4	3	2	1
29. Develop a commitment to exercise the rights and responsibilities of citizenship	5	4	3	2	1
30. Develop a lifelong love of learning	5	4	3	2	1
31. Develop aesthetic appreciations	5	4	3	2	1
32. Develop an informed historical perspective	5	4	3	2	1
33. Develop an informed understanding of the role of science and technology	5	4	3	2	1
34. Develop an informed appreciation of other cultures	5	4	3	2	1
35. Develop capacity to make informed ethical choices	5	4	3	2	1
36. Develop ability to work productively with others	5	4	3	2	1
37. Develop management skills	5	4	3	2	1
38. Develop leadership skills	5	4	3	2	1
39. Develop a commitment to accurate work	5	4	3	2	1
40. Improve ability to follow directions, instructions, and plans	5	4	3	2	1
41. Improve ability to organize and use time effectively	5	4	3	2	1
42. Develop a commitment to personal achievement	5	4	3	2	1
43. Develop ability to perform skillfully	5	4	3	2	1
44. Cultivate a sense of responsibility for one's own behavior	5	4	3	2	1
45. Improve self-esteem/self-confidence	5	4	3	2	1
46. Develop a commitment to one's own values	5	4	3	2	1
47. Develop respect for others	5	4	3	2	1
48. Cultivate emotional health and well-being	5	4	3	2	1
49. Cultivate an active commitment to honesty	5	4	3	2	1
50. Develop capacity to think for one's self	5	4	3	2	1
51. Develop capacity to make wise decisions	5	4	3	2	1

52. In general, how do you see your primary role as a teacher? (Although more than one statement may apply, please circle only one.)

1 Teaching students facts and principles of the subject matter

2 Providing a role model for students

3 Helping students develop higher-order thinking skills

4 Preparing students for jobs/careers

5 Fostering student development and personal growth

6 Helping students develop basic learning skills

Source: Classroom Assessment Techniques, by Thomas A. Angelo and K. Patricia Cross.

Exhibit 2.2. Teaching Goals Inventory, Self-Scoring Worksheet.

1. In all, how many of the fifty-two goals did you rate as "essential"? _____

2. How many "essential" goals did you have in each of the six clusters listed below?

	Cluster Number and Name	*Goals Included in Cluster*	*Total Number of "Essential" Goals in Each Cluster*	*Clusters Ranked—from 1st to 6th—by Number of "Essential" Goals*
I	Higher-Order Thinking Skills	1–8	_____	_____
II	Basic Academic Success Skills	9–17	_____	_____
III	Discipline-Specific Knowledge and Skills	18–25	_____	_____
IV	Liberal Arts and Academic Values	26–35	_____	_____
V	Work and Career Preparation	36–43	_____	_____
VI	Personal Development	44–52	_____	_____

3. Compute your cluster scores (average item ratings by cluster) using the following worksheet.

	A	*B*	*C*	*D*	*E*
	Cluster Number and Name	*Goals Included*	*Sum of Ratings Given to Goals in That Cluster*	*Divide C by This Number*	*Your Cluster Scores*
I	Higher-Order Thinking Skills	1–8	_____	8	_____
II	Basic Academic Success Skills	9–17	_____	9	_____
III	Discipline-Specific Knowledge and Skills	18–25	_____	8	_____
IV	Liberal Arts and Academic Values	26–35	_____	10	_____
V	Work and Career Preparation	36–43	_____	8	_____
VI	Personal Development	44–52	_____	9	_____

Source: Classroom Assessment Techniques, by Thomas A. Angelo and K. Patricia Cross. Copyright © 1993. Permission to reproduce is hereby granted.

If you are just beginning to experiment with Classroom Assessment, it is not necessary, or productive, to worry too much about linking goals to assessment tools. Many faculty start out by trying a few simple Classroom

Appendix 3: Questionnaire Data

These are the results from the Teaching Goal Inventory questionnaire (Angelo and Cross, 1993). The first table includes all three disciplines and indicates how *essential, very important, important* or *unimportant* higher-order thinking skills are in their opinion.

Then the following tables are grouped into the three disciplines illustrating the distribution of importance placed on the teaching goals, the differences between question #2 and #7 and the difference between participants' perceptions of their primary role as a teacher before and after taking the questionnaire.

Lastly, the definitions of critical thinking as provided by the Political Science participants are placed in a table.

The numbers of respondents to the questionnaire were low and as a result the responses are used to support other data that emerged during the interviews. Therefore these results were integrated within the study.

The following table indicates the distribution of importance placed on the teaching goals (Angelo and Cross, 1993)

Higher order thinking skills (8 questions)	Participants	Essential	Very important	Important	Unimportant
Political Science	#1	6	2		
	#2	5	2	1	
Economics	#3	6	2		
	#5	2	3	3	
	#7	1	6	1	
	Tom	2	4	1	1
	John	5	3		
	Bob		6	3	
EAP	#4	7	1		
	#6	6	1	1	
	Michelle	3	5		
	Jen	8			
	Liz	2	5		

13 participants in total

ECONOMICS DATA

The results illustrated here are all of the *Essential* responses in all six of the teaching goals.

Economics

Participant	Higher-order thinking skills (8 *Qs*)	Basic academic success skills (9 *Qs*)	Discipline specific knowledge & skills (8 *Qs*)	Liberal arts & academic values (10 *Qs*)	Work & Career Preparation (8 *Qs*)	Personal Development (8 *Qs*)
#3	**6**	0	0	0	1	0
#7	**1**	0	0	0	1	4
#5	**2**	1	1	2	0	2
John	**5**	3	4	1	5	5
Tom	**2**	0	2	0	0	1
Bob	**0**	0	1	0	0	0

These numbers presented here are the amount of *Essential* questions that were circled on the questionnaire and *Qs* represents questions.

These two tables illustrate a difference between responses from Questions 2 and 7.

Economics

Question 2: Develop analytic skills	Participants	Responses
	#3	Essential
	#5	Essential
	#7	Essential
	Tom	Essential
	John	Essential
	Bob	Very important

Economics

Question 7: Develop ability to think creatively	Participants	Responses
	#3	Very important
	#5	Important
	#7	Important
	Tom	Unimportant
	John	Essential
	Bob	Important

This table illustrates a difference between Economics professors' perceptions of their primary role as a teacher before and after taking the questionnaire

Participants	**Primary role of teacher (initial belief before doing the questionnaire)**	**Essential teaching goals (outcome of the questionnaire)**
Tom	Teaching students facts and principles of the subject matter	Higher-order thinking skills AND Discipline specific knowledge and skills
John	Fostering student development and personal growth	Higher-order thinking skills AND Work and Career preparation AND Personal development
Bob	Teaching students facts and principles of the subject matter	Discipline specific knowledge and skills

ENGLISH FOR ACADEMIC PURPOSES (EAP) DATA

These results show the distribution of importance placed on the teaching goals (Angelo and Cross, 1993)

EAP

Participant	Higher-order thinking skills (8 *Qs*)	Basic Academic success skills (9 *Qs*)	Discipline specific knowledge & skills (8 *Qs*)	Liberal arts & academic values (10 *Qs*)	Work & Career Preparation (8 *Qs*)	Personal Development (8 *Qs*)
#4	**7**	4	1	5	4	7
#6	**6**	6	2	0	0	0
Michelle	**3**	0	0	0	5	3
Jen	**8**	3	2	3	1	5
Liz	**2**	5	4	2	1	1

These numbers presented here are the amount of *Essential* questions that were circled on the questionnaire and *Qs* represents questions.

These two tables illustrate a difference between responses from Questions 2 and 7.

EAP

Question 2: Develop analytic skills	Participants	Responses
	#4	Essential
	#6	Essential
	Michelle	Essential
	Jen	Essential
	Liz	Very important

EAP

Question 7: Develop ability to think creatively	Participants	Responses
	#4	Very important
	#6	Important
	Michelle	Very important
	Jen	Essential
	Liz	Very important

This table illustrates a difference between EAP instructors' perceptions of their primary role as a teacher before and after taking the questionnaire

Participants	**Primary role of teacher (initial belief before doing the questionnaire)**	**Essential teaching goals (outcome of the questionnaire)**
Michelle	Helping students develop higher-order thinking skills	Work and career preparation
Jen	Fostering students development and personal growth	Higher-order thinking skills
Liz	Helping students develop higher-order thinking skills AND Helping students develop basic learning skills (Academic English and Values)	Basic academic skills

POLITICAL SCIENCE DATA

These results show the distribution of importance placed on the teaching goals (Angelo and Cross, 1993)

Political Science

Participant	Higher-order thinking skills (8 *Qs*)	Basic Academic success skills (9 *Qs*)	Discipline specific knowledge & skills (8 *Qs*)	Liberal arts & academic values (10 *Qs*)	Work & Career Preparation (8 *Qs*)	Personal Development (8 *Qs*)
#1	**6**	2	2	1	2	1
#2	**5**	2	3	2	1	4

These numbers presented here are the amount of *Essential* questions that were circled on the questionnaire and *Qs* represents questions.

These were the two Political Science participants' definitions of critical thinking.

Political Science Questionnaire data	Definitions of critical thinking
Participant #1	Analyzing events and data from an **impartial perspective**; thinking about what meanings may lie behind the writer's overt presentation of an argument; thinking about all angles of a situation
Participant #2	Critical thinking is the ability to develop **independent judgments** regarding materials, arguments, or situations. Development of these judgments would involve a self-conscious application of one's normative values, of analytical categories and logical reasoning, and of methods for assessing the validity and relevance of information and arguments.