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University of Alberta

Curricular and Teaching Changes in Universities

by

Jacqueline Rose Peters 

A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfilment of the requirements for the degree of Master of Education

in

Adult and Higher Education

Department of Adult, Career and Technology Education

Edmonton, Alberta

Spring, 1996

ISBN 0-612-10791-4

University of Alberta

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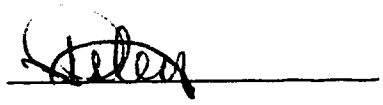
Degree: Master of Education

Year this Degree Granted: 1996



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Dr. Paula A. Brook

Dr. Kathy Skau

Dr. Pat Rooke

15-12-95

DEDICATION

This thesis is dedicated to my family - Joe, Natasha, and Amber - all of whom persevered throughout this long and often intense process. My thanks to each of you. You are the loves of my life.

To my mother, Rose Brunner, and my father, Bernard Brunner, who provided support and encouragement to me at critical times in my life. As parents, you fostered my love of learning and my drive to achieve. Your expectations for my success helped me to accomplish what I have today.

ABSTRACT

This study used a secondary data analysis of 74 questionnaires collected during 1993-1994 at two research universities to investigate relationships between curriculum change and teaching. The analysis revealed that faculty members were actively making curricular revisions to programs and courses. Program level changes centred around revisions to the undergraduate curriculum. Most course level changes involved modifications of course content. Although a majority of the respondents were teaching courses affected by the curricular revisions, few professors reacted by making many teaching changes.

Internal precipitators (e.g., department consensus, student feedback, individual instructors, or department colleagues) were found to be significantly related to course changes. Faculty members' attitudes towards curriculum change did not appear to greatly influence course change activity. Highly experienced faculty members made more course changes than less experienced faculty members.

Recommendations from respondents included the need for greater institutional support and incentives for changes to be made to curriculum. One suggestion was to establish programs and opportunities to enhance the curriculum development skills of professors.

ACKNOWLEDGEMENTS

My life during my five years of graduate education was marked more by the accomplishments I achieved in conjunction with the experience rather than within the educational process - the development of one child and the birth of another; the move to a new city; the juggling of two professions; and the creation of a small consulting business. Many people assisted in both my professional and personal development as I evolved as an adult educator and pursued my degree over the past five years - I have been blessed by this support and friendship from friends, family, and neighbours.

I need to acknowledge the person who not only actively encouraged me to begin my graduate education process, but was instrumental throughout the entire journey and was vital to my completion of this degree. My soul mate, my husband, my friend, Joe Peters, will forever receive my undying admiration, respect and gratitude for persevering with me throughout this process. Together, we beat the odds by not only maintaining our marriage, but watching it grow over the five year process, not only in friendship and love but in the gift of our children as well.

My greatest gifts during this time period have been my two children, Natasha and Amber. Natasha did not wait for me to complete my degree, but blossomed from a baby into a delightful young girl with a song in her smile and joy in her heart. Amber was born almost a year prior to the day of the completion of my degree, and she brought with her the power to make me feel peaceful despite my many struggles to finish.

My thanks go out to my parents, Bernie and Rose Brunner, who provided greatly needed support to me and care for Natasha and Amber at some critical periods in this educational experience.

Thank you to my advisor, Paula Brook, who persevered with my erratic and complicated work style and schedule. Her mentoring and friendship have been invaluable to me. Also, my thanks to Dr. Tak Fung at the University of Calgary who provided patient and timely assistance with the statistical analysis for this study.

A special thanks to my sisters, Cori and Deena, and my many friends and neighbours, especially Wendy, Tammy, Marti, Maureen and Ellamay. A big thank you to Luce, who has been a loving nanny for my children and has become a trusted friend. These significant people not only weathered my storm with me but provided invaluable support and encouragement during my most difficult times.

And finally, my appreciation goes out to the many faculty members who participated in the curriculum change study and who made my research possible. I hope that my study contributes to improving the curriculum change process in universities.

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CHAPTER I

INTRODUCTION TO THE STUDY

Background to the Problem

The socioeconomic climate today is focused on change. Change is occurring rapidly as a result of improved technology, increased environmental awareness, the shift to a global economy, and concerns with increasing unemployment for all, particularly those who belong to the 18 to 24 year old cohort. Education is feeling the effects of these societal forces and is also undergoing considerable change. Reform to all areas of education has been written about extensively and there are increasing pressures for even more changes, especially in the areas of structure and curriculum.

Unquestionably, higher education has been affected by these calls for reform (Lattuca & Stark, 1994). As governments restructure finances, less public funding is made available to higher education. However, the many societal changes are causing increased demands on higher education, particularly in the areas of research and service (Borrero Cabal, 1993). Curricular changes are inevitable, whether or not they are desired by postsecondary institutions. Curricular change is being encouraged in order to deal with increased demands by students and the public to make programs more affordable, more accountable in terms of student learning, and more responsive to the needs and requirements of the professions and institutions/enterprises which students will join after graduation (Guskin, 1994). In addition, one cannot underestimate the impact that technology has on changing the curriculum, not only in the types of instructional

techniques used but in the delivery and format of courses as well (Green & Gilbert, 1995). All of these factors are compounding to exert more pressure for change in higher education; educational journals are replete with articles discussing the urgency of curricular reform for some or all of the above considerations. "Standard curricular models and tradition-bound general education requirements are simply inadequate to meet the realities of today's educational environment" (Dever & Templin, 1994, p. 34).

Although there are many external pressures for change in higher education, actual institutional change has been slow with some resistance and disagreement on how to manage the change coming from within the higher education system (Brand, 1993; Gaudiani, 1994). Many faculty have also lacked specific training in managing curricular change, thus confounding the difficulties in making reforms to the curriculum (Davis, 1994). For example, it was recently noted at the University of Alberta and the University of Calgary that 89% of faculty members involved in the curriculum change process did not have any formal preparation or training in the area of curriculum development (Brook, Clemence & Peters, 1995). Cranton (1994) pointed out that not only do faculty lack curriculum planning knowledge and skills, they also lack instruction in teaching, thus making curriculum changes at the course level difficult as well.

This lack of preparation in curriculum and teaching is inconsistent considering that the curriculum relates to most all other aspects of higher education institutions. "Research, academic management, and faculty workload all relate back to how the participants conceive of the curriculum" (Tierney, 1989, p. 72). "Curriculum is the focal point from which every facet of institutional life emerges" (Bender, 1979, p. 93). "The curriculum

stands at the heart of academic practice, yet it remains an underdeveloped resource of learning" (Toombs & Tierney, 1991, p. 53). Thus, the omnipresence of the curriculum in postsecondary education makes it a critical factor in the operation of higher education institutions.

Stark, Lowther and Smith (1986) provided an extensive review of the theory and research surrounding postsecondary curricula. In their review, they indicated that there have been a number of studies related to the documentation of curriculum change that is occurring in higher education. However, Stark, Lowther and Smith (1986) pointed out that curriculum research was much more limited at the course level and they suggested that "fruitful curricular research will concentrate at the course and program level where at least some student involvement with teaching and learning occurs" (p. 70). My study does focus on course change as curriculum change and it investigates how faculty are responding to curriculum change by making changes in the courses that they teach. This study also highlights some of the major curriculum changes occurring at the Universities of Alberta and Calgary.

Given the realities or mandates, as Toombs and Tierney (1991) call them, of impending societal and university change, how is higher education in Alberta responding? Specifically, what is the nature of curriculum change, what do faculty identify as the precipitators of change, and how do the curricular changes relate to teaching in higher education? In pursuing these questions, it is noteworthy that this study counters one of the criticisms of research into faculty and teaching or curriculum productivity. Some researchers have noted that if teaching is the focus of a study, then

faculty from liberal arts institutions tend to make up the sample, and if research is the focus, then research institutions are the sample of choice (Lawrence & Blackburn, 1988). In this study, course changes, which correspond to teaching changes, was one of the main variables investigated and it was examined using a selected sample of professors from two research-oriented institutions.

Curriculum Change and Culture

As a background and introduction to this study, some points about organizational culture will be articulated because culture affects all aspects of the organization, including the curriculum. Culture in an organization is "reflected in what is done, how it is done, and who is involved in doing it. It concerns decisions, actions, and communication both on an instrumental and a symbolic level" (Tierney, 1988, p. 3). Recognition of the general culture of postsecondary institutions is important because "as decision-making contexts grow more obscure, costs increase, and resources become more difficult to allocate, leaders in higher education can benefit from understanding their institutions as cultural entities" (Tierney, 1988, p. 5). Fullan (1991) went as far as to say that culture so pervades and inhibits or enhances revisions that "changing the culture of institutions is the real agenda, not implementing single innovations" (p. 107). Each institution has a different culture and specifically which curriculum changes work and how they work are dependent upon this idiosyncratic institutional culture (Farmer, 1990).

Peterson, Cameron, Jones, Mets and Ettington (1986) pointed out the critical relationship between the climate or culture of an institution, and the curricular offerings at

that institution. They reviewed research related to the organizational context for teaching and learning. Their review prompted them to make generalizations about the impact of culture on the curriculum. Generally, if there was a collegial ethos in the university and a well defined mission and goals, then curriculum was also fairly coherent and strong. Alternatively, when there was an uncertain and unclear environment, then the resulting curriculum was also weak, disjointed and confusing.

As an organizational culture, the university is conservative and does not readily embrace change (Kashner, 1990; Toombs & Tierney, 1991; Wattanbarger & Scaggs, 1979). Thus, many barriers will be experienced in the process of revising the curriculum. Many researchers and writers in the curriculum field have described these barriers to curriculum and instructional change and have suggested ways for administrators to overcome some of these barriers (Carmichael, 1993; Farmer, 1990; Mayhew & Ford, 1971; Sikes, Shlesinger, & Seashore, 1974).

The original survey on which my study is based explored these barriers. An in-depth description of the culture at the Universities of Alberta and Calgary would likely explain or support these barriers and put them into context. However, as important as culture is to the activities of faculty members, it is elusive and a thorough description of the cultures at the universities of Alberta and Calgary is beyond the scope of this study. One aspect of culture, however, seems to be quite important and is mentioned often in reports about curriculum change: the perceived barriers to curriculum change. This contributing factor to curriculum change, or lack thereof as the case may be, will be further explored in Chapter II as it relates to faculty's attitudes and feelings toward curriculum change.

Purpose of this Research

This research used a secondary analysis of a descriptive, exploratory survey of curriculum change in two post-secondary institutions in Alberta; the University of Alberta and the University of Calgary. This study focused on the relationship of course changes to factors such as the precipitators of the change, feelings or attitudes about the change, and the length of time as a faculty member. The first step in studying this question is to describe the curriculum changes that are occurring at the two Alberta institutions. In addition, the relationship between curriculum change and one's teaching is explored. Finally, course changes are related to teaching changes, and the various relationships between course changes and other factors are presented.

Many precipitators of curriculum change have been identified in the literature (Levin, 1978; Trinkaus & Booke, 1980; Wood, 1990). Some of these precipitators can be considered change forces external to the intimate department structure, while others are forces which operate internally to the department, where most curriculum change at the course level actually occurs. How do faculty respond to these changes? Is there a relationship between the change precipitators and the course changes that occur? Are more course changes observed as a result of internally or externally driven changes?

Which faculty members actually make course changes as a result of curriculum change? As Fullan (1993, p. 23) aptly pointed out in his discussion of change forces in educational curricula, you cannot make people change. Some research has indicated that faculty who have been teaching less than seven years make changes to their teaching more frequently than faculty who have been teaching longer than seven years (Barr &

Rossett, 1994). This study will investigate this relationship between teaching changes and years of teaching experience, or career age. In other words, even if curricula are revised, are faculty actually making changes in their teaching in order to support this curriculum change and what is the level of experience of the faculty members who make the changes?

Attitude based on the stage of the curriculum change has been identified as a factor in the success or failure of curriculum change (Fullan, 1993, p. 25). My research will examine the relationship between the amount of curricular changes occurring and the attitude a faculty member has towards the curricular change. Do faculty members who have a positive feeling about the change make more changes than faculty members who are negative toward the change? This notion of regarding the curriculum and teaching techniques as they relate to faculty attitudes was also suggested at a 1991 forum sponsored by UNESCO and the University of Pittsburgh (Borrero Cabal, 1993).

By focusing on course changes, this researcher hopes to address the most fundamental building block of curriculum change - the course. As Toombs and Tierney (1991) acknowledged, "faculty view their courses as the fundamental unit of practice in the teaching-learning domain and the basic building block of the curriculum" (p. 27). Stark, Lowther, Ryan and Genthon (1988) further stated that:

> Arguably, the foundation of curricular change is at the course level. Although comprehensive reforms should not be neglected, it is also important to improve coherence within individual courses, where the structure for much academic learning is established. (p. 220)

Thus, the most prevalent curriculum changes that students encounter on a daily basis in

the university are those changes that occur in the courses in which they participate.

By investigating these various factors in curriculum change and how they relate to course changes, it is hoped that more information about the curriculum change process can be identified. Because the results of this study are based on a relatively small, purposeful sample, there is limited generalizability of the results. However, these findings stimulate questions and interest for further research into the curriculum change process and how university faculty perceive and react to changes, particularly at the course level.

Scope of the Study and Research Questions

This study is limited to faculty members from two postsecondary institutions in Alberta, the University of Calgary and the University of Alberta. Curriculum change has been conceptualized to occur in three arenas: modification or reform; integration; and transformation (Toombs & Tierney, 1991, p. 55). However, this study does not attempt to differentiate between these three categories to describe the actual type of curricular change occurring.

What this study does focus on is describing some of the curricular changes that are occurring at the University of Alberta and the University of Calgary. Is curricular change occurring and at what level is it occurring - the program level or the course level? If curricular changes are undertaken, how do these curriculum changes relate to the precipitators of the change, selected faculty's teaching and course changes, and the attitudes and experience levels of faculty who make the curriculum changes? What are

some of the contextual factors surrounding curricular revisions and how do the changes relate to teaching? Within the broader scope of curricular change, this specific study explored the following questions:

1. What are some of the curricular changes occurring at the University of Alberta and the University of Calgary?
2. How does curriculum change relate to one's teaching?
3. What are the relationships among course changes, precipitators of curriculum change, one's feelings/attitudes about the change, and career age (the length of time that one has been a faculty member)?

Definition of Terms

Whenever possible, definitions (of concepts in this study) from the prevailing literature on curriculum change are used. By using previously established definitions, there is enhanced correspondence to other literature in the curriculum field. This provides greater validity to the definitions and loose comparisons can be made between other research in curriculum and the results obtained in this study. When standard definitions are not available and/or utilized, definitions that are operationalized based upon the original survey will be employed.

Attitude. "The way a person views something or tends to behave towards it, often in an evaluative way" (Collins Concise English Dictionary, 1992, p. 78). In this study, the survey examined attitude as the feelings that faculty members reported having as a result of the curriculum changes. These attitudes/feelings included the following: enthusiastic,

hopeful, frustrated, cynical, neutral/indifferent, overwhelmed, relieved, confident and any other feelings that the respondents wrote on the survey.

A *barrier* is "anything that prevents progress" (Collins Concise English Dictionary, 1992, p. 103), in this case, anything that prevents progress in the curriculum change process. Barriers that were specifically outlined on the survey included the following:

Lack of administrative guidance and support;
Unclear direction for the change;
Lack of knowledge about curricular change;
Faculty resistance to the change;
Lack of time;
Lack of resources;
Lack of institutional flexibility;
Too much talk/little action occurring;
Unrealistic expectations; and
Other barriers that were indicated by the respondents on the survey.

Career age is "the number of years as a faculty member at any type of institution" and this correlates highly with faculty's chronological age (Blackburn, Lawrence, Bieber and Trautvetter, 1991a, p. 390). It was used synonymously with the term *years of experience* in this study.

A *course* is "a formal unit of study offered to students in a specific time frame for a specific number of academic credit hours" (Stark, Lowther & Smith, 1986, p. 72).

Curriculum is a word that has many connotations, and faculty tend to define and regard curriculum in a variety of ways. In the literature, definitions for curriculum abound (Connelly & Clandinin, 1988), and Millard (1991) astutely pointed out that "the term *curriculum* itself is slippery and frequently ill defined or undefined" (p. 91).

Toombs and Tierney (1991) also contended that "a firmer grasp is needed on what the curriculum is as an idea, what language can describe it, and at what levels it operates" (p. i). The word curriculum, in its literal Latin translation, refers to the term "racecourse" but it has since become defined as a course of study or training (Tierney, 1989, p. 55). For the purpose of this study, a definition that reflects the all-encompassing nature of curriculum that was implied in the original study is as follows:

> An academic plan incorporated in a course or a program or both and including:
> 1. A selection of knowledge, skills, and attitudes to be learned.
> 2. A selection of subject matter in which to embed educational activities directed at acquiring the knowledge, skills, and attitudes.
> 3. A design for the educational activities, including sequencing of materials.
> 4. A consideration of the previous backgrounds and skills of the learners.
> 5. A selection of materials, sources, tools, and settings to be used in the learning.
> 6. A method for evaluating the learning.
> 7. A system for considering and revising items 1 through 5 in light of the result of 6. (Stark, Lowther & Smith, 1986, p. 73)

Curricular Change. Using the above stated definition for curriculum, curricular change could be a change or revision in any of the above areas. Green and Stark (1988) indicated that curriculum change can focus on:

> changes in college goals, on mechanistic changes in curricular support processes (such as the college calendar or credit system), or on substantive changes (such as the realignment of academic fields or educational outcomes expected of students). (p. 42)

In this study, curricular change is operationally defined by the choices outlined on the survey. These choices were divided into two categories, Program Level Changes and Course Level Changes, with several choices falling under each category. The choices in each category were as follows:

Program Level Changes:
Revision of undergraduate program;
Revision of graduate program;
Addition of new course(s) to program;
Change in philosophy and/or mission;
Establishment of a new degree program;
Addition of new major or minor to present program;
Merger of program(s) into new or existing program;
Revision or addition of a practicum or field placement or internship; and
Other changes indicated by the respondents on the survey.

Course Level Changes:
Identification/clarification of course objective;
Updating of course content;
Change in course content related to other courses in the program;
New instructional activities/strategies;
Change in approach/philosophy of instruction;
New method(s) of evaluating student learning; and
Other changes indicated by the respondents on the survey.

Faculty can be defined as "a department within a university or college devoted to a particular branch of knowledge [or] the staff of such a department" (Collins Concise English Dictionary, 1992, p. 456). In this study, the latter part of the definition will be used, thus the term faculty will be connoted to mean the department staff or professors in higher education institutions.

Higher education is a term that describes "education and training at colleges and universities, etc." (Collins Concise English Dictionary, 1992, p. 609) and is used synonymously with the term *postsecondary education* in this study.

The *precipitators of curriculum change* are operationally defined in this study by the options utilized in the survey instrument. The precipitators identified in the survey were:

University mandate for change;
Recent program review;
External pressures for change;
Department consensus on need for program improvement;
Student feedback;
Initiated by an instructor in the department/faculty;
Initiated by the respondent; and
Other factors indicated by the respondents on the survey.

A *program* is "an arrangement of courses and learning options that leads to publicly recognized certificates or credentials" (Toombs & Tierney, 1991, p. 29).

The term *reform* has been used imprecisely and connotations vary widely in the curriculum literature. It "usually implies some significant change of policy or direction aimed at correcting a perceived deficiency or misalignment" (Small, 1994, p.4) but the magnitude of what significant means is often in the eyes of the beholder. For this study, curricular reform is used synonymously with the term *curricular change* to refer to changes at the program level.

Support. "To give aid or courage to" (Collins Concise English Dictionary, 1992, p. 1353). In this case, anything or anyone who facilitated the curriculum change process to occur was considered to be a support. Supports that were specifically outlined on the survey included the following:

Time release for development;
Faculty development activity(ies);
Secretarial assistance;
Financial assistance (eg. travel to other sites, grants);
Help from expert(s);
Resources (eg. hardware, software);
Administrative support (chair, dean);

Support from other colleagues; and
Other supports that were indicated by the respondents on the survey.

Teaching, particularly effective teaching, is a complex process which is really best understood as an interaction between the teacher and the learner. Effective teaching is an elusive concept that is not dependent on some kind of magic elixir. Generally, there are three kinds of knowledge that are important in effective teaching at the college level:

1. Knowledge of the *subject matter* - the concepts, principles, and methods of thinking - to be taught.
2. Knowledge of the *students*. Teaching involves building links between the knowledge we are trying to teach and knowledge and concepts our students already have.
3. Knowledge of *teaching strategies* and skills that facilitate student motivation and learning of cognitive structures, skills, and strategies. (McKeachie, Pintrich, Lin, & Smith, 1986, p. 2)

A *university* is an "institution of higher education having authority to award bachelors' and higher degrees, usually having research facilities (and includes) the buildings, members, staff, or campus of a university" (Collins Concise English Dictionary, 1992, p. 1473).

Delimitations and Limitations

Two broad areas, curriculum change and teaching, are targeted in this study. Both of these areas represent complex processes which involve and are influenced by a number of factors. It is important to clarify that it is not the purpose of this study to discuss teaching and learning specifically, but to focus on the relationship between teaching-learning and curriculum. The focus is on how changing the curriculum might enhance the teaching-

learning transaction. In order to effectively narrow the scope of this study on curricular change and teaching, the following delimitations and limitations were imposed:

1. This study did not evaluate the curriculum changes described or presented as successful or unsuccessful; valuable or not valuable.
2. The data in this study were limited to the surveys that were collected during the initial study of Curriculum Change Matters in the University (Brook, Clemence & Peters, 1995).
3. Curriculum changes were explored only in selected Faculties at the University of Alberta (self-selected sample) and the University of Calgary (representative selected sample).

One limitation to this study is the lack of generalizability of the results to other institutions and studies of curriculum change. The sample size was small (n=74) and the purposeful sampling technique utilized in obtaining the survey data does not necessarily lend itself to a representative view of faculty members at either of the two universities involved in this study. What this study does do, however, is provide an overview of curriculum change in a number of faculties in two universities in the province of Alberta, at a specified point in time.

Assumptions

As in any research endeavour, several assumptions were made in order to complete this study. The assumptions made in this study included:

1. Curriculum change was an activity in which most faculty participated and it may

have taken place at the program or course level.

2. The survey respondents answered the survey questions truthfully and the answers provided were representative of their experiences with the curriculum change(s) they reported.
3. Course changes could be regarded as curricular changes as well as a loose indicator of teaching changes.
4. The number of course changes a faculty member made was not necessarily indicative of teaching quality, however, some researchers have indicated that a higher level of teaching effort, or course changes in this case, may be a reasonable indicator of teaching excellence (Blackburn, Lawrence, Bieber, & Trautvetter, 1991b).
5. Secondary analysis is a valid and legitimate method of research which is no better nor worse than primary analysis (Stewart, 1993). Secondary analysis is a "re-analysis from a different standpoint of the findings in someone else's research" (Moser & Kalton, 1972, p. 43). The term *secondary* "does not imply anything about the importance of the information, only that it is being used for research beyond the specific informational need that prompted the original gathering of the data" (Stewart, 1993, p. 4).
6. The survey data are sufficient to address the research questions proposed in this study.

Overview

Chapter II will review and summarize relevant research related to the experience of curriculum change at the postsecondary level. The literature review focuses on information which provides a framework for the questions in this study. Chapter III outlines the methods and procedures undertaken in the original, primary study, in order to provide a context for the survey data. Following that, the methods and procedures used in the secondary analysis process of this study are described. The results of the secondary analysis and the corresponding discussion of these results will be presented in Chapter IV. Finally, the summary of these results as well as conclusions and recommendations are addressed in Chapter V. Implications for higher education institutions and future research directions are outlined in the recommendation section.

CHAPTER II

RELATED LITERATURE AND RESEARCH

In 1987, El-Khawas reported that 95% of the nation's colleges and universities had recently attempted curricular change (cited in Tierney, 1989, p. 5). According to this statistic, there has been a tremendous amount of curriculum change occurring. Considering the magnitude of curricular reform "movement", it is no surprise that there is a vast amount of literature describing research and theory surrounding the curricular restructuring.

A comprehensive review and model of curriculum research was provided by Stark, Lowther and Smith (1986). In their review of the literature, they indicated that there is a need to study curriculum more extensively at the course level, where student learning takes place. Of the many studies on postsecondary curriculum, these authors indicated that few studies have focused around five key areas, one of which was course design/changes (Stark, Lowther & Smith, 1986, p. 8). Even though this comment was made ten years ago, minimal new research in the area of course changes has emerged since then. To meet this gap, this study focused on curriculum change at the course level. The literature reviewed within will relate minimally to curriculum in general, and primarily to course level changes as a result of curriculum change.

A great deal of the literature on curriculum change has been generated from studies done in the United States. Both Canadian and American literature will be referred to in this study because several writers have recognized the similarities between the Canadian

and American postsecondary systems (Small, 1994; Borrero Cabal, 1993). Small (1994) also indicated that the Canadian universities are similar to the American universities in the amount of innovation that they undertake.

In order to limit the scope of the literature review, this chapter focuses on relevant literature that amplifies the questions asked in this study. First, curriculum change and how it relates to course changes is described. Literature relating to precipitators of curriculum revision will follow, and faculty attitudes towards curriculum change is explored third. Lastly, studies that describe characteristics of faculty who tend to make curriculum changes will be provided, with an emphasis on faculty career age and how it relates to curriculum change.

The general nature of curriculum is also provided cursory attention, including some of the key thoughts and writings around curriculum in higher education. This background information reveals and clarifies some of the complexities of curriculum and curriculum change, thus facilitating the discussion of curriculum as it relates to the specific questions in this study.

Background Information on Curriculum

Toombs & Tierney (1991) discussed three paradoxes in curriculum. The first is that the nature of most education is a collective experience (e.g., courses, classes and programs), however, the actual learning process is an individual experience, internalized by the students alone. These researchers and others (Stark, Lowther & Smith, 1986) pointed out that one of the very under-researched and under-developed domains of

curriculum, then, is the point where the actual outcomes of the educational process impact the individual learning experience. This study does explore how curriculum change bears on course changes: the course being the fundamental arena where the learning in higher education is supposed to take place. If course changes are occurring, one may assume that there is a good chance that new ideas, content and techniques will be incorporated into the teaching-learning transaction.

The second paradox is related to the first. Only students directly experience the curriculum. All others, faculty included, have a role in creating the curriculum but it is the students who actually engage in it (Toombs & Tierney, 1991). The lack of involvement of students in curriculum is ironic because students have the most to gain and/or lose from the curriculum changes but they have the least amount of input into the conceptualization and implementation of the curriculum, despite sometimes having token appointments to curriculum committees (Tierney, 1989). Many writers have focused on this lack of student involvement in the change process and have recommended that the students need to have a greater role in making curricular revisions (Kashner, 1990).

The third paradox identified by Toombs and Tierney (1991) is that the curriculum is meant to be future oriented, however it is usually based on the past. Content and instructional choices are often made based on past knowledge (of faculty, of the literature, and of research). Thus, it is difficult to provide a relevant, current curriculum. Some faculty do not see the need for much curriculum change but for a continuation or return, as the case may be, to a more traditional, liberal curriculum orientation. Millard (1991) referred to this notion of regressive reform as the "Golden Era Myth."

Along with this idea of returning to a mythical Golden Era, which Millard (1991) and others (Levine, 1989) pointed out really was not golden at all, there followed a concern about the rapid changes occurring in postsecondary education. Change is certainly not a concept that the public associates with the university; an institution that seems quite conservative and slow to change on many accounts (Gray & Hoy, 1989; Menges & Mathis, 1988). In fact, universities are often blamed for being unresponsive and out of touch with the rest of the world. Small (1994, p. 3) cited a summary from a Public Affairs Management report that universities have not been sufficiently responsive to the demands of a rapidly changing society nor have they maintained an adequate level of relevance. The report indicated that the universities are often described with words which allude to an atmosphere of remoteness, aloofness, elitism, arrogance and naivete. These adjectives certainly do not paint a picture of a responsive, highly developed or relevant system of education. However, Small's study of reform in Canadian universities revealed that despite the aura of unresponsiveness, universities were making changes. Of the areas of reform surveyed by Small, 58% of the respondents indicated that they had made revisions to the curriculum. However, Small implied that the changes may not have been as significant and far-reaching as one might have hoped and significant reform is still required.

Curriculum Change as Course Changes

Many articles discussed the requirement to view curriculum change at the course level, where the business of teaching and learning takes place (Cohen, 1979; Stark, 1989;

Twombly, 1992). Several researchers indicated that very little is known about how faculty plan, develop and assess courses - how academics articulate the curriculum into the practice of teaching (Andresen, Barrett, Powell, & Wieneke, 1985; Powell and Shanker, 1982).

Stark (1989) talked about curriculum change at the course level. She called for mechanisms in curricular change to address faculty's repertoire of course planning and instructional strategies. She was concerned that although curriculum change may have been occurring, actual educational improvements at the teaching-learning level did not occur without adequate support. As indicated earlier, the teaching-learning level is the primary level where students, who are the recipients of the curriculum, can experience and interact with the curriculum.

Twombly (1992) concurred that there is little consideration of how students' experiences will change in the classroom when it comes to curriculum revision. In fact, her literature review revealed that most institutions do not have a clear vision of how to enact the curriculum changes at the classroom level. She stated, "a breakdown seems to occur after intellectual vision is translated into a set of graduation requirements. Most institutions assume that once this set of requirements receives official approval, individual faculty will understand, embrace, and enact the vision through the courses that they teach" (Twombly, 1992, p. 92). In essence, Twombly further supported the view that curriculum change does not always translate into course changes. In fact, there were very few institutions that actually had procedures to institute the curriculum at the teaching-learning level of the individual classroom. She further noted that course

content, or the "real curriculum," is driven more by faculty expertise and their knowledge of their discipline than by the larger curriculum.

> Regardless of the exploratory nature of much of the research in this area, there is clearly a huge gap between curriculum planning efforts and implementation in the classroom. The process seems to break down after goals and curriculum structure are agreed on. In the culture of higher education organizations, classroom activities are viewed as largely private matters between faculty and students, which may contribute to this gap between principles and practices. (Twombly, 1992, p. 99)

Bunda (1993) surveyed how 124 faculty at a large university made decisions about planning and changing individual courses that they taught. She indicated that her data were necessary to help fill a gap in the literature between how instructors plan their courses and upon which criteria they select activities. Her results concurred with other studies (Stark, Lowther, Ryan & Genthon, 1988; Twombly; 1992) that have indicated that most faculty decide on course content based upon their own knowledge, experience, and expertise in their chosen discipline. In discussing this finding, Bunda noted an interesting contradiction between faculty beliefs and actions. Despite the widely held faculty belief that what is most important in the learning process is students' acquisition of skills, course development decisions were centred around selecting the course content. In practice, professors give little actual consideration to the perceived or actual skill needs of the learners.

A similar study to Bunda's was undertaken by Barr and Rossett (1994) at another community college. They studied whether, why, how and how much individual faculty changed their courses in response to the many demographic and economic realities impacting postsecondary institutions today. They surveyed 133 faculty at a large

community college. Changes to the course syllabus were inferred to be indicative of course change and were thus used as the measuring stick. They found that 93% of the respondents reported course syllabi changes within at least the last two years. Of those making changes, 38% of the professors reported changes to less than one quarter of the syllabus; 36% changed one quarter to one half; and 16% changed more than half of their course syllabus. This study revealed that faculty do appear to be making course changes, at least at this community college.

What many of these researchers appeared to be finding is summed up well by Stark, Lowther and Smith (1986, p. 53). They felt that the curriculum should serve as a mechanism for growth for both the students and faculty and as such, both faculty and student perspectives should be taken into account when curriculum changes are made. Curriculum changes are necessary and these changes should translate into course changes, where faculty and students interact with the curriculum.

In a recent article about integrating curriculum, teaching and assessment, the three perceived sides of the quality triad, Davis (1994) commented that "when curriculum, teaching and assessment activities are perceived as separate, efforts to improve them are often superficial and ineffective" (p. 44). This observation calls for the need to address curriculum change as it relates to the course level, where the teaching actually occurs. As Mayhew and Ford (1971) further elaborated, "the curriculum is the vehicle through which the institution seeks to make its most significant impact on the lives of students" (p. 81). Davis (1994) further emphasized that teaching and curriculum are interrelated and for effective curricular change, the two fields have to be viewed and treated as inter-related.

Menges and Mathis (1985) concurred and emphasized the co-dependency of teaching, learning, curriculum and faculty. With these recommendations in mind, this literature review spans each of these areas, providing a more holistic, inherently interactive picture of curriculum change.

A common theme in the literature surrounding curriculum changes and how it relates to course changes was that there was not enough study nor action in this area. To address the need for more information, this study investigated the number of course changes faculty were undertaking as a result of the curriculum changes with which they were involved. It did not go quite as far as some researchers suggested in determining student outcomes or learning as a result of specific coursework and/or techniques (Ratcliff, 1992). However, this study did reveal if course changes were occurring as a result of curriculum changes and provided a basis for developing future studies focusing on student involvement in curricular and instructional outcomes.

Precipitators of Curriculum Change

Both internal and external pressures have been cited as precipitators of curriculum change in postsecondary institutions (Cohen, 1979; Levin, 1978, Trinkaus & Booke, 1980; Wood, 1990). As defined in this study, internal pressures can include faculty members themselves, other faculty in the department, or students. University administrators, institutional mandates, government direction or public pressure can all be included in the realm of external precipitators. Whether precipitators are externally or internally initiated can be important in curriculum change. Fullan (1991), in his study of

the meaning of change in the primary and secondary school systems, indicated that externally precipitated changes are completely dismissed by some teachers. At the postsecondary level, one assumption has been that colleges and universities should be minimally affected by forces external to the academy (Millard, 1991). Farmer (1990) has indicated that whether the changes are precipitated internally or externally, the real question is not which changes are required, but which changes should be made. The overwhelming sentiment in Farmer's statement, which characterizes the thinking in most of the literature, was that curriculum change is inevitable and institutions must respond.

Within higher education institutions, it is well recognized that responsibility for the curriculum, course content and instructional methods lies with faculty (Diamond, 1989; Millard, 1991; Muscatine, 1985; Toombs & Tierney, 1991). This responsibility was also outlined by The American Association of University Professors, the American Council on Education, and the Association of Governing Boards (Toombs & Tierney, 1991, p. 53). Thus, the main changes in the curriculum that are felt by the students are experienced at the course level, where faculty can exert the most control over their individual classroom. In fact, this control over course content/curriculum by an individual professor has spurred the sardonic expression that "in the extreme, hiring decisions determine the curriculum" (Louis, 1989, p. 18). It is no surprise then, that in some instances, almost 40 to 50% of the initiatives to restructure the curriculum have come from faculty members themselves (Franklin, 1988, p. 204). Other researchers have also supported the view that curriculum change was primarily faculty driven (Barr & Rossett, 1994; Zoglin, 1981) and according to one dean, instructional change at his

college has only been effective when faculty have initiated the changes (Stallings, 1977). Toft (1991) agreed and stated that in his opinion, each individual faculty member needs to be the focal point for change to occur, and this involves understanding the motivations and areas of resistance for faculty members. These experiences and comments provided a strong rationale for internally, faculty driven change.

Small (1994) presented a different picture of curriculum change precipitators. In his survey of Canadian university administrators (vice presidents academic and deans), he found that most administrators rated the university board and administrators as being the most influential change agents in the university. Provincial ministries were rated second most influential, and academic faculty were rated third. Not surprisingly, students and the general public were rated as having very little impact on reform in higher education. It is important to note that Small was referring to reform in general. Curriculum certainly was a significant aspect of the reform, but it was not the only area included in his conception of reform. However, it is likely that the perceived sphere of influence for curriculum change, had it been rated separately, may have rendered similar results.

In Small's (1994) study, when the administrators rated who they felt should have the most impact and influence on reform, they tended to respond that faculty should have the most influence, followed by the board and administration, and then the students. The respondents' preference was that the greatest amount of influence should come from internal sources, rather than external sources such as the provincial or federal government. Small concluded by stating that the current state of affairs dictates that much of the reform is precipitated by external pressures, particularly financial constraints.

A study by Levin (1994) on influencers of change in British Columbia colleges corroborated Small's results that a great deal of change in postsecondary institutions was spurred by external forces such as government, college presidents and college boards. Notable was Levin's findings that the overwhelming perception of the key participants in the institutions was that government directed the actions of the colleges in British Columbia, not college presidents and boards. Levin (1994) stated that this perception and acceptance of the dominance of government in postsecondary reform "means that community colleges can rationalize change or lack of it, depending on the context, by pointing to government as the party responsible" (p. 83). This perception sets up a very unempowering and potentially ineffective environment for change.

Small's (1994) and Levin's (1994) findings seemed to provide fuel for Millard's (1991) observation of the "Reform from Within Myth" which operates in many postsecondary institutions. This myth referred to the assumption that effective curriculum restructuring originates from forces within the university institution and not from external pressures. Millard sees reform from within as a myth. He stated that in actual practice, reform was not often initiated from within the institution. This concurs with the findings of the two aforementioned studies.

Millard (1991) listed a variety of reasons for a lack of major internal reform. Inhibiting factors he alluded to were elaborate hierarchical administrative structures; turfism and territoriality issues; and a hyper-critical attitude toward new ideas. Because of these inhibiting factors, many universities were not capable of being initiators of their own internal, academic reform, even if they felt that they should be the initiators. In

essence, then, Millard (1991) said that "higher education is integral to social, governmental, and legal contexts and that initiatives for change and reform of higher education, while they may in some cases come from within the academy, much more frequently and insistently come from these wider contexts" (pp. 31-32). He further characterized this mutual relationship between universities and society: "Through a fascinating and unintended reciprocal arrangement, many of the initiatives for change and reform in society come from the academy, while many of the major initiatives for change and reform in the academy come from the wider society" (Millard, 1991, p. 32).

Similar to Millard's observations, Sikes, Shlesinger, and Seashore (1974) have also noted that external events and influences are major factors in causing changes in higher education. They noted that "few successful changes are internally initiated" (Sikes, Shlesinger & Seashore, 1974, p. 20). Despite a fifteen year time span between the two writings, the conclusions were still the same. As much as higher education would like changes to come from within, real change is often spurred by external factors.

Support for the interactive effect of internal and external precipitators of change came from a study done by Wideen and Holborn (1986). These researchers analyzed documents, interviewed and surveyed individuals regarding curriculum changes in faculties of education across Canada over a thirty year time span. As a result of their findings, they outlined in detail six factors they felt influenced change in these faculties. One of the key precipitating factors included the presence of external influence such as commissioned reports and government legislation. In order to achieve implementation of the change, however, internal forces were also identified as being at work. Some of these

internal factors included formal or informal change structures; key players or change agents; and receptive faculty and students. Thus, external forces may have precipitated curriculum change but implementation was dependent on internal forces.

Many departments in higher education reported specific changes they were undertaking in their curriculum and teaching. For example, some departments of accounting were making changes as a result of external professional pressures of increased knowledge and technology (Wyer, 1993). Decreasing enrollments and public knowledge/interest were precipitating curriculum innovation in selected departments of mathematics (Wagener, 1991). Many of these departments were starting to call for course and teaching changes, and were attempting to reward these changes. However, without widespread institutional changes to the incentive and reward system, it will be difficult. As one faculty member said, there are not really incentives to be a good teacher, but "the department provides incentives for you not to be a bad teacher" (Wagener, 1991, p. 31). This strategy sounds reminiscent of negative reinforcement measures and has a punitive connotation associated with it; hardly a friendly atmosphere in which to make changes!

Barr & Rossett (1994) investigated precipitators for course changes, or the reasons why faculty changed their courses. They found that faculty in the vocational areas reported making revisions because of changes in the marketplace and technology. Academic faculty, on the other hand, tended to make changes based upon personal interests in a new tool, theory or approach. Regardless of the motivation to make curricular revisions, however, these researchers concluded that faculty tend to rely on the

"shoehorn" method of curriculum modification. They define this approach as one in which when something new is discovered, it is usually "stuffed into existing courses" (Barr & Rossett, 1994, p. 21), often in the form of a new module, unit or course (Wattanbarger & Scaggs, 1979). Barr and Rossett questioned if this was appropriate or responsive and whether or not there might be a better way of responding to the many demographic and economic changes occurring in higher education today.

Menges and Mathis (1988), in their review of the curriculum literature, indicated that many writers in the area of curriculum currently see the student as the most influential driving force for change. They cited several studies which discussed this consumer-oriented approach to the curriculum, and they indicated that economic necessities were driving this approach. This responsiveness to the students' demands for curriculum changes can be interpreted as being altruistic. On the other hand, responding to student pressure has been criticized as abandoning the true purpose of education and falling to the whims of career and money oriented learners who are not interested in the intrinsic benefits of sound educational philosophy (Menges & Mathis, 1988).

Clearly, these studies revealed that curriculum change in higher education has been a result of both internal and external precipitators. Likely, successful change will be dependent on an interaction between both types of precipitators, as Millard (1991) stated:

> Higher education is usually a product of interaction between the external environment, including governments, and the higher education community and is frequently initiated by forces and movements external to the academy, and frankly recognizing this interactive and reactive context may itself be an important source of reform. (p. 65)

The present study sought to identify which factors, external or internal, tended to have a

higher correlation with curriculum change at the Universities of Alberta and Calgary.

Attitudes Toward Curriculum Change

"These are very hostile times for those of us who work in the academy." (Perley, 1995, p. 43). This statement opened a recent article discussing recent written reports and general perceptions that tenure is a deterrent to restructuring in higher education. Perley stated that "faculty, particularly its tenured professors, is seen as a barrier to the restructuring of the academy." Gaff (1978), almost two decades ago, talked about the "rampant pessimism among college faculty" (p. 43), especially when it came to looking at teaching improvements. Wattanbarger and Scaggs (1979) talked about curriculum revision and clearly stated that "changing a curriculum, changing the course content, changing the strategies for teaching - all of this is recognized by faculty and administrators alike as difficult if not impossible" (p. 1). Toft (1991) concurred and indicated that "there is great difficulty for the faculty group or administrator who wishes to make a significant change in any part of the academic program, and there is relatively little hope that it will survive if implemented" (p. 76). Farmer (1990) indicated that "resistance to change is particularly intense in higher education because faculty members are instinctively hyperconservative about educational matters" (p. 7). These statements paint a picture of the magnitude of cynicism that accompanies curriculum change in higher education. With these kinds of negative attitudes and beliefs about curriculum and teaching revisions, it is clear that many professors feel quite threatened by change and may also be negative about improvement, including curriculum change at any level.

Perhaps one of the roots of this pessimistic attitude towards curriculum change can be attributed to the observation that curriculum change is not a rational process (Fullan, 1991; Stark, Lowther & Smith, 1986; Toft, 1991). Heppner (1991) has gone so far as to say that "'Rational Curricular Review' is an oxymoron" (p. 43) and curriculum revision is an inherently political and emotional process. The rational-empirical approach to change, which is the assumption that "if a change can be shown to be desirable and effective to a person, then he/she will adopt the proposed change" (Wideen & Holborn, 1986, p. 35), obviously did not seem to apply to curriculum changes, according to these writers. Fullan (1991) indicated that the main reason that rational approaches to curriculum change fail is that these approaches ignore the culture of the organization. One aspect of culture involves the attitudes of the participants in the culture and how the members of the culture incorporate and make meaning of the changes (Fullan, 1991). Ignoring this attitudinal component of curriculum change can be disastrous. In at least one institution in the United States, faculty were not consulted in the curriculum process and the resulting extreme negative reaction by faculty contributed to the closing of that college (Levine, 1978).

Because the characteristics and attitudes of faculty members contribute greatly to the culture and climate of an institution (Peterson, Cameron, Jones, Mets, & Ettington, 1986, p. 46), these attitudes and characteristics will definitely impact the experience and satisfaction of students who encounter faculty members. It has already been pointed out that faculty are the main change agents when it comes to curriculum, especially at the course level where faculty are responsible for course development and revisions (Barr &

Rossett, 1994; Cranton, 1994), so faculty attitudes are a key ingredient to making successful curriculum changes. "The character of a college or university depends heavily on the vigour and resourcefulness of its professors" (Baldwin & Krotseng, 1985) so faculty vitality is important for the curriculum and the institution. Unfortunately, it appeared that many faculty were facing disincentives (or even no incentives) for change, and those who did make changes and strived for teaching excellence were seen as being quite remarkable and a rare commodity indeed (Rice, 1986).

Cranton (1994) listed several factors that impact faculty attitudes toward curriculum change. Faculty are expected to participate in the curriculum design and review process, if even only at the course level. Because of faculty's lack of knowledge about the curriculum development process (Brook, Clemence & Peters, 1995), this expectation can be threatening. They not only feel pressure to participate in a process about which they may be unprepared and unknowledgeable, they also feel mandated to learn about curriculum. Cranton (1994) indicated that some adult education literature makes a strong argument that such a negative context can cause the learners, in this case faculty, to be resistant and certainly not self-directed in enhancing their own learning. This situation can clearly set up a pessimistic attitude towards curriculum change as a result of a lack of experience and knowledge in the area, particularly in faculty who often need development the most.

Many people in the business field recognized the need for motivators to be set up in organizations, and many studies in higher education have also alluded to this concept (Baldwin & Krotseng, 1985; Lawrence, 1988; Schuster, 1985; Seldin, 1990; Toft, 1991).

Despite this seemingly logical stance that all a postsecondary institution has to do is establish sufficient motivators within the institution in order for change to occur, Weisbord (1978) discovered that most professors actually derived many rewards from motivators/sources external to their institution. In addition, work by McKeachie (cited in Baldwin & Krotseng, 1985) has indicated "that the intrinsic satisfactions of the academic career have a greater relationship to faculty vitality than do external rewards" (p. 8). The power of this intrinsic motivation is important as many writers in academia have focused on a lack of extrinsic rewards for faculty (Carmichael, 1975; Gaff, 1978; Lucas, 1990; Rice, 1986). This complex interaction among external motivators and intrinsic drive has a great impact on the ability for higher education institutions to provide adequate internal rewards for their faculty.

A clear understanding of the motivations of faculty is needed in order for institutions to respond appropriately. Other than the obviously powerful intrinsic motivator of wanting to perform well, can incentives for faculty be derived from curriculum change? If so, how might this impact faculty attitude towards curriculum change? Alternatively, what major barriers to curriculum change have an impact on faculty attitudes towards curriculum change?

To motivate faculty from within the institution, some researchers suggested a changing and vital curriculum (Altshuler & Richter, 1985; Bevan, 1985). One specific suggestion made by Altshuler and Richter (1985) is for faculty to vary instructional strategies in their courses. Another idea they presented focused on the course curriculum and they stated that faculty would benefit from a requirement to provide administrators

with a detailed course syllabus outlining specific learning objectives. Their rationale was that by providing an impetus for faculty to continually renew and revise their course curricula, faculty burnout could be averted. Since burnout has often been linked with a diminishing of commitment and involvement and a decrease in the quality of work, one can assume that a requirement for course modifications could enhance faculty commitment and involvement, and further benefit the curriculum and the students (Peterson, Cameron, Jones, Mets, & Ettington, 1986). Similarly, Cranton (1994) talked about fostering conditions which encourage faculty to take a more critical approach to their teaching. In particular, she suggested that faculty become involved in a curriculum review or other similar projects, thus fostering increased critical reflection and hopefully, greater and improved teaching/course changes.

Wyer (1993) also talked about the excitement that curricular innovation can bring, particularly to faculty who are in the mid-career stage. In order to foster this innovation and to keep courses vital, Schuster (1985) suggested that administrators require faculty members to rotate the courses that they teach on a regular basis. They felt that professors, courses, and ultimately the students would benefit from intermittent rotations and changes to professors' teaching responsibilities. However, it is important to provide release time for professors who are making these curricular and course changes (Bowen, 1985; Carmichael, 1975), otherwise the work required to necessitate the changes can become a burden rather than an incentive.

Curriculum change as a burden has been adamantly pointed out by some professors who have participated in curriculum change projects. Heppner (1991) provided the

advice that if a department is thinking about undertaking curriculum change, they should think twice. He came to this conclusion after his experience of trying to develop a rational approach to redeveloping the curriculum in his department of Critical Thought. He indicated that despite over 1000 hours of collective work on the curriculum, fraught with emotion and stress, the new curriculum did not appear to be much improved over the old curriculum, and may have been even worse. Other curricular revisionists have echoed Heppner's lament and provided the tongue-in-cheek advice, "Don't do it!" (Brook, Clemence & Peters, 1995, p. 30).

Thus, some participants experienced in the curriculum change process have emphatically indicated that curriculum revision is an onerous and unsatisfying task, even at the course level. This can cause other faculty members to become unnerved by the amount of effort and lack of rewards that curricular modification can bring (Carmichael, 1975). Confounding the discomfort of curriculum change due to workload is the reality that most faculty are experts in their discipline but not well versed in the area of teaching (Carmichael, 1975; Davis, 1994; Gaff, 1978). It has been shown in many empirical studies that there is "little or no relationship between how productive a person is as a researcher and how effective that person is as a teacher" (Friedrich & Michalak, 1983, p.145). Given that "one of the necessary conditions for teaching well and for engaging in curriculum development competently is to have a sound knowledge of teaching and curriculum" (Christenson, 1989, p. 21), many faculty may feel quite threatened by curriculum change.

To compound the problem of lack of knowledge about how to achieve curriculum

change, there was no reliable, agreed upon method for evaluating the effectiveness of the curriculum generally nor at the course level (Muscatine, 1985). Similarly, there was little agreement, even among those who were experts on teaching practice, on what constituted successful teaching or what successful teaching looked like (Mayhew & Ford, 1971, p. 59). This ambiguity around teaching and curricula makes implementing the curriculum at the course level, where teaching changes occur, a difficult and uncertain task.

Another barrier to curriculum change is that it is often under-valued, unrewarded (Gaff, 1978; Louis, 1989; Mayhew & Ford, 1971), and unrecognized (Diamond, 1989), especially at the undergraduate level. For research-oriented institutions, teaching does not generate revenue like research grants do, further inhibiting the time and effort expended on teaching (Brook, Clemence, & Peters, 1995, p. 22). This lack of institutional reward for curriculum and teaching changes negatively impacts faculty attitudes.

Although there are incentives for faculty to participate in curriculum change (Brook, Clemence, & Peters, 1995), research and publication seem to hold higher rewards at the institutional level. Notably, the major determinant of tenure and promotion is research productivity, which can cause considerable stress for faculty who place emphasis on teaching and the curriculum (Park, 1996). Mayhew and Ford (1971) stated that this obvious tension between teaching and research roles was "perhaps the biggest single problem American higher education has faced in the last one hundred years, and has so far failed to resolve, is the conflict between the research role of the university and its teaching function" (p. 60). Despite increasing attention to the educational process in

postsecondary education as of late (Wright & O'Neil, 1994), this conflict, twenty-five years later, has yet to be reconciled, and teaching and curriculum change still often falls second to other faculty priorities (Blackburn, Lawrence, Bieber & Trautvetter, 1991a).

Faculty, like many other employees, will tend to focus their energies on those things that they value, feel will be rewarded, and derive pleasure from doing. As Lawrence (1988) pointed out, "it seems reasonable to expect that, given choices, professors will devote time to activities they believe they do well and that are likely to have an impact on their fields and students" (p. 62). Given this context, it is probable that faculty attitudes towards curriculum change will have an impact on the willingness with which faculty participate in making changes.

From the many studies reviewed thus far, it is clear that the power to change the curriculum at the course level primarily lies with individual faculty members. However, curricular change is not a challenge that is undertaken lightly or without consideration to career consequences. Armour and Littleton (1978) observed that professors were more likely to risk prestige and professional ambitions if they were confident that their effort on curriculum projects would be rewarded and recognized. Without reassurance from the institution, however, the tensions between research (a highly recognized and rewarded endeavour) and teaching will remain.

Millard (1991) discussed the issues surrounding this dilemma between research and teaching or curriculum in his reference to the "Research-Publication Myth". Although many universities have a three-fold mission - teaching, research and service - research results were most valued and most frequently used when assessing productivity,

achievement and rewards (Gray & Hoy, 1989; Millard, 1991). Despite calls for improved teaching practices and enhanced teaching preparation for Ph.D. candidates by many reform reports (Lawrence, 1988; Millard, 1991), research remains the key emphasis for faculty and graduate students. Millard (1991) quoted Cheney who indicated that "it is much easier to judge whether a faculty member has written a sufficient number of articles than whether he or she reveals to students by example and through questioning how and why it is that learning matters in life" (p. 11). Other researchers (Green and Stark, 1988; Mayhew & Ford, 1971; Menges & Mathis, 1988; Seldin, 1990) concurred with the difficulties in assessing teaching effectiveness. Green and Stark (1988) indicated that one of the main problems is a lack of consensus on the criteria to use in determining the teaching success of faculty. Basically, teaching quality is a more elusive concept than research and how to assess effective teaching may be part of the difficulty in attempting to recognize and reward it.

The difficulty of measuring teaching quality creates problems in curriculum assessment. Millard (1991) discussed the Assessment Myth and presented information that reflected some of the fears that faculty have displayed towards the process. He indicated that there were two conflicting assumptions in assessment. The first myth was that if effective assessment in higher education occurred, particularly assessment of student learning, then many quality problems would be solved. Millard stated that assessment as a solution is deceptively simple because assessment by itself does not ensure quality. However, the lack of attention to curriculum assessment is pervasive as curricula are often implemented without careful, if any, attention to evaluation (Brook,

Clemence & Peters, 1995; Conrad & Eagen, 1989; Schultz & Webb, 1979).

Millard's second contradictory assumption was that calls for better assessment in higher education were merely a passing fad which would wane when political attention was shifted elsewhere. Certainly assessment is receiving a great deal of attention lately, despite the difficulty in evaluating curriculum change and measuring educational quality and effectiveness (Blackburn, Lawrence, Bieber & Trautvetter, 1991a; Doherty, 1994; Ratcliff, 1992, Wagner, 1993). However, not all attitudes towards assessment were so pessimistic. El-Khawas (1988, p. 2) reported that 95% of educational administrators were supportive of assessment that was clearly linked to educational improvements.

One last barrier worth noting is that many faculty regard course and curriculum planning/change as more of an art than a science (Stark, Lowther & Smith, 1986). Despite many pressures to change occurring around them, a number of professors do not make course changes because of their attitude that faculty who are the most knowledgeable in a discipline are also the best, most qualified teachers (Gaff, 1978; Friedrich & Michalak, 1983; Sheridan, 1990). The logic follows that as the content expert, they do not need to focus on nor adjust their teaching, especially since they are natural teachers (Gray & Hoy, 1989). This view that the best scholar is the most effective teacher has become part of the "academic folklore" surrounding teaching in postsecondary education (Gaff, 1978, p. 45). This illusion that knowledge is the most critical factor in effective teaching coincides with another commonly held assumption that teaching cannot be taught (Gaff, 1978), thus further stifling efforts to make curricular and instructional changes.

Brookfield (1990), in his discussion of skillful college teachers, discussed the limitations that having a narrow view of curriculum and teaching can impose. He articulated that:

> Most college teachers work within contexts that are clearly defined by the pursuit of particular familiar curricular objectives....In their belief that no one does exactly what they do, in precisely the manner in which they do it, they decide they have little in common with teachers in other settings or content areas. They claim to be teaching bodies of knowledge, particular skills, or required subject matter and declare that their only purpose is to develop these in students....If college teachers define themselves only as content or skill experts within some narrowly restricted domain, they effectively cut themselves off from some broader identity as change agents involved in helping students shape the world they inhabit. (Brookfield, 1990, p. 17).

To counter the many studies which focused on the negative attitudes faculty had toward curriculum change, one study revealed some of the positive attitudes of faculty in postsecondary institutions (Stark, Lowther, Ryan & Genthon, 1988). These researchers found that although faculty members may have been disenchanted with many of the working conditions and institutional barriers in the academy, satisfaction with teaching and course planning seemed to be high. Their study investigated how faculty made decisions about course planning and they observed and heard interest and enthusiasm expressed during their interviews with faculty members. Thus, curricular change may be a positive experience for some professors.

However, most of the studies reviewed stated that curriculum change was generally not seen as a fruitful enterprise at the universities. Assessment of teaching and curriculum was feared; thus effective curriculum change was subject to a great deal of resistance. Because the University of Alberta and the University of Calgary are large

institutions which are predominantly research focused, they certainly are subjected to these barriers to curriculum change. In fact, a recent article in the University of Calgary's Alumni Magazine (Bloch-Nevitte, 1995), indicated that research is becoming a big business. She cited that research and consulting have created an estimated 5000 jobs and paid for approximately 10% of the University of Calgary's faculty salaries. With these benefits from research, it is clear that it will be a challenge to convince faculty that teaching and curriculum change provides such direct, tangible benefits.

Certainly there are a number of other barriers and incentives for curricular change in higher education institutions which impact the culture and attitudes that faculty hold toward change. The most important point to be made here is that attitudes can have a fundamental effect on the change process and whether or not changes are actually implemented. Because the course level is where faculty have the most independence when it comes to making changes, it seems that course changes might be a reasonable mirror of how much actual change is being incorporated as a result of or along with other curricular revisions.

Characteristics of Faculty who make Curriculum Changes

"The characteristics of faculty members contribute significantly to the climate and culture of an institution" (Peterson, Cameron, Jones, Mets, & Ettington, 1986, p. 46). These authors indicated that some researchers have found that faculty characteristics can mold culture and vice versa. It has already been argued that curriculum change is highly dependent upon institutional culture and faculty attitudes. One other interacting and

influencing variable in the curricular change equation is specific characteristics of faculty members.

In the curriculum change literature, there were often references to idea champions, change agents, or faculty members who led the curricular reforms (Farmer, 1990; Goodman, 1977; Toombs & Tierney, 1991; Wattanbarger & Scaggs, 1979; Wood, 1990). Recommendations have been outlined for these change agents to utilize when fostering curriculum and institutional change (Brook, Clemence & Peters, 1995; Farmer, 1990; Levine, 1978; Toft, 1991; Wattanbarger & Scaggs, 1979). These suggestions included basic ideas such as fostering trust, having a committed leader to lead the change, and planning effectively (Farmer, 1990); as well as analyzing budget and resource and understanding and utilizing the informal power structures (Mayhew & Ford, 1971; Wattanbarger & Scaggs, 1979).

A great deal of attention has been granted to the barriers that these idea champions/innovators encountered when trying to make curriculum and course changes and subsequent suggestions to encourage curriculum change were often provided (Toombs & Tierney, 1991; Wattanbarger & Scaggs, 1979). These suggestions included ideas for how to create an innovative environment and provide incentives for faculty to attempt curriculum revisions (Cranton, 1994; Farmer, 1990).

Beyond the notion of the idea champions for curricular change, however, is the realization that has been discussed at length in this review; when it comes down to actual course changes, each faculty member is ultimately responsible for changing his or her own course. What are the characteristics of these faculty members? One faculty

characteristic that has received attention because of its correlation with academic productivity in many areas, including teaching and research, was career age, or the years of experience as a faculty member (Baldwin & Blackburn, 1981; Lawrence, 1985).

Lawrence (1985) outlined a framework of developmental needs to consider when looking at faculty who are at different stages in their career and how these needs translate into potential work incentives. Similarly, Baldwin and Blackburn (1981) stated that life stage theory indicates that people have different needs at different points in time, and these needs motivate behaviour. Thus, it is expected that faculty at different stages in their career may emphasize varying aspects of their position. These researchers found that faculty interest in teaching increased as (male) faculty approached retirement, or the late career stage.

In another curriculum change study that correlated career age and teaching, Barr and Rossett (1994) surveyed vocational and professional faculty members at a large community college in California. They defined curriculum changes as being equivalent to the changes that professors made to the course syllabus. They found that the number of changes that professors made to the course syllabus varied depending upon the amount of teaching experience a faculty member had. Most faculty members with less than seven years experience reported that they changed greater than 50% of their course syllabi. The majority of these course changes (82%) involved an update of course materials or references. Overall, altering the course structure (e.g., in-class activities and practices and lecture topics) was the most frequently cited category of change. Most faculty members with more than eight years of teaching experience reported changing less than

25% of their course syllabi, and their changes focused on alterations to the assigned readings and textbooks. At the college studied by Barr and Rossett (1994), most of the significant curriculum changes at the course level were undertaken by less experienced faculty while the more experienced faculty made fewer and less substantial changes. This finding loosely conflicted with Baldwin and Blackburn's (1981) conclusion that experienced faculty members were more interested in teaching than beginning faculty members.

In contrast to the previous studies, Blackburn, Lawrence, Bieber and Trautvetter (1991b) found no correlation between career age and teaching investment. They surveyed 4400 faculty across the United States and looked at selected motivational variables and how these related to teaching efforts. They found that neither career age nor academic rank predicted the amount of time that faculty devoted to teaching activities, which included course planning and other instructional preparation tasks. Blackburn, Lawrence, Bieber and Trautvetter (1991b) indicated that these results contrasted the earlier Baldwin & Blackburn (1981) study which found that late career professors and beginning professors showed a high degree of interest in teaching. They concluded that the discrepancies between the two studies may be explained by acknowledging that interest (the variable in the 1981 study) may not be indicative of effort (the variable in the 1991 study). These results have implications for this particular study in that a high (or low) number of course changes may not necessarily be reflective of faculty interest in teaching, but may be reflective of faculty effort.

Armour & Littleton (1978) indicated that faculty at the mid-career stage are more

inclined to want to renew themselves through teaching than is sometimes thought. Baldwin (1979) has also noted that career age is a factor in faculty's interest in teaching, and that older faculty members have developmental needs which provide impetus for putting more focus on teaching and course changes. Diamond (1989) referred to the "academic seven-year itch" (p. 22) and inferred that many course or curricular projects are a result of boredom with the current methods in place. These observations about the teaching investment that mid and older career faculty have were contrary to Barr & Rossett's (1994) and Blackburn, Lawrence, Bieber and Trautvetter's (1991b) research, but it concurred with Wyer's (1993) thoughts that mid-career faculty could be re-energized by participating in curricular innovations.

Because Diamond's (1989), Wyer's (1993), and Armour and Littleton's (1978) comments were based on self-reported opinion rather than research, it is possible that mid-career faculty do not always act upon what they believe. In other words, mid to late-career faculty may present themselves as wanting to participate in curricular change, but when it comes to tangible course revisions, less action may actually be occurring. As Blackburn, Lawrence, Bieber and Trautvetter (1991b) stated, some of these studies may have been focusing on interest in teaching or course changes, which does not always transpire into actual effort or results. Other reasons to account for the differences observed in the studies could be due to different populations of faculty and/or the observation that educators have sometimes acted in ways that were contrary to the beliefs that they espoused (Argyris & Schon, 1974).

Generally, the literature on the characteristics of faculty who make curriculum changes

revealed contradictory findings. Career age was sometimes seen as correlated with productivity in curriculum and course changes, while at other times, no relationship was found. This study will reveal how career age impacts the course changes made by faculty at the Universities of Alberta and Calgary and will add yet another dimension to this literature base.

CHAPTER III

METHOD AND PROCEDURES

This study is a secondary data analysis of a survey conducted at the University of Alberta and the University of Calgary. Secondary data analysis is the use of survey data which has been collected for a particular purpose, but is then utilized by another researcher(s) at a later date for a different purpose (Babbie, 1973, p. 361). This study is somewhat unique in that I was also one of the researchers involved in the primary study for which the data were initially collected. Thus, I was personally aware of the procedures undertaken in the original collection of the survey data as a result of participating in the University of Calgary portion of the study which initially distributed the survey. Consequently, I had access to and used the actual survey documents as the source of data for my study, and not merely the tabulated results of the survey.

The importance of being highly aware of the methodology of the primary research when using secondary research has been clearly outlined by Stewart and Kamins (1993). They stated that "information is useful only when it is applied to a particular problem or context and integrated into a meaningful pattern [which] requires the availability of information about the methodologies employed in the original studies" (Stewart & Kamins, 1993, p. 138). Given the value of the methodological information from the primary study, the methodology will be outlined here and organized into three sections, the University of Alberta, The University of Calgary, and Secondary Data Analysis. The first two sections deal with the methodology utilized in the primary research and the last

section describes the procedures utilized for this study - the secondary data analysis of the curriculum change data compiled from the primary research.

Neither this study nor the primary study is an experimental design because the researchers had no control over the variables surrounding the curriculum change process. Instead, this secondary study is a correlational, ex post facto design (Leedy, 1989, p. 227) which attempts to discover relationships between and among specific variables relevant to the curriculum change process.

The purpose of the original research was to explore curricular changes and their relationship to teaching at the University of Alberta, in Edmonton, Alberta, and the University of Calgary, in Calgary, Alberta. The project was funded by the Alberta Heritage Excellence in Teaching Fund and began in May 1993. Survey data and interview data were collected throughout the 1993-94 academic year, and the analysis was conducted throughout the summer and fall of 1994.

The research team consisted of:

Dr. Paula Brook	Primary Researcher, University of Alberta
Dr. Bob Schulz	Research Contact, University of Calgary
Linda Clemence	Research Assistant, University of Alberta
Jacquie Peters	Research Assistant, University of Calgary

In addition, Dr. Schulz's assistant, Joan Taylor, was instrumental in providing administrative support for the Calgary portion of the research.

Slightly different procedures and time frames were utilized to collect the survey and interview data at the two universities due to different time commitments by the primary researchers at the two universities. As a result, some of the specific procedures employed

at each institution are described separately. It is important to remember that my study did not utilize the interview data compiled in the primary study. Although I sometimes reference the interview data, only the survey data results were used in my secondary data analysis.

Generally, all questionnaires and interviews were administered/conducted during the time period of Spring (May) 1993 to Winter (March) 1994 at both institutions. A total of 51 surveys were collected at the University of Alberta, for a response rate of 76%. At the University of Calgary, 23 surveys were returned, for a slightly lower response rate of 59%. None of the questionnaires were returned as undeliverable. Since the surveys were largely unidentifiable as to who had returned them as a result of procedures to protect anonymity, there was no follow-up to those faculty who did not respond to the initial mailing. Although there are no formal guidelines for an acceptable response rate, Babbie (1973, p. 165) does indicate that a response rate of at least 50% is adequate, 60% is good, and 70% or more is very good. Given these rough guidelines, it is apparent that the University of Alberta response rate was very good while the University of Calgary response rate is in the high range of adequate.

Development of the Survey Instrument

The survey was designed by the University of Alberta research team, Dr. Paula Brook and Linda Clemence, in the spring of 1993. The questions were based on the work of Fullan (1993) and the researchers' extensive involvement and experience in curriculum. The survey instrument was developed because the researchers could not find an

appropriate instrument in the literature which addressed curriculum change. The instrument was used in the primary study, along with the interviews, to meet the following objectives:

- to explore how teaching-learning issues influence curricular revision;
- to identify how curricular changes are used to improve teaching; and
- to examine differences between change experiences across Faculties. (Brook, Clemence, & Peters, 1995)

The questionnaire contained a series of questions which were aimed at eliciting descriptive information about the curriculum change in which these faculty members were involved. Specific target questions asked about:

- the type of curricular change (i.e., at the program level or course level);
- the status or stage of the change;
- precipitators;
- supports and barriers;
- documentation of the change ;
- faculty members' background/experience in curriculum development;
- feelings related to being involved in the change ;
- the relationship between the curriculum change and the respondent's teaching;
- the length of time the respondent had been a faculty member; and
- any additional comments or information.

After development, the instrument was reviewed by several colleagues at the University of Alberta and then changes were made to improve the wording and organization of the questionnaire. For a full description of the methodology and results of the primary study, please refer to Brook, Clemence, and Peters (1995). This report provides a context for the survey development and corresponding analysis of the questionnaires and interviews in the primary study.

University of Alberta

In the spring of 1993, an introductory letter (see Appendix A for the letter) and a one page questionnaire (see Appendix B for the questionnaire) were sent out to all of the Deans (18) and Chairs (85) at the University of Alberta. The questionnaire asked the administrators to identify any curricular changes occurring in their Faculty and any faculty members they knew of who were specifically involved in curriculum change. For the purposes of the initial study, these administrators, or "contact people" as they were referred to, were the initial contacts for the curriculum change study. They were chosen as the initial contacts in order to give every Faculty an opportunity to respond and this seemed to be the most expedient method. It was assumed that Deans and Chairs would be aware of changes occurring in the classroom and at the program level. However, it was recognized, as with any sampling technique, that there would be gaps and/or no respondents. In addition to completing the one page questionnaire, the Deans and Chairs were asked if they would participate in an interview about their involvement in the curriculum change.

Based on faculty members identified by the contact people, an introductory letter (see Appendix C for letter) and a 4-page questionnaire (see Appendix D for questionnaire) were distributed through the campus mail to all those named. Again, for the purposes of the initial study, the respondents were invited to participate in an interview to discuss their experience(s) with curriculum change. A separate, addressed return envelope was enclosed with each questionnaire so the respondents could conveniently return the survey to the researchers through campus mail. Confidentiality was assured in the cover letter

accompanying the survey and the responses were designed to be anonymous unless the respondents chose to provide their name by filling out and leaving the interview request form intact rather than separating the form from the questionnaire and returning it separately, as directed in the instructions.

The purposeful sampling procedure described above was identified as the most appropriate for selecting subjects for the research because the researchers were interested primarily in those faculty who were or had been actively involved in a curriculum change process. As a result, this was a non-random sample that was subject to the bias of the contact people who identified potential participants of this study. This was not a sample representative of the general faculty population and generalization of the results to the larger faculty population at either of the two universities is limited.

University of Calgary

The Research Contact at the University of Calgary, Dr. Schulz, Director of the Teaching Development Office, was the initial source of contact people at the University of Calgary. Dr. Schulz was chosen as the initial source of potential research subjects for two reasons. First, the research at the University of Calgary commenced several months after the surveys were collected at the University of Alberta and it was hoped that Dr. Schulz would be able to expedite the data collection process. Secondly, because of his position at the Teaching Development Office, Dr. Schulz was quite familiar with many of the curriculum changes (and respective involved faculty members) being undertaken at the university.

Once the professors were identified by the Research Contact, Dr. Schulz, they were sent: (i) an introductory letter (see Appendix E); and (ii) the same 4-page questionnaire utilized at the University of Alberta (see Appendix D). Concurrently, I contacted in writing the Deans of the five Faculties (Engineering, Management, Nursing, Physical Education, and Science) which were under-represented or not represented at all in the questionnaires returned at the University of Alberta. The Deans were sent: (i) an introductory letter (see Appendix F); and (ii) the initial one page questionnaire requesting names of potential candidates for the study (see Appendix B). This decision to focus on these five Faculties was made by the Primary Researcher at the University of Alberta, Dr. Brook, in order to provide a more holistic picture of curriculum change for the two major Alberta universities. In addition, two people from the faculty of Social Work and two people from the faculty of Continuing Education were contacted based on the recommendations of Dr. Schulz and Dr. Brook, respectively.

Due to the time constraints resulting from a late start at the University of Calgary, some of the surveys were hand delivered at the same time that I conducted the interviews with the faculty members. Most of the surveys, however, were sent to the faculty members via the University of Calgary campus mail. All other procedures for survey collection at the University of Calgary were the same as at the University of Alberta. The University of Calgary surveys were distributed and returned between January and March 1994. All surveys were returned anonymously through the University of Calgary campus mail to this writer, care of the Teaching Development Office.

Table 1 illustrates the number of survey respondents and the corresponding percentage

of respondents at each university. Between the two universities, there were at least two surveys collected for each Faculty unit represented. The Faculty of Medicine had the most respondents at the University of Alberta (U. of A.) representing 25% of the total respondents, while Engineering had the fewest respondents for any Faculty, representing 2% of the total respondents. At the University of Alberta, the Faculty of Social Work did not have any survey responses (na) because this Faculty did not exist at that University. There were no survey responses (na) from the Faculty of Continuing Education because this Faculty was not surveyed, and there were no responses from the Faculties of Physical Education (0) and Nursing (0) because no surveys were returned from these Faculties, although surveys were sent to selected faculty members in these two Faculties.

At the University of Calgary (U. of C.), the Faculties which have "na" in the column under number of respondents were either Faculties which did not exist at the University of Calgary (i.e., Agriculture/Forestry, Dentistry, and Rehabilitation Medicine), or were Faculties which were not sent any surveys (i.e., Arts, Education, and Medicine). Since the goal for the Calgary portion of the study was to survey Faculties which had little or no response from the University of Alberta, this selective sampling strategy resulted in a cross-section of the Faculties for the two Alberta universities but did not provide a comprehensive picture of curriculum change for either university. Because the study was meant to be descriptive and exploratory in nature, a comprehensive picture was not required.

Table 1

Respondents by Faculty and University

Faculty	U. of A. (N=51) N	%	U. of C. (N=23) N	%	Total (N=74) N	%
Agriculture/Forestry	7	14	na	na	7	9
Arts	6	12	na	na	6	8
Business/Management	2	4	4	17	6	8
Continuing Education	na	na	2	9	2	3
Dentistry	2	4	na	na	2	3
Education	8	16	na	na	8	11
Engineering	1	2	3	13	4	5
Medicine	13	25	na	na	13	18
Nursing	0	0	3	13	3	4
Physical Education	0	0	5	23	5	7
Rehabilitation Medicine	3	6	na	na	3	4
Science	7	14	4	17	11	15
Social Work	na	na	2	9	2	3
Not Identified	2	4	0	0	2	3
TOTAL	51	101*	23	101*	74	101*

Note: Faculties are listed in alphabetical order. All percentages are rounded to whole numbers. % = % of total N; na = not applicable and represented Faculties which either did not exist (non-entity) or were not sent any questionnaires.

* Does not sum to 100% due to rounding.

The Faculty which returned the highest number of surveys was the Faculty of Physical Education with 23%. The Faculties with the lowest number of surveys returned were the Faculties of Social Work and Continuing Education. It should be noted that the number and percentage of responses per Faculty do not indicate the response rate. The Faculties of Social Work and Continuing Education only had two faculty members each who were sent surveys, so in that regard, they had a 100% response rate. Again, this purposeful sampling procedure was determined to be appropriate for this study as the researchers were only interested in surveying faculty members who had been involved in curriculum change. For a complete tabulation of the responses to the questions on the initial survey, see Appendix G. These results from the original study will not be reported here because they are either discussed in Chapter IV as they relate to the questions for my study, or they are interesting but less relevant for my research purposes.

Secondary Data Analysis

The secondary data analysis of the original research data began in February 1995. A total of 74 questionnaires were utilized in the data pool for the analyses: 51 from the University of Alberta and 23 from the University of Calgary. Seventy-five surveys were utilized in the original study, however one survey went missing in the time between the analysis of the primary study and the data compilation for my study. Rather than merely using the reported frequency counts from the original study, I decided to only use the 74 surveys which were available at the time. I also wanted to review and code the data from the original questionnaires myself (with a double check of all data entries by both myself

and another person) to confirm the integrity of the data and ensure consistency in my interpretation of the responses to the open-ended survey questions (e.g., the written responses to the prompt, "Other," in certain questions). By building and confirming the accuracy of the data set myself from the original, individual questionnaires and not using the aggregated data reported in the original report (Brook, Clemence & Peters, 1995), I countered one of the criticisms of secondary data analysis as a research methodology. This criticism contends that consolidated data from the original study may be aggregated in a form or unit that is inappropriate for the purposes of the secondary data analysis (Stewart, 1993).

As I reviewed the survey questions to determine how best to investigate the relationship between curriculum change and teaching, the research questions were formulated, and then the data were analyzed using SPSSX, a Statistical Package for the Social Sciences. Dr. Tak Fung from Academic Computing Services at the University of Calgary assisted in the SPSSX analysis for this study.

The research questions in this secondary data analysis were:

1. What are some of the curricular changes occurring at the University of Alberta and the University of Calgary?
2. How does curriculum change relate to one's teaching?
3. What are the relationships among course changes, precipitators of curriculum change, one's feelings/attitudes about the change, and career age?

The first question regarding curriculum change was purely a descriptive question which required direct reporting of the frequency counts of the changes reported by the

respondents in sections A and B of the first question on the survey which asked about the level at which the curriculum change was occurring (see Appendix D for the survey). The frequency counts are reported in this study as a total for the two universities and not for each university separately. I was interested in establishing a holistic picture of curriculum change at both universities, not of each university individually. In addition, as indicated earlier, the Faculties surveyed at each university were complementary and were not meant to be used for comparison purposes. Pooling the surveys also provided a larger sample size for a more meaningful statistical analysis. With only a total of 74 cases between the two universities, neither university had enough cases on its own to provide a sound statistical analysis.

The statements to be completed in A and B of the instrument were, respectively, "The curricular change is at the Program Level and involves:..." and "The curricular change is at the Course Level and involves:..." Each statement, A and B, then had nine and seven choices respectively, regarding specific areas in which curriculum changes were being made. Because the statements involved marking each area in which change was being made, multiple responses were possible for both sections A and B.

The second question, "How does curriculum change relate to one's teaching?" was also a frequency count of the responses to the question, "How does the curricular change relate to your teaching?" from the last page of the survey (see Appendix D for survey). There were five possible responses to that question:

Although at initiation stage I am already making changes in my own course;
I will teach/do teach the courses affected by the change;

My teaching role/assignment changes dramatically;
No direct influence - my courses/teaching stay the same; and
Other (please describe).

There was the potential for multiple responses again, although there was less probability of a respondent marking more than one choice to this question due to the more exclusive nature of the response choices provided. For example, if a respondent chose "No direct influence," this would preclude any other response to this question.

The last research question, "What are the relationships among course changes, precipitators of curriculum change, to one's feelings/attitudes about the change, and to the length of time that one has been a faculty member?" was the most statistically complicated question in this analysis. Four new nominal variables were created to explore this question and a Chi-squared test was performed to determine statistical significance of the six crosstabulations required to address this question.

The first new variable was called "Course Changes," and was created by coding the responses to Question B of the original survey (see Appendix D). Question B asked, "The curricular change is at the Course Level and involves:..." and offered seven possible responses. The responses to this question were tallied for each individual to compute a sum from zero to seven total changes. This sum was then classified into one of three discrete subcategories: no change (no responses marked on this question), some change (a summative total of one to three responses marked by one respondent on this question) and high change (a summative total of four to seven possible changes marked by one respondent on this question). The seventh possible response to this question, "Other,"

was coded by this researcher as either a zero or one, depending upon whether the written response was evidence of no change (indicated by a value of zero) or a type of change (given a value of one). The exact type of change was not considered relevant since I was more interested in describing the total number of teaching changes made rather than trying to describe or rate the nature of the teaching change (a subjective task that was neither appropriate nor reasonable based on the data collected in the original survey).

The second new variable, "Precipitator," was created from the first question on the second page of the survey (see Appendix D), "What precipitated the curricular change?" Eight possible response choices were provided for this question, with the eighth choice, "Other," providing an opportunity for a more qualitative, written response. The eight responses were divided into two subcategories, external and internal change. External change referred to: university administration mandate for change; recent program review; external pressures for change; or a response to "Other " that was determined to be indicative of external change. Internal change was: department consensus on need for program improvement; student feedback; initiated by an instructor(s) in my department/faculty; I initiated the change; or a response to "Other" that was indicative of internal change.

For the purposes of this study, the division between external and internal precipitators was largely an intuitive and subjective categorization based on the experiences of the researchers involved in the primary study. This external/internal division of the precipitators was confirmed by the interview findings described in the original study (Brook, Clemence & Peters, 1995). In addition, there was some support in the literature

for the internal/external coding of precipitators used in this study (Trinkaus & Booke, 1980; Wideen & Holborn, 1986).

Trinkaus and Booke (1980) referred to internal and external precipitators of curriculum change. They viewed internal precipitators as being composed of faculty, students and university administrators. However, they indicated that university administrators were a less significant component of the internals. This clarification about the role of administrators, along with my own experience with interviewing faculty (in the original study) involved in curriculum change, steered the final decision to code administrators as an external component - external to the significant impact of the internal organizational element of the department and its components. External precipitators included all other factors outside of the immediate control of the faculty members in the department and/or any person that was not likely to be a participant in the actual change process.

Although the students did not have a formal voice in curriculum change, as Trinkaus and Booke (1980) also found, the perceptions of the students and their feedback was thought to influence faculty members in a way that could provide internal motivation for change (i.e., faculty could choose to respond to classroom comments/evaluations, thus making an independent and internal decision). Andresen, Barrett, Powell, and Wieneke (1985), in their research of how academics plan courses, corroborated the impact student feedback has on faculty and they indicated that faculty members used this student feedback to monitor and determine the success of their teaching and course planning. Therefore, student feedback was coded as an internal precipitator.

"Attitude" was the third new variable and it was formulated by analyzing the question, "What is/are your present feeling(s) related to your involvement in the change?" into three distinct possibilities. The nine possible response choices provided for this question clearly fell into three separate divisions: positive, negative, and neutral feelings about the change. Positive feelings were represented by a response to the choices of enthusiastic, hopeful, relieved, and confident. Negative feelings were exemplified by a response to the choices of frustrated, cynical and overwhelmed. Neutral feelings were quite clearly indicated by a response to the choice: neutral/indifferent. The ninth response, "Other," was coded into one of the above three categories, based on my judgement. Because of the potential for multiple responses to this question, it was possible that any one survey respondent could express a combination of feelings from one, two, or even all three of the subcategories, thus potentially being positive, negative and/or neutral about the curricular change.

The "Precipitator" and "Attitude" variables were analyzed separately by subcategory because of the multiple responses allowed for these categories. Thus, some professors attributed the precipitating agent to both internal and external factors. Similarly, they sometimes indicated more than one feeling in response to the question regarding their attitudes towards the change (i.e., positive, negative, neutral). Once the subcategories were created, if there was no response to any items in a subcategory, the subcategory was scored as a "no." The "yes" designation represented a response to one or more items within a subcategory. For example, if a professor noted that s/he was both hopeful and enthusiastic about the curriculum change, these three items were collectively scored as

only one "yes" response to the subcategory of positive attitude. These types of multiple responses were not scored more than once because they were not considered to be additive. Marking two or more positive items did not necessarily mean having a more positive feeling toward the change than marking only one positive item.

Alternatively, if a professor did not mark any responses considered to fall within the positive category, then s/he was coded as a "no" in the positive attitude category. This method of coding allowed for the fact that some of the survey respondents indicated feelings or precipitators in only one subcategory (e.g., only one or more internal precipitators were marked and this resulted in a "yes" in the internal precipitator subcategory and a "no" in the external subcategory). Other respondents indicated responses in more than one subcategory (e.g., both external and internal precipitators could have been marked and this would have resulted in that individual's response being coded as one "yes" in the external subcategory and one" yes" in the internal subcategory).

The last new variable created, "Experience," did not allow for multiple responses. This variable was devised by dividing the response to the last forced-choice survey question (see Appendix D), "How long have you been a faculty member?" into two subcategories. The subcategories were either one to fifteen years of experience as a faculty member (labelled some/moderate experience and would correspond to an early to mid-stage career age), or more than fifteen years of experience as a faculty member (considered to be high experience, which would correspond to a mid to late-stage career age).

The division of "Experience" into two mutually exclusive subcategories, less than fifteen years experience and more than fifteen years experience, was based on the

observation that fifteen years was the median level of experience of the respondents. This formation of two equal subcategories was a natural dividing point for the purposes of this analysis because of the study's small sample size. By trying to keep the divisions as simple as possible (two subcategories only), it was hoped that the minimum expected frequency for each cell in the crosstabulation would be met, thus increasing the statistical meaning of the correlations. Further division into more than two subcategories may have made the sample size in each subcategory too small for comparison purposes, although some other researchers have used a different and/or more specific format for dividing career age into subcategories (Barr & Rossett, 1994; Baldwin & Blackburn, 1981).

Once the new variables were created, six crosstabulations were calculated to explore the relationships between: course changes and internal/external precipitators of curriculum change; course changes and one's positive/negative/neutral feelings about the change; and course changes and career age (the length of time that one has been a faculty member). The results were then reviewed and analyzed to determine if there was any statistical or conceptual significance within the relationships. The findings of the analysis are presented in the next chapter.

CHAPTER IV

FINDINGS AND DISCUSSION

The purpose of this chapter is to outline and discuss the significance of the findings from the secondary data analysis of curriculum change issues at the Universities of Alberta and Calgary. It is important to indicate that when reading the interpretation of these findings, readers will be influenced by their experiences and the contexts in which they have found themselves. Inferences to the teaching-learning transaction could be made, but the focus of this study was not to discuss instruction specifically. Rather, the study highlighted relationships between teaching and curriculum.

In this chapter, the statistical and conceptual significance of the results will be discussed along with a presentation of how these findings correspond to the related literature on curriculum changes. The research questions provide the framework for the discussion. To review, the research questions were:

1. What are some of the curricular changes occurring at the University of Alberta and the University of Calgary?
2. How does curriculum change relate to one's teaching?
3. What are the relationships among course changes, precipitators of curriculum change, one's feelings/attitudes about the change, and career age (the length of time that one has been a faculty member)?

The key variables in this study were curricular change and course change. Curricular change was operationally defined by a response on the Curriculum Change Matters

Survey (see Appendix D) to any of a possible nine choices to the question, "The curricular change is at the Program Level and involves:..." The response choices for the Program Level changes included:

Revision of undergraduate program;
Revision of graduate program;
Addition of new course(s) to program;
Change in philosophy and/or mission of program;
Establishment of a new degree program;
Addition of new major or minor to present program;
Merger of program(s) into new or existing program;
Revision or addition of a practicum or field placement or internship; and
Other (please specify).

Course change was defined by a response to any of a possible seven choices to the question, "The curricular change is at the Course Level and involves:..." The seven possible course changes identified on the survey were:

Identification/clarification of course objective;
Updating of course content;
Change in course content related to other courses in the program;
New instructional activities/strategies;
Change in approach/philosophy of instruction;
New method(s) of evaluating student learning; and
Other (please specify).

The other variables which were used in this secondary data analysis were precipitators of curriculum change, feelings or attitudes about the change, and the length of time that one had been a faculty member. These variables were further delineated into discrete categories. Precipitators were categorized as either external or internal precipitators. Feelings or attitudes about the change were rated as either positive, negative, or neutral.

The length of time that one had been a faculty member (i.e., career age based on the total number of years experience at all postsecondary institutions) was coded as one of two divisions, either one to fifteen years of experience or greater than fifteen years of experience.

Curricular Changes Occurring

Question one asked about curricular changes that were occurring at the University of Alberta and the University of Calgary. Table 2 illustrates the frequency data calculated from the responses to this first research question and is a description of "What curricular changes are occurring at the University of Alberta and the University of Calgary?" These frequency count data are reported as the combined total changes for both universities for each program level or course level change. As discussed in Chapter III, I was most interested in reviewing the data from the 74 surveys as a complete whole rather than separately for each university.

Because the researchers in the original study recognized that a number of curricular changes could be occurring concurrently, respondents were invited to mark more than one response under each area (program level and course level). This made multiple responses possible and thus the numbers and percentages for each curricular change do not sum to 74, the total number of respondents. In Table 2, two types of percentages are presented. The first percentage indicator (%) was generated by dividing the number of program or course level changes for a specific response (N) by the total number of curriculum changes (335) reported for both change levels: % = (N/335) x 100. The second

Table 2

Type of Curricular Changes Occurring

Curriculum Change	N	%	% of R
Program Level			
Revision of undergraduate program	45	13	61
Addition of new course(s) to program	27	9	36
Change in philosophy and/or mission of program	24	7	32
Establishment of a new degree program	16	5	22
Revision or addition of a practicum or field placement or internship	12	4	16
Addition of new major or minor to present program	10	3	14
Revision of graduate program	9	3	12
Merger of program(s) into new or existing program	6	2	8
Other	7	2	9
TOTAL PROGRAM LEVEL CHANGES	156~	48	na
Course Level			
Change in course content related to other courses in the program	33	10	45
New instructional activities/strategies	33	10	45
Updating of course content	31	9	42
Identification/clarification of course objective	27	8	36
Change in approach/philosophy of instruction	26	8	35
New method(s) of evaluating student learning	19	6	26
Other	10	3	14
TOTAL COURSE LEVEL CHANGES	179~	53	na
TOTAL CURRICULUM CHANGES	335~	101*	na

Note. All responses are ordered from high to low except for the category "Other." All percentages are rounded to whole numbers. % = % of total curriculum changes; % of R = N as a % of total number of survey respondents (74); na = not applicable.

~ Designates multiple responses (Total number of surveys were 74).

* Represents rounding

percentage (% of R) is generally more meaningful for my purposes. It was calculated by dividing the number of times a program or course level change was reported for each individual category (N) by the total number of survey respondents (74) in the study: % of R = (N/74) x 100. Thus, N and % of R provide a measure of the total number of times a particular category was cited as a response by the survey respondents. Evidence of multiple responses occurring was observed by the numbers (N) and percentages (% of R) exceeding 74 and 100% (na) respectively.

Slightly less than half (48%) of all curricular revisions reported occurred at the program level. The program level changes most frequently mentioned were revisions of undergraduate programs, with 61% of the respondents indicating this change. The next two most often cited areas of change were additions of a new course(s) to the program and a change in the philosophy and/or mission of the program, with 36% and 32% of faculty members identifying changes in those areas respectively. Merger of a program(s) into a new or existing program was the least cited category of change with only 8% of the respondents indicating mergers. Nine percent of the respondents indicated making program level changes that did not fall into the eight categories available in the survey. Some examples of the other changes that faculty were making included: integration of the curriculum to make it interdisciplinary; a new degree offered by two faculties in cooperation; and a new way of conducting the current program. Usually, the items listed in the "Other" category could fit into one of the response choices listed in the question. Most of the respondents who elaborated on the "Other" response merely described the change in somewhat more detail than was presented in the choices listed for the question.

However, these "Other" responses were maintained in the "Other" category and were not re-categorized back into the forced choices due to the subtleties described by the respondents.

Of all curricular changes reported, 53% were at the course level. An almost equal number of course changes were made in three key areas: new instructional activities/strategies, change in course content related to other courses in the program, and updating of course content. A total of 45%, 45% and 42% of the respondents respectively cited changes in these three areas. This loosely coincides with other researchers' results that course changes were more frequently observed as revisions to content rather than instructional activities (Barr & Rossett, 1994; Bunda, 1993). The observation that many professors tended to change course content more than changing other aspects of courses may be a result of the tendency for professors to focus their professional energies on, be influenced by, and use as a referent, discipline specific issues rather than teaching concerns (Bunda, 1993; Stark, Lowther, Ryan & Genthon, 1988; Twombly; 1992). Thus, faculty members were more likely to make content changes than instructional changes, despite the importance that both components have in effective teaching (McKeachie, Pintrich, Lin, & Smith, 1986, p. 2).

One caution to note when regarding the two items, "Change in course content related to other courses in the program," and "Updating of course content" is that there was some overlap between these two responses. Some respondents checked off both of these items; thus the two items were not necessarily additive. However, enough individuals marked only one or the other item (not both) to support the conclusion that revisions centred

primarily around course content.

A very small number, 6%, of the overall curriculum changes were made in evaluating student learning. This percentage indicates that of all the specified categories of curriculum change at the course level, not including the category "Other" which elicited a variety of responses, the least amount of change was made in methods for evaluating student learning with only 26% of faculty indicating changes in this area. Given the current importance placed upon assessment and evaluation of both student learning and the curriculum (Guskin, 1994; Ratcliff, 1992), evaluation seems to have received a relatively insignificant emphasis by these professors.

Only 3% of the respondents cited other areas of course change that were not specifically listed. Some of the course changes cited in the "Other" category included: use of technology to improve effectiveness; merging of several courses into one course after identifying common themes; and a complete change in the course content. Once again, many of the "Other" responses were merely elaborations and/or slight variations of one or more of the forced choice responses but they were left in the "Other" subcategory and were not re-coded into one of the forced choice responses.

In summary, faculty members at the Universities of Alberta and Calgary were undertaking a variety of curricular revisions, with a fairly even distribution of changes between the program and course levels. The most frequently cited changes at the program level occurred in the undergraduate curriculum, and the most course level changes reported focused on changing the course content in some manner.

Curriculum Change and Teaching

Question two asked about how curriculum change related to one's teaching. The responses to this question are presented in Table 3 and were tabulated by calculating a frequency count for the following five response choices:

I will teach/do teach the courses affected by the change;
My teaching role/assignment changes dramatically;
Although at initiation stage, I am already making changes in my own courses;
No direct influence - my courses/teaching stay the same; and
Other (please specify).

Table 3

How Curricular Change Relates to One's Teaching

How curricular change relates to one's teaching	N	%	% of R
I will teach/do teach the courses affected by the change	52	50	70
My teaching role/assignment changes dramatically	18	17	24
Although at initiation stage, I am already making changes in my own courses	16	15	22
No direct influence - my courses/teaching stay the same	11	10	15
Other	8	8	11
TOTAL	105~	100	na

Note. All responses are ordered from high to low. All percentages are rounded to whole numbers. % = % of total number of responses (105); % of R = N as a % of total number of respondents (74); na = not applicable.
~ Designates multiple responses (Total number of surveys were 74).

This survey question about curriculum change and its relationship to teaching allowed for multiple responses to the choices provided and resulted in some respondents indicating more than one response to this question. Because of this multiple response possibility, the total number of responses (N) equalled 105 rather than 74 (the total number of surveys completed). The degree of overlap between the first three response items indicated in this question could not be determined without looking at each individual survey. In other words, the same person could have responded affirmatively to all three categories; I will teach/do teach the courses affected by the change; My teaching role/assignment changes dramatically; and Although at initiation stage, I am already making changes in my own courses. The category, "No direct influence - my courses/teaching stay the same" was the purest category with the least overlap occurring between it and the other response choices. That is, if someone marked "No direct influence", they rarely provided any other response to this question. Thus, the "No direct influence" response generally was not confounded by multiple responses.

Once again, two types of percentages were calculated for this question. The first percentage (%), was determined by dividing the number of responses for a particular choice (N) by the total number of responses to this question (Total N). The second percentage (% of R) was calculated by dividing the number of responses for an item (N) by the total number of survey respondents (74): % of R = N/74. This second calculation provided the percentage of times each item was marked on all 74 of the surveys.

The interpretation of these teaching change results was limited by the fact that faculty members were instructed on the survey to utilize one curriculum change in which they

were involved as a reference point to answer this question. The reference point was determined on the first page of the survey where professors could indicate if the change was at the course level or the program level. Potentially, then, there may have been no change occurring at the program level. Alternatively, if the referent for curriculum change was at the course level, there were a limited number of factors other than teaching that could have been impacted by course level changes and it is not known how these professors connoted teaching changes (i.e., did they consider a change in course content to be a teaching change or were new methods of student evaluation and new instructional techniques the only things they considered to be indicative of a teaching change?). Therefore, interpretation of how curricular change related to teaching for this group of professors was a cautious estimate at best.

Despite the previously noted cautions and limitations, some observations were well worth noting. Seventy percent of the 74 respondents indicated that they taught the courses affected by the change. Despite this high number of faculty whose courses were affected by the change, only 24% of the professors indicated that their teaching role or assignment changed dramatically. Twenty-two percent of the faculty members were at the initiation stage and were starting to making course changes. This means that the majority of professors were not making teaching changes, even though 70% specified that they did teach courses affected by the change. It appeared that many professors were not responding to the curricular reforms by making teaching changes even when their courses were impacted by the changes.

Of the 15% of professors who indicated that their teaching was affected in some other

way than that listed on the survey, the most common reason was that the person was not teaching in the program. Most of these non-teaching faculty indicated in the open-ended question, "Other," that they were not teaching because they were administrators. The remainder of the "Other" responses to this question varied from observations that enrollment had increased in the classes to merely stating that the teaching changes were an added dimension to what was already done in their teaching. Thus, if the two categories; "Other"; and "I will teach/do teach courses affected by the change"; were not considered to be explicitly indicative of teaching changes, a maximum of 46% of the respondents stated that they were undertaking course/teaching changes as a result of curriculum change (i.e., 24% of the faculty whose teaching role changed dramatically added to 22% of the faculty who were already making changes in their courses; but some respondents responded to both of these items, thus making the total percentage even smaller than 46%). Overall, a minority of professors were responding to curriculum change at the course level.

In reviewing the literature for studies which were similar enough to compare and contrast with my study, only one loosely related study provide some background. Barr and Rossett (1994) found that course changes, as indicated by changes to the course syllabus, were being made by 93% of the faculty she surveyed. Her results certainly revealed a more active body of professors than my study revealed. However, the measures of course change were not the same because she asked faculty to reflect back on course syllabus changes they had made over the most recent two year period as opposed to this survey which did not provide a concrete reference point for reflecting upon course

changes. Therefore, it was difficult to draw clear parallels between the two studies.

Course Change Relationships

The third and final research question asked about the relationship between course changes and three variables: precipitators of curriculum change, one's feelings/attitudes about the change, and the length of time that one had been a faculty member. Table 4 outlines the frequency counts and percentages of the two variables which allowed for multiple responses: precipitators (internal and external) and attitudes (positive, negative, and neutral). Note that the totals for the "yes" and "no" divisions in the precipitator subcategories (i.e., internal and external precipitators) totalled 74, the total number of survey respondents, while the totals for the "yes" and "no" divisions in all of the attitude subcategories (i.e., positive, negative, and neutral attitudes) totalled only 72 because two respondents neglected to respond to any of the items in the attitudes question, resulting in two missing cases for these subcategories.

The results in Table 4 revealed that most of the reported curriculum changes (80%) were precipitated by internal factors, including faculty driven initiatives. External factors accounted for 66% of the precipitators for change. For many respondents, both external and internal factors initiated curriculum change because the total number of internal and external precipitators totalled 108 not 74 (the number of survey respondents). Clearly, some respondents indicated that their curricular revisions were affected by a variety of factors. The observation that curriculum change was precipitated by a multiplicity of influencers has also been noted by other researchers (Franklin, 1988; Zoglin, 1981).

Table 4

Precipitators and Attitudes

	Individual Response		
Variable	**yes**	**no**	**Total**
Precipitator			
Internal	59 (80)	15 (20)	74 (100)
External	49 (66)	25 (34)	74 (100)
TOTAL	108~	40~	
Attitude			
Positive	65 (90)	7 (10)	72* (100)
Negative	23 (32)	49 (68)	72* (100)
Neutral	6 (8)	66 (92)	72* (100)
TOTAL	94~	112~	

Note: Numbers in parentheses represent valid percent for the numbers in each sub-category. All percentages are rounded to whole numbers.
~ Represents multiple responses.
* Total is not 74 because there were two missing cases.

In terms of the primacy of the external or internal factors as precipitating events, other studies on curriculum change have concurred that despite the interacting effect of internal and external variables, many curricular changes were initiated internally, particularly by faculty (Franklin, 1988; Stallings, 1977; Zoglin, 1981). In comparing these studies, it is important to review the different contexts and methodologies within which these observations were made and to compare them to my study. Stallings (1977) based his judgement that most effective curricular revisions were made by faculty on his own

personal experience as an administrator at an American community college. Franklin (1988) used a secondary analysis of survey data collected in 1984 by the American Council on Education (ACE). The ACE survey specifically regarded who was initiating the restructuring of General Education Requirements in the Humanities and did not regard curriculum review in the broader sense that was undertaken in my study.

Zoglin (1981) studied curriculum change, defined as course additions or deletions, in three community colleges in California at a time of high economic and educational growth. Her surveys and interviews revealed that professional factors (i.e., faculty, administrators, and the world of academe) initiated 74% and 63% of prebaccalaureate and developmental programs respectively. However, occupational and community/general programs revealed only 25% and 36% influence by professional precipitators. Thus, her results showed that different influencers effected separate types of programs in different ways. Direct comparisons to my study were limited as the postsecondary and general economic climate in which she did her study was one of growth as opposed to reduction; she specifically surveyed colleges, not universities; her definition of curriculum change was far more narrow than used in this study; and her inclusion of faculty, administrators and the world of academe in one category was contrary to my demarcation of faculty members as internal precipitators and administration as an external precipitator. Nevertheless, Zoglin's (1981) conclusion regarding the influence of different precipitating agents, particularly internal factors does concur with mine.

Other curriculum researchers have noted that curricular reform is primarily precipitated by external influences (Millard, 1991; Sikes, Schlesinger & Seashore, 1974).

In particular, the results of my study were somewhat contrary to other Canadian studies on curricular reform which have found that external factors, not internal factors as the Alberta professors noted, most often precipitated curriculum change, or were at least perceived to precipitate change (Levin, 1994; Small, 1994). The discrepancy in conclusions, however, may be a matter of differences in the definitions of change and the focus of the change (e.g., at the course, program, or institutional level).

A major difference between Levin's (1994) study and my study was that Levin looked at influencers on the postsecondary system of community colleges in British Columbia as a whole, rather than specifically at the level of the curriculum. Even Levin acknowledges that the dominant governmental influence that many of the respondents perceived at this broad, systemic level may not be indicative of perceptions of influencers or precipitators at the independent community college level.

Meanwhile, Small (1994) investigated the principal areas of reform, defined as a significant educational change, and the corresponding principal change agents at many large institutions across Canada. His sample consisted of administrative personnel such as vice presidents and deans rather than faculty members, as my study did. Despite a focus on administrators, 58% of the respondents did cite changes to the curriculum as a major area of reform, and 72% indicated a change to the mandate and/or goals of their institution (an item which was also included in my study). Because of the fact that administrators were used for the sample and their focus was not entirely at the level of the curriculum, the influencers he cites would not be expected to conform as well to the results found in my analysis.

In all the curriculum studies reviewed, however, generally both internal and external forces were acknowledged as precipitators of curricular reform. It appeared that the varying degree of influence any one factor had on curricular change from study to study was a result of the definition of curriculum change used, contextual factors, and individual perception/interpretation of what the primary precipitator was.

The second main area reported in Table 4 highlighted the attitudes the respondents held about the curriculum changes with which they were involved. Despite the predominant view in the literature that postsecondary faculty were generally cynical towards curriculum change (Cranton, 1994; Gaff, 1978; Levine, 1978; Toft, 1991; Wattanbarger & Scaggs, 1979), 64% of the faculty members surveyed in this study indicated having positive feelings toward the changes with which they were involved. Some of the respondents who had positive feelings also had negative or neutral feelings because respondents could indicate more than one response to this question. However, only 26% of the professors indicated negative feelings surrounding the curriculum changes. It appeared that faculty members at the Universities of Alberta and Calgary had an overwhelmingly optimistic view of the curricula changes on their campuses. This optimistic view did relate to the opinions and speculation by a few curriculum writers that curricular review and revisions can motivate and excite faculty (Altshuler & Richter, 1985; Bevan, 1985; Cranton, 1994; Wyer, 1993).

One caution about interpreting the high percentage of reported positive attitudes revealed in this study was that the selectivity of the sample may have pre-empted those faculty members who were more negative towards the changes. In other words, the

faculty members who may have had a negative experience with the change may have chosen not to respond or they may not have been identified by the deans and others who recommended candidates for the study.

Table 5 reveals the only specific demographic data collected on the survey, years of experience as a faculty member. The survey respondents fell neatly into one of two categories with regard to career age or amount of teaching experience: one to fifteen years of experience, and fifteen or greater years of experience. The median career age of the responding professors was fifteen years, which was approximately the mid-career stage.

Table 5

Years of Teaching Experience and Course Changes

Variable	N	%
Teaching Experience		
Some/Moderate (1-15 years)	37	50
High (>15 years)	37	50
TOTAL	74	100
Course Changes		
No change	24	32
Some (1-3 changes)	26	35
High (4-6 changes)	24	32
TOTAL	74	100

Table 5 presents the results of the frequency analysis of the three categories identified for the course changes variable. The degree of course changes was determined by adding the number of specific course changes indicated in the Course Level changes question (a potential of zero to seven total responses): No change, Some change (one to three reported teaching changes) and High change (four to seven reported changes). The frequency counts showed that the three subcategories received approximately the same number of respondents: 32% of the respondents indicated that they made no changes, 35% made some changes, and 32% made a relatively high number of changes.

The finding that 32% of the faculty studied reported no teaching changes in response to the curricular revisions occurring may have been due to a number of reasons besides an implied lack of response by the professors. Some administrators who were not teaching in the program completed the survey and either they were not implementing course changes themselves or they could have been unaware of course changes that were occurring. Also, depending on the status of the change (i.e., initiation of the change), curricular change[illegible]t yet have been incorporated at the course level.

Table 6 provides the results of the crosstabulations run in this study and relates to the final research question: What are the relationships among course changes, precipitators of curriculum change, one's feelings/attitudes about the change, and career age? In order to provide a meaningful framework for investigating the correlations in this question, the course changes variable was divided into three categories based on the amount/degree of change observed: no change, low to moderate change, and high degree of change. To investigate course changes and its relationship to precipitators, feelings, and career age,

Table 6

Relationship of Course Changes (by percent) to Precipitators, Attitudes, and Years of Experience

	Course Changes (by percent)				
Variable	**%No**	**%Some**	**%High**	**Total**	**Significance**
Precipitator					
Internal					
Yes	25 (15)	41 (24)	34 (20)	100 (59)	*
No	60 (9)	13 (2)	27 (4)	100 (15)	*
External					
Yes	35 (17)	35 (17)	31 (15)	~101 (49)	NS
No	28 (7)	36 (9)	36 (9)	100 (25)	NS
Attitude					
Positive					
Yes	31 (20)	35 (23)	34 (22)	100 (65)	NS
No	43 (3)	43 (3)	14 (1)	100 (7)	NS
Negative					
Yes	26 (6)	44 (10)	30 (7)	100 (23)	NS
No	35 (17)	33 (16)	33 (16)	~101 (49)	NS
Neutral					
Yes	50 (3)	33 (2)	17 (1)	100 (6)	NS
No	30 (20)	36 (24)	33 (22)	~99 (66)	NS
Experience					
1-15 years	35 (13)	43 (16)	22 (8)	100 (37)	NS
>15 years	30 (11)	27 (10)	43 (16)	100 (37)	NS

Note: Numbers in parentheses represent the number of individual responses. All percentages reported represent valid percent and are rounded to whole numbers.
~ Does not sum to 100% due to rounding.
* Significant at the .05 level ($p < .05$); NS = Not significant ($p > .05$).

six cross tabulations were run (see Appendix H for the SPSSX crosstabulation results):

course changes by internal precipitators;
course changes by external precipitators;
course changes by positive attitudes;
course changes by negative attitudes;
course changes by neutral attitudes; and
course changes by years of experience as a faculty member.

To briefly review the coding process, as discussed in Chapter Three, the precipitator and attitude variables were analyzed separately by subcategory because multiple responses were allowed for these categories. If there were one or more responses in a subcategory, the subcategory was scored as a "yes" and if there was no response to any items in a subcategory, the subcategory was scored as a "no."

The final two categories, course changes and years of experience were much more straightforward as the subcategories were mutually exclusive; there were no multiple responses allowed. For example, a faculty member either had greater than fifteen years experience or less than fifteen years experience, not both. Similarly, the numbering system used for dividing course change into subcategories did not allow for overlap or multiple responses. This resulted in three discrete subcategories: no change; some change (one to three changes); or high change (four to six changes).

Because the variables used in this study were nominal variables, the chi-square statistics obtained "can only provide some indication of the strength of association between variables; they cannot indicate direction or anything about the nature of the relationship" (Norusis, 1983, p. 54). Also, in one of the correlations (course changes by internal precipitators), 67% of the cells had the minimum expected frequency required to

provide a good approximation of the distribution of the statistic. In three of the correlations - course changes by years of teaching experience; positive attitude; and neutral attitude - 50% of the cells had the minimum expected frequency. The cells in these four crosstabulations did not meet the minimum expected frequencies required because of the small sample size which limited the meaning of the statistical analysis. Despite the limited statistical meaning derived from the data analysis of this study, the findings provided meaningful conceptual significance.

The crosstabulations revealed that among the six relationships investigated (as listed on page 85), only course changes by internal precipitators was statistically significant at the .05 level (see Table 6). This means that course changes and internal precipitators were related in some way. The statistical significance of this relationship must be regarded cautiously, however, because of the small number of responses in two of the six cells in the crosstabulation.

Closer scrutiny of the statistics revealed some valuable observations. No course changes were made by 60% of the professors who reported no internal change precipitators. Thus, if the curriculum change was not influenced by internal forces such as department consensus, student feedback, individual instructors or department colleagues, then faculty members were unlikely to initiate any course changes. This apparent power of internal precipitators as an impetus for change has been noted by other researchers (Franklin, 1988; Stallings, 1977; Zoglin, 1981).

The lack of a statistical relationship between course changes and external precipitators was conceptually meaningful. It appeared that neither the presence nor absence of

external precipitating agents impacted the likelihood of course changes occurring. Each cell in the crosstabulation included approximately 30% of the respondents, a relatively even split. For these faculty members, external precipitators did not seem to negatively or positively influence their behaviour as a whole.

This lack of effect of external precipitators contrasted with other studies which have examined the critical relationship between external precipitators and educational reform and change (Levin, 1994; Millard, 1991; Sikes, Shlesinger, & Seashore, 1974; Small, 1994). The discrepancy may lie in the scope or breadth of the change investigated. Course level changes, which require individual faculty implementation, may be more dependent on internal precipitators while program level changes may be influenced more by external pressures which drive the university's responses to such influencers as funding, technological advances, and political or public pressure.

The fact that there did not appear to be a correlation between number of course changes and the attitude towards the change seemed to go against an intuitive sense that if faculty were more positive about the curriculum change, then they would have made more course changes. Conversely, it would be expected that if faculty were feeling negative about the change, then they may not have undertaken as many course changes. The findings in this study indicated that for these faculty members, attitude did not significantly effect the number of course changes they made.

One notable finding for the course changes by attitudes relationship, however, was seen in the area of positive attitude. Ninety percent of the faculty members surveyed reported having positive feelings toward curriculum change. This did not mean that they

did not also have negative feelings as they could indicate a response to more than one item in all of the attitude subcategories. However, these respondents seemed to exhibit a more optimistic position towards curriculum change than has been alluded to in other literature (Farmer, 1990; Gaff, 1978; Heppner, 1991).

In addition, although only six faculty members did not indicate any positive feelings towards the curriculum change, only one of these professors made a high number of course changes. Similarly, only one of six professors who indicated neutral feelings towards the change indicated a high number of course changes. Thus, having a positive or neutral attitude may not significantly impact whether or not course changes are made but the lack of a positive attitude or the presence of a neutral attitude may negatively influence the number of course changes made. A larger sample would be required to investigate these inferences further.

Faculty members who had a greater amount of teaching experience (i.e., greater than fifteen years) made relatively more course changes than the less experienced faculty members, though this correlation was not statistically significant. Forty-three percent of the experienced faculty members were in the high change subcategory while only 22% of the junior faculty members were in this subcategory. This conceptual observation coincided with others who have indicated that mid and/or late career faculty do tend to be involved in curricular change (Armour & Littleton, 1978; Baldwin, 1979; Baldwin & Blackburn, 1981; Diamond, 1989; Wyer, 1993). In addition, the absence of a correlation in this study coincided with another study's finding that there was no correlation between career age and teaching investment, if one considered course changes to be one indicator

of teaching investment (Blackburn, Lawrence, Bieber & Trautvetter, 1991b).

Alternatively, this observation of greater course changes occurring among more experienced faculty members conflicted with the findings from Barr and Rossett's (1994) study in which more course and curriculum changes were observed in less experienced faculty. It is possible that if the same age range that Barr and Rossett utilized (less than seven years experience and greater than seven years experience) had been applied in my study (as opposed to less than fifteen years and greater than fifteen years experience), my results may have agreed with theirs. Barr and Rossett's categorization method was not utilized in my study because of the relatively smaller number of faculty members who fit within the less than seven years experience subcategory.

In summary, course changes were occurring at the Universities of Alberta and Calgary. Despite limited statistical meaning derived from the results of this secondary analysis, there were many interesting observations to be made regarding which factors appeared to influence the faculty members in this selective sample. The lack of internal precipitators negatively impacted the number of course changes faculty members made. External precipitators did not appear to significantly impact course changes in either a negative or positive way. The attitude which a faculty member had did not appear to greatly influence participation in course changes, although the absence of positive feelings or the presence of neutral feelings provided a tentative possibility of a negative impact on the number of course changes made. Lastly, despite a lack of statistical significance, the more experienced faculty members surveyed made a higher number of course changes than the less experienced faculty members surveyed. Further

investigation of all of these relationships would provide a clearer picture of factors which influence curriculum changes at the course level.

CHAPTER V

SUMMARY

Prior to summarizing and making final conclusions and recommendations, this quantitative study must be put into context with qualitative methods for investigating curricular change. In particular, Tierney (1989) offered some words of wisdom from his experience and provided a unique way of viewing curriculum change. He studied curriculum at seven different institutions and offered an analytical and detailed description of the context and culture of curriculum at these institutions. He used a critical ethnographic methodology to explore his perspective that curricula are socially constructed. Therefore, he argued that curriculum cannot be regarded without investigating the culture of the institution in which the curriculum belongs.

Tierney (1989) was adamant that any survey which did not attempt to discover the meaning of the responses decontextualized the curricula. He provided an effective reasoning for his qualitative approach to curricula. He succeeded at providing a meaningful and rich snapshot of how institutional culture affects the curriculum at the postsecondary institutions he studied. Tierney's approach certainly contributed greatly to the curriculum literature as he highlighted and described the different experiences and perspectives of faculty at seven institutions.

When interpreting the results of this exploratory survey, I kept Tierney's advice in mind. I avoided far-reaching conclusions which would have decontextualized the survey results or attempted to describe more than was reasonable given the lack of contextual

knowledge derived from a focused, small, quantitative study.

Summary

This study was part of a larger study on curriculum change at two Alberta higher education institutions, the Universities of Alberta and Calgary. A secondary data analysis was performed on 74 surveys collected during the main study. The purpose of this study was to describe curriculum changes occurring at the two universities and to investigate the relationships between curriculum change and teaching. Specifically, I explored how these curriculum changes related to the precipitators of the change, to the relationship between teaching and course changes, and to the attitudes and experience levels of the faculty who made the curriculum changes.

To review, the research questions were as follows:

1. What are some of the curricular changes occurring at the University of Alberta and the University of Calgary?
2. How does curriculum change relate to one's teaching?
3. What are the relationships among course changes, precipitators of curriculum change, one's feelings/attitudes about the change, and career age?

To conduct the secondary analysis, four new variables were created from the information contained in the original survey (see Appendix D). The first variable was "Course Changes" and it was created by tabulating the number of course changes respondents indicated were occurring. This variable was divided into three subcategories: no change; some change (one to three course changes); and high change (four to six

changes). The second new variable was created from the precipitators listed on the original survey. The precipitators were subdivided into two new subcategories, internal and external change. Positive, negative and neutral attitudes were subcategories of the third new variable, "Attitude". The responses to the original survey question which related to feelings about the curriculum change were categorized to make the three new subcategories for "Attitude". Lastly, "Years of Experience" was created and subdivided into two categories: one to fifteen years of experience as a faculty member; and greater than fifteen years experience as a faculty member.

SPSSX, the Statistical Package for the Social Sciences, was used to analyze the data from the 74 questionnaires. Frequency counts provided the information to address the first two research questions: "What are some of the curricular changes occurring at the University of Alberta and the University of Calgary?" and "How does curriculum change relate to one's teaching?"

The results of the data analysis for the first question revealed preliminary information about curriculum and course changes at the two universities. Faculty members surveyed in 1993 and 1994 were active in the curriculum revision process and the changes they reported were evidenced at both the program and course levels. There were a number of changes occurring in Faculties throughout the universities. At the program level, the majority (61%) of the faculty surveyed reported revisions to the undergraduate curriculum. Revisions in graduate programs and mergers of existing programs were reported the least (12% and 8% respectively). At the course level, most of the changes involved changes in course content while the next highest number of changes involved

experimentation with new instructional activities. The least number of changes was seen in the evaluation of student learning; a domain that has been targeted by many curriculum writers as an area requiring extensive attention but not necessarily revisions (Guskin, 1994; Ratcliff, 1992).

Multiple responses were provided by the respondents to the second question, which asked how curriculum change related to one's teaching. The results indicated that 70% of the respondents were teaching courses affected by the change but only 24% indicated that their teaching was dramatically altered as a result of the curricular revisions. At least 15% of the respondents were making no changes at all to their courses despite being affected by the curricular changes.

The final question asked about relationships between curriculum and teaching. Frequency counts of the variables in question and six crosstabulations were performed to address the relationship of course changes to precipitators of curriculum change; one's feelings/attitudes about the change; and career experience. Because of the small sample, there was limited statistical significance derived from many of the crosstabulations. However, conceptual meaning was noted in the results obtained.

The only statistically significant relationship ($p < .05$) related to course changes and internal precipitators. The results revealed that if there was a lack of internal precipitators (e.g., department consensus, student feedback, individual instructors, or department colleagues), then fewer course changes were made by faculty members. Specifically, 60% of the professors who reported no internal curriculum change precipitators did not make any course changes. In contrast, the presence or absence of external precipitators

(university administration, recent program review, or external pressures) did not appear to influence either negatively or positively the number of course changes made.

The attitude which a faculty member had towards curriculum change did not appear to greatly influence course change activity. However, it was noted that respondents who did not have positive feelings or who had neutral feelings toward the change made fewer course changes than those who reported positive feelings or the absence of neutral feelings.

This study revealed that more experienced faculty members appeared to make more course changes than did less experienced faculty members. This last finding received inconsistent support in the literature; coinciding with some studies but not others.

Conclusions

As Menges and Mathis (1988) stated in their discussion of key trends and issues for research and practice in postsecondary education, "teaching, learning, curriculum, and faculty must be seen as interacting elements in the broader universe of higher education" (p. 361). In the spirit of their recommendation, this study probed some of these interactions and provided some preliminary findings about curriculum and teaching changes occurring at the Universities of Alberta and Calgary. The investigation focused on the interacting relationships among curriculum change and course change (inferred to be related to teaching change); attitudes; and experience level/career age of the faculty members who were making those changes at two large research universities in Alberta. When reviewing these conclusions, it is important to remember that the curriculum

change referred to is relative to the specific curricular modifications with which these faculty members were involved. Based on the findings from this study , the following conclusions were derived:

1. *Curriculum change is a complex process which involves faculty, students, administration and government*. Many respondents indicated multiple precipitators for the curricular changes in which they were involved and they indicated having a multitude of feelings (positive and negative) about the curricular change process. Despite the complexities of the change process, this study documented that curriculum changes were occurring at the two universities. Program level changes centred around modifications to the undergraduate curriculum in general while course level changes focused on revisions specific to the course content. Although many writers have expressed the perception that higher education is minimally responsive to change (Gray & Hoy, 1989; Small, 1994), these faculty members were actively involved in the change process.

2. When attempting to make curriculum changes, it appeared that *faculty members usually faced more barriers than incentives*. A minority of respondents (32%) indicated making course changes in response to the curricular changes occurring and many barriers were cited on the questionnaire (Brook, Clemence & Peters, 1995). These barriers to curricular change make it difficult for higher education institutions to respond to the calls for change and reform that are forthcoming from within and outside of higher education.

3. *Both internal and external precipitators influenced curricular revisions* at these

two universities experiencing change. Internal precipitators were found to be significantly related to course changes while external precipitators were not significantly related to course changes. Regardless of the source of the primary precipitator, however, curriculum change was generally influenced by many factors, both internal and external. This conclusion agreed with the results of other studies (Franklin, 1988; Zoglin, 1981) which also reported the interacting effect of multiple influencers on curriculum change.

4. *Feelings or attitudes towards curriculum change did not have a significant impact on whether or not curricular change was undertaken but positive attitudes enhanced the extent of course changes occurring.* This means that for these professors, attitude toward the curriculum change did not significantly correlate with the amount of course changes undertaken. However, the absence of positive feelings and/or the presence of neutral feelings seemed to coincide with fewer changes to courses than was exhibited by those who did report having positive feelings towards the change. Although varying attitudes did not have a significant impact on curriculum change, positive attitudes did seem to improve the chances that these professors would respond to curriculum change by making revisions to their courses.

5. *Mid to late career stage professors displayed more course changes than early to mid career stage faculty members.* This frequent implementation of course changes by faculty members with more than fifteen years experience seemed to make sense based on the finding that many of the respondents in the original study had little training or

education in the curriculum development process (Brook, Clemence & Peters, 1995). In other words, maturing faculty members reportedly relied upon personal growth and professional experience to obtain information and skills in order to actively participate in the curriculum change process. Therefore, faculty members appear to be gaining skills in curriculum development and revision as a result of experience. Because of this apparent dependence on past experience and on-the-job training, it is not surprising that the mid to late career faculty members participated more fully in course changes than less experienced faculty members.

Recommendations for Institutions

There are many steps that institutions can take to assist the curriculum change process on campus. Several writers have suggested providing incentives or removing barriers in order to enhance the probability of curricular revisions occurring (Farmer, 1990; Toombs & Tierney, 1991; Wattanbarger & Scaggs, 1979). Based on the small sample used in this study, three recommendations are presented.

1. *Institutions must reduce barriers and/or build in appropriate incentives for curriculum change.* Despite the many times that this recommendation has been presented by other researchers (Baldwin & Krotseng, 1985; Farmer, 1990; Schuster, 1985; Toombs & Tierney, 1991), barriers to and a lack of incentives for curricular and teaching changes continue to be encountered. If curriculum changes are truly to be supported, postsecondary institutions throughout North America need to break down barriers and provide a cohesive system of incentives for curriculum and course changes. As Louis

(1989) aptly observed, changes in an individual institution are not as effective as restructuring the entire system because each institution is part of the total American and global postsecondary system. Thus, "radical change in one institution (for example, changing the tenure system to give more weight to teaching) is difficult without concurrent changes in the larger context" (Louis, 1989, p. 14).

2. *Postsecondary institutions need to mentor, train, and assist all faculty members, in particular the less experienced faculty members, to become more knowledgeable in the teaching and curriculum revision process.* Increased curriculum development skill levels for all faculty would lessen the burden of curricular change for mature faculty members as the responsibility and workload for the curriculum could be shared more equally. Also, with increased institutional support, the likelihood that curriculum would be viewed as a legitimate area on which to focus one's energies would be raised. Because the current prevailing culture emphasizes research as the preferred faculty activity (Blackburn, Lawrence, Bieber & Trautvetter, 1991a; Millard, 1991; Park, 1996), it will take a great deal of institutional promotion for faculty members to believe that curriculum is also an activity which will be genuinely recognized as worthy of attention in higher education.

Universities should offer and actively promote/encourage specific seminars on curriculum change and teaching improvement to facilitate discussion and sharing of new ideas. Some studies at the postsecondary level have discovered that teaching improvement centres (Seldin, 1990) and other formal types of professional development

events receive limited response and involvement (Armour & Littleton, 1978; Gaff, 1978). Perhaps by enhancing the profile of the Teaching Development Office on campus, greater participation in faculty development activities (i.e., curricular and instructional change) would follow. Currently, these offices do not appear to have a strong emphasis on curriculum development information nor the resources to provide adequate support to faculty members undertaking curricular revisions related to teaching and learning.

3. *There needs to be more encouragement and institutional support for faculty so that they can make curriculum changes at the course level.* Many teachers feel isolated in making course and teaching changes (Fullan, 1993), but faculty do seem to appreciate talking to researchers about teaching and/or curriculum and course planning (Brook, Clemence & Peters, 1995; Gaff, 1978; Green & Stark, 1988). To address faculty needs for inclusiveness, universities should promote more discussion at the department level around curriculum and course changes, not in an evaluative manner, rather in a supportive and problem solving approach that would inspire a passion for curricular vitality in faculty. These could be formal meetings, or more likely, informal meetings, which may be more conducive to collegial sharing. Twombly (1992) and Fullan (1991) have both emphasized the awareness, learning and curricular cohesiveness that can be fostered by having open dialogues about teaching objectives and approaches. Gray and Hoy (1989) have provided some ideas for what these discussions would look like.

Institutions also need to gain more knowledge about how faculty currently decide on changes and what factors impact course planning. This information can provide ideas

and plans for administrators and other faculty to consider when trying to improve courses.

One factor that did seem to have some impact on course revisions for the professors in this study was one's attitude or feeling towards the curricular changes occurring in these two universities. The findings in this study revealed that a lack of positive feelings towards curricular change coincided with a lesser degree of course changes being attempted. It appears that institutions would benefit from providing a positive environment within which change could occur. If action towards curricular revisions is desired, universities should provide supports which would enhance the curricular change process and faculty attitude towards this process.

Considerations for Further Study

Further to the recommendations for institutions, the following considerations are provided for those researchers who are pursuing further study related to postsecondary curricular and teaching changes.

1. *Additional study into the complex nature of the teaching-learning transaction, with a focus on the interaction between faculty, students and the curriculum*, is not only warranted, it is necessary for postsecondary institutions to meet the changing needs and goals of today's society. As with much of the recent research on curriculum change, this study points to the need for further study at the level of the "real curriculum" (Twombly, 1992, p. 100). That is, curriculum change should be further investigated at the course level, where the curriculum is actually articulated in the teaching-learning transaction.

In order to better investigate this transaction, it is critical that students are included in

the research process to describe their experiences of teaching and learning (the curricula) at the classroom level. As in most communication loops, the intentions that faculty may have when delivering the curriculum may not translate directly into the perceptions that students have of the course and outcomes of the curriculum. In addition, "concern for the specific outcomes of instruction has made understanding the design of the classroom from the faculty member's perspective essential" (Bunda, 1993, p. 2). As Twombly (1992) contended, one of the great challenges in curricular revision has been translating the broad aims and goals of the curriculum into classroom experiences. This translation is an onerous task, one which is filled with gaps. Future research should focus on filling these gaps in curriculum implementation at the course level.

2. To complement the quantitative data analyzed in this study, *qualitative data should be obtained from faculty members about course planning thoughts and processes.* Although interviews were a component in the primary study upon which this secondary data analysis was based, more extensive, targeted interview data may reveal a broader picture of what factors determine when, why and how an individual faculty member makes course changes. As Fullan (1991) stated, "educational change is a process of coming to grips with the *multiple* realities of people, who are the main participants in implementing change" (p. 95).

Further support for a qualitative approach to curriculum investigation is provided by Tierney (1989), who indicated that an in-depth knowledge of faculty thoughts and perceptions about curriculum is critical because "the manner in which faculty come to

terms with their own lives and working relationship at an institution affects how the curriculum is conceived, changed, and carried out" (p.83). This recommendation was echoed by Green and Stark (1988, p. 45), who said that "if salient influences on faculty course planning on one's own campus can be discovered, institutional researchers may go beyond outcome assessment to identify ways to assist faculty in improving education."

More work is required to explore course change mechanisms and procedures as the course is the primary vehicle for fostering student learning. Improvements to teaching and curricular coherence will be limited without a fuller understanding of how faculty put the curriculum into action through their teaching of courses (Powell & Shanker, 1982; Stark, Lowther, Ryan & Genthon, 1988).

3. *Additional study is required to enhance the knowledge obtained from this study's exploration of the relationship between factors that impact faculty (e.g., attitudes, precipitators, and length of time as a faculty member) and the course changes that they implement.* First, do the views that faculty hold of themselves as teachers impact the amount of course changes that they undertake? If faculty view themselves as competent teachers already, will they make more or less course changes than faculty who do not perceive themselves as being competent teachers? Does the source of feedback (e.g., student/evaluations/comments, administrator evaluations, peer feedback, self-perceptions, etc.) have an impact on the likelihood of faculty making course changes? I agree with Lawrence (1988), who suggested that further investigation into these faculty self-perceptions is another important area of research.

4. *Further inquiry may reveal information that would provide clues as to how to encourage significant, specifically learner focused course revisions.* The majority of the curriculum changes reported at the course level in this study occurred within the area of course content. This finding concurred with results observed in other studies of course changes (Bunda, 1993; Barr & Rossett; 1994). However, as Stark, Lowther, Ryan and Genthon (1988) have advocated, course revisions should not just be focused around revisions in content. Given that effective teaching encompasses knowledge of subject matter, students, and teaching strategies (McKeachie, Pintrich, Lin, & Smith, 1986, p. 2), it would seem logical that course changes should address and impact each of these areas.

For example, many faculty members in this study seemed reluctant to modify methods for evaluating student learning. This is an area at the course level which would benefit from renewed reflection and revision, given the current emphasis on quality, outcomes, and performance indicators in higher education. At present, many professors seem to be making rather superficial changes that reflect professional discipline knowledge but may not significantly enhance educational quality or student learning. In other words, if they are not changing content, many professors might be assuming that their courses cannot be improved upon. What factors might encourage professors to make more significant course changes?

With increased attention to quality in postsecondary education, it is important to determine if the course and curriculum changes made by faculty and institutions actually benefit the learners. While some universities and postsecondary systems have attempted to address the educational quality debate (Doherty, 1994; Wagner, 1993), it is a sensitive

and murky issue which requires better definitions and measurement techniques, particularly from the learner's point of view. As Ratcliff (1992) stated, "knowledge of such links between coursework and learning would complement faculty wisdom, student evaluation, and other means of appraising the extent to which particular sets and sequences of course have their intended effects" (p.9). Clearly, additional research into course changes as planned improvements to education certainly fits today's economic and political climate which calls for increasing accountability for public spending and evidence of a value-added approach to curriculum change and education in general.

5. *Future research should more accurately delineate which forces are most influential at the course, program, and institutional level and what different academic cohorts perceive as the influencers.* Many of the studies reviewed in my literature search revealed inconsistent findings with regards to the influence of external versus internal forces as a primary motivator of change and reform in postsecondary institutions (Franklin, 1988; Levin, 1994; Stallings, 1977; Toft, 1991; Zoglin, 1981). I hypothesized that the differences observed in these studies regarding the precipitator of change may have been a result of different definitions of curriculum change or reform, or differences in the level in which the change was viewed (i.e., at the institutional level, program level, or course level). For example, do students perceive different influencers than professors, and do professors perceive influences differently from administrators? Exploration of these questions may provide institutions with a better sense of what the most powerful influencers on education and curriculum are. Knowledge of the precipitating forces may

facilitate a more effective response to influencers and encourage a more active approach to deciding upon which influencers to focus.

6. Lastly, *further investigation of curricular change with a larger, more random sampling of professors from a number of Faculties* would provide more information about course changes in general.

Final Remarks

Overall, curriculum and teaching changes will continue to be required as our society evolves and the demands for postsecondary education responsiveness and accountability continue. Universities must not only learn how they can most effectively create the changes they need but also implement ideas and strategies which reflect the knowledge they obtain.

To assist the learning required by universities, this study analyzed some past efforts at curricular and teaching changes occurring at two research universities in Alberta. Some relationships among course changes and precipitators, attitudes and career experience were identified and investigated to help in understanding how course change was most successfully achieved. The information obtained from this study contributes to the curriculum literature and provides recommendations for institutions to consider when attempting to encourage and facilitate curriculum change in higher education. As we move into the next century, it is incumbent upon academia to focus on the relationship between curriculum and teaching - both for understanding and improvement.

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APPENDICES

Appendix A

Introductory Letter Sent to Department Chairs at the University of Alberta

MEMORANDUM

To: Department Chairs (DATE)

From: Dr. Paula Brook
Adult and Higher Education

Re: Research Project on Curricular Change

With support from Central Research, I am beginning a project on curricular change in higher education and would like your assistance in identifying people for the study. The purpose of this study is to increase understanding of the nature and the scope of curricular change through interviews with faculty and administrators who are or have been involved with the actual change process. The general questions are:

- **What are the key issues that influence curricular change?**
- **What are the circumstances under which curricula change occurs?**

If you know of anyone who has been actively involved in curricular change at the University of Alberta please send their name on the form attached, using the return envelope. **This does not commit them to participate**; my research assistant or I will contact them to explain the study and to solicit their involvement.

Thank you for your assistance.

Paula Brook
Associate Professor
492-7949

Encl.

Appendix B

Questionnaire Sent to Deans and Chairs at the University of Alberta and Selected Deans at the University of Calgary

People Involved in Curricular/Instructional Change at the U. of C.

* **I am presently involved or have recently been involved in curricular/instructional change and would be willing to participate in the research study described in your letter.**

Name:_____
Department:_____
Type of
Change:_____
_____

The best periods of time to arrange to talk to me are:_____
_____

****
****

* **The following individuals are presently or have recently been involved in curricular/instructional change in their course(s) or program:**

Name:_____
Department:_____
Type of Change (if you know)_____
_____
_____

Name:_____
Department:_____
Type of Change (if you know)_____
_____
_____

Name:_____
Department:_____
Type of Change (if you know)_____
_____
_____

Please return to: Jacqueline Peters
c/o Teaching Development Office
Room 433, Scurfield Hall

Appendix C

Introductory Letter Sent to Faculty Members at the University of Alberta

DATE

Dear Faculty Member:

Your name was suggested to me by your chair (or another faculty member) in response to a recent inquiry about curricular change at the University of Alberta.

This study is supported by Central Research and is designed to determine the extent and character of curricular change activities at the university. Please take a few minutes to complete the enclosed questionnaire and return it in the envelope provided as soon as possible. All responses will be confidential.

In addition to the survey, we are also inviting you to participate in an interview about your experience with curricular change. Complete and return the portion of the last page of the survey in a separate envelope to ensure confidentiality of your survey responses. My research assistant, Linda Clemence, will be contacting those who volunteer. Your commitment would involve an informal interview of approximately one hour. The time and location of the interviews will be arranged at your convenience over the next two months.

What we've learned to date that is exciting is the magnitude and range of curricular change activities which are underway at the U. of A. Change matters! We are looking forward to hearing from you.

Yours truly,

Paula Brook, Ed.D.
Associate Professor
Adult & Higher Education

Encl.

Appendix D

Curriculum Change Matters Survey

Curricular Change Matters at the University

Briefly describe the curricular change with which you have been involved.
(Please copy questionnaire if you are involved in more than one curricular change activity. Use a separate questionnaire for each major change):

_____

_____

Put a check ✔ in each box which applies to the curriculum change.

- **Which statements reflect the change in which you've been involved?**

A. The curricular change is at the Program Level and involves:

- ❑ Revision of undergraduate program
- ❑ Revision of graduate program
- ❑ Addition of new course(s) to program
- ❑ Change in philosophy and/or mission of program
- ❑ Establishment of a new degree program
- ❑ Addition of new major or minor to present program
- ❑ Merger of program(s) into new or existing program
- ❑ Revision or addition of a practicum or field placement or internship
- ❑ Other (please specify):_____

B. The curricular change is at the Course Level and involves:

- ❑ Identification/clarification of course objective
- ❑ Updating of course content
- ❑ Change in course content related to other courses in the program
- ❑ New instructional activities/strategies
- ❑ Change in approach/philosophy of instruction
- ❑ New method(s) of evaluating student learning
- ❑ Other (please specify): _____

- **What stage of the process best describes the status of the change?**

- ❑ Initiation - in the process of understanding and developing the change
- ❑ Implementation - changes have recently been put into action or will be put into action in the near future
- ❑ Continuation - going into second or more years of trying the change(s)
- ❑ Evaluation - determining the effectiveness of the implemented changes
- ❑ Other (please explain):_____

- **What precipitated the curricular change?**
  - ❑ University administration mandate for change
  - ❑ Recent program review
  - ❑ External pressures for change (e.g., from professional organizations, the labour market, public accountability)
  - ❑ Department consensus on need for program improvement
  - ❑ Student feedback
  - ❑ Initiated by an instructor(s) in my department/faculty
  - ❑ I initiated the change
  - ❑ Other (please specify): _____

- **What support(s) have been part of the change process?**
  - ❑ Time release for development
  - ❑ Faculty development activity(ies)
  - ❑ Secretarial assistance
  - ❑ Financial assistance (e.g., travel to other sites, grants)
  - ❑ Help from expert(s)
  - ❑ Resources (e.g., hardware, software)
  - ❑ Administrative support (chair, dean)
  - ❑ Support from other colleagues
  - ❑ Other (please specify): _____

- **What barriers have been encountered in the curricular change process?** (If none, go on to next question)
  - ❑ Lack of administrative guidance and support
  - ❑ Unclear direction for the change
  - ❑ Lack of knowledge about curricular change
  - ❑ Faculty resistance to the change
  - ❑ Lack of time
  - ❑ Lack of resources
  - ❑ Lack of institutional flexibility
  - ❑ Too much talk/little action occurring
  - ❑ Unrealistic expectations
  - ❑ Other (please explain): _____
    _____

- **How has the curricular change been documented?**
  - ❑ Articulation into a brief or proposal for change
  - ❑ Development/revision of program mission statement
  - ❑ Through minutes of department and/or committee meetings
  - ❑ Revision of course syllabus (syllabi)
  - ❑ New description of program and/or courses in university calendar
  - ❑ There is no formal record of the change
  - ❑ Other (please specify): _____

- **What is your background/experience in curriculum development?**
  - ❑ Previous involvement in curriculum development/change
  - ❑ Training in curriculum development
  - ❑ Experience in professional field
  - ❑ Independent learning (i.e., books, media, journals)
  - ❑ None
  - ❑ Other (please specify): _____

- **What is/are your present feeling(s) related to your involvement in the change?**
  - ❑ Enthusiastic
  - ❑ Hopeful
  - ❑ Frustrated
  - ❑ Cynical
  - ❑ Neutral/indifferent
  - ❑ Overwhelmed
  - ❑ Relieved
  - ❑ Confident
  - ❑ Other (please specify): _____

Please continue on the next page

- **How does the curricular change relate to your teaching?**
  - ❑ Although at initiation stage I am already making changes in my own courses.
  - ❑ I will teach/do teach the courses affected by the change.
  - ❑ My teaching role/assignment changes dramatically.
  - ❑ No direct influence - my courses/teaching stay the same.
  - ❑ Other (please describe): _____

- **How long have you been a faculty member?** (include total time at other universities and colleges)
  - ❑ 1 - 3 years
  - ❑ 4 - 6 years
  - ❑ 7 - 10 years
  - ❑ 11 - 15 years
  - ❑ more than 15 years

  Discipline/Area of Study: _____

  Current Faculty _____

- **Any additional comments or information you'd like to share about your experiences with curriculum change at the university:**

- **I would be willing to participate in an interview about my experience(s) with curricular change.**
  - ❑ Yes. I can be contacted at this telephone #_____

    Best time to contact me is _____

Name: _____

Department: _____

Office Location:_____

Please return in separate envelope to: Dr. Paula Brook
649 Education South

Appendix E

Introductory Letter Sent to Faculty Members at the University of Calgary

(DATE)

Dr. (NAME)
ADDRESS

Dear Dr. (NAME):

You have been identified by your chairperson or colleagues as one who is involved in changing your curriculum to improve teaching and learning.

Alberta Heritage is funding a collaborative project at the Universities of Calgary and Alberta to study the relationship of curricular change activities to teaching and learning. **We'd like to invite you to participate in this research.**

Please take a few minutes to complete the enclosed questionnaire and return it in the envelope provided as soon as possible. All responses will be confidential.

In addition to the survey, we are also interviewing people about their experience with curricular change and teaching-learning improvement. If you have 1 hour to talk with us, please complete and return the portion of the last page of the survey in a separate envelope to ensure confidentiality of your survey responses. Our research assistant, Jacquie Peters, will be contacting those who volunteer. The time and location of the interviews will be arranged at your convenience over the next two months. We'd like to interview during late January and February.

What we've learned to date that is exciting is the magnitude and range of curricular and instructional change activities which are underway in higher education. We look forward to hearing from you.

Yours truly,

Paula Brook, Ed.D.
Associate Professor
Adult & Higher Education
University of Alberta

Dr. Bob Schulz
Professor
Policy & Environment Area
University of Calgary

Encl.

Appendix F

Introductory Letter Sent to Selected Deans at the University of Calgary

(DATE)

Dr. (NAME), Dean
Faculty of (TITLE)

Dear Dr. (NAME):

The Universities of Alberta and Calgary have recently received funding from Alberta Heritage Excellence in Teaching fund to conduct a collaborative research project on the relationship of curricula to teaching improvement. Dr. Bob Schulz of the Faculty of Management (Calgary) and Dr. Paula Brook of the Faculty of Education (Edmonton) are the co-researchers.

To date, 40 interviews have been conducted with department chairs and faulty members at the University of Alberta. We are now ready to imitate the Calgary component of the study.

We would like to invite you to participate in this study in several ways.

1. **complete the attached sheet about involvement in curricular and instructional change;**

2. **volunteer to be interviewed.**

Our research assistant, Jacquie Peters, will be calling those of you who volunteer to set up an interview time. The time and location of the interviews will be arranged at your convenience during January and February. These will last approximately 1 hour.

What we've learned to date is that there is a great deal being done at our universities to improve teaching and learning through curricular change. Change does matter, and we want to know about your efforts!

If you have any questions, please call one of us listed below. We look forward to hearing from you.

Cordially,

Dr. Bob Schulz
220-6591

Jacquie Peters
256-7146

Dr. Paula Brook, U. of A.
(403) 492-7949

Appendix G

Results of Original Curriculum Change Matters Survey

Table A1

Respondent Information

Respondent Information	U. of A. (51) N	%	U. of C. (23) N	%
Faculty				
Agriculture/Forestry	7	14	na	na
Arts	6	12	na	na
Business/Management	2	4	4	17
Continuing Education	na	na	2	9
Dentistry	2	4	na	na
Education	8	16	na	na
Engineering	1	2	3	13
Medicine	13	25	na	na
Nursing	0	0	3	13
Physical Education	0	0	5	23
Rehabilitation Medicine	3	6	na	na
Science	7	14	4	17
Social Work	na	na	2	9
Not Identified	2	4	0	0
TOTAL	51	101~	23	101~
Years as a Faculty Member				
1 - 3 years	7	14	2	9
4 - 6 years	3	6	1	4
7 - 10 years	4	8	1	4
11 - 15 years	12	24	7	30
More than 15 years	25	50	12	52
TOTAL	51	100	23	99*
Curriculum Development Background				
Previous involvement	30	33	13	27
Independent learning	22	24	10	21
Experience in professional field	19	21	14	29
None	10	11	3	6
Training in curriculum development	9	10	5	10
Other	0	0	3	6
TOTAL	90~	100	48~	99*
Relationship to Teaching				
Teach the courses	38	54	14	41
Changes to own courses	11	15	5	15
Dramatic change in role/assignment	8	11	10	29
No direct influence	8	11	3	9
Other	6	8	2	6
TOTAL	71~	99*	34~	100

Note: Ordered by high to low responses using U. of A. as a base. Faculty ordered alphabetically.
na = not applicable and represented Faculties which did not exist or were not sent questionnaires.
~ Designates multiple responses.
* Represents rounding.

Table A2

Type and Stage of Change

Variable	U. of A. (51) N	U. of A. (51) %	U. of C. (23) N	U. of C. (23) %
Program Level Change **				
Revision of undergraduate program	35	35	10	18
Addition of new course(s) to program	19	19	8	15
Change in philosophy and/or mission	13	13	11	20
Establishment of a new degree program	8	8	8	15
Revision/addition of practicum, internship	8	8	4	7
Addition of new major or minor to program	8	8	2	4
Revision of graduate program	4	4	5	9
Merger of program	3	3	3	5
Other	3	3	4	7
TOTAL	101~	101*	55~	100
Course Level Change **				
Updating of course content	21	23	10	16
New instructional activities/strategies	21	23	12	20
Change in course content	19	21	14	23
Identification/clarification of course objectives	15	16	12	20
New method(s) of evaluating student learning	11	12	8	13
Other	5	5	5	8
TOTAL	92~	100	61~	100
Stage of the Change Process				
Implementation	23	45	15	65
Initiation	9	18	4	17
Continuation	9	18	1	4
Evaluation	6	12	3	13
Other	4	8	0	0
TOTAL	51	101*	23	99*

Note: Ordered by high to low responses using U. of A. as a base.

~ Designates multiple responses.

* Represents rounding.

Table A3

Precipitators, Supports and Barriers to Change

Variable	U. of A. (51) N	%	U. of C. (23) N	%
Precipitators of Change				
Department Consensus	22	20	12	18
Student feedback	20	18	9	14
Self-initiated	15	14	8	12
Recent program review	14	13	7	11
External pressures for change	13	12	15	23
Initiated by other instructor(s)	13	12	6	9
University administration mandate	10	9	4	6
Other	4	4	5	8
TOTAL	111~	102*	66~	101*
Supports for Change				
Administrative support (chair, dean)	29	25	16	22
Support from other colleagues	28	24	19	26
Secretarial assistance	15	13	11	15
Help from expert(s)	10	9	7	9
Financial assistance	8	7	4	5
Time release for development	7	6	3	4
Faculty development activities	5	4	6	8
Resources	5	4	5	7
Other	8	7	3	4
TOTAL	115~	99*	74~	100
Barriers to Change Encountered				
Lack of time	28	22	11	16
Faculty resistance	17	13	14	20
Too much talk/little action	16	13	8	12
Lack of resources	21	17	7	10
Unclear direction	12	9	2	3
Lack of institutional flexibility	11	9	9	13
Lack of administrative guidance/support	9	7	5	7
Lack of knowledge	5	4	2	3
Unrealistic expectations	3	2	3	4
Other	5	4	8	12
TOTAL	127~	100	69~	100

Note: Ordered by high to low responses using U. of A. as a base (except for the category Other).
~ Designates multiple responses.
* Represents rounding.

Table A4:

Documentation of Change

Documentation of Change	U. of A. (51) N	%	U. of C. (23) N	%
University Calendar	31	24	14	20
Minutes of meetings	30	23	13	19
Revision of course syllabus (syllabi)	28	22	13	19
Program mission statement	14	11	10	14
Brief or proposal for change	14	11	12	17
No formal record of the change	2	2	2	3
Other	9	7	5	7
TOTAL	128~	100	69~	99*

Note: Ordered by high to low responses using U. of A. as a base (except for the category Other).
~ Designates multiple responses.
* Represents rounding.

Table A5

Feelings Related to Change

Feelings	U. of A. (51) N	%	U. of C. (23) N	%
Enthusiastic	32	34	11	22
Hopeful	20	22	9	18
Confident	13	14	7	14
Frustrated	6	6	9	18
Cynical	6	6	3	6
Overwhelmed	5	5	5	10
Neutral/indifferent	4	4	0	0
Relieved	2	2	2	4
Other	5	5	4	8
TOTAL	93~	98*	50~	100

Note: Ordered by high to low responses using U. of A. as a base (except for the category Other).
~ Designates multiple responses.
* Represents rounding.

Appendix H

Crosstabulations of Course Changes and Precipitators, Attitudes, and Length of Time as a Faculty Member

Figure H1

Amount of Course Change by Internal Precipitators

		Internal Precipitators		
	Count Row Percent Column Percent	no 1.00	yes 2.00	ROW Total
Amount of Change	.00 No change	9 37.5 60.0	15 62.5 25.4	24 32.4
	1.00 Some changes	2 7.7 13.3	24 92.3 40.7	26 35.1
	2.00 High change	4 16.7 26.7	20 83.3 33.9	24 32.4
	Column Total	15 20.3	59 79.7	74 100

Chi Square	Value	DF	Significance
Pearson	7.14647	2	.02806
Likelihood Ratio	7.12689	2	.02834
Mantel-Haenszel test for linear association	3.17914	1	.07458

Minimum Expected Frequency - 4.865

Cells with Expected Frequency < 5 - 2 of 6 (33.3%)

Number of Missing Observations: 0

Figure H2

Amount of Course Change by External Precipitators

		External Precipitators		
	Count Row Percent Column Percent	no 1.00	yes 2.00	ROW Total
Amount of Change	.00 No change	7 29.2 28.0	17 70.8 34.7	24 32.4
	1.00 Some changes	9 34.6 36.0	17 65.4 34.7	26 35.1
	2.00 High change	9 37.5 36.0	15 62.5 30.6	24 32.4
	Column Total	25 33.8	49 66.2	74 100

Chi Square	Value	DF	Significance
Pearson	.38491	2	.82493
Likelihood Ratio	.38811	2	.82361
Mantel-Haenszel test for linear association	.36748	1	.54438

Minimum Expected Frequency - 8.108

Number of Missing Observations: 0

Figure H3

Amount of Course Change by Positive Attitude

		Positive Attitude		
	Count Row Percent Column Percent	no 1.00	yes 2.00	ROW Total
Amount of Change	.00 No change	3 13.0 42.9	20 87.0 30.8	23 31.9
	1.00 Some changes	3 11.5 42.9	23 88.5 35.4	26 36.1
	2.00 High change	1 4.3 14.3	22 95.7 33.8	23 31.9
	Column Total	7 9.7	65 90.3	72 100

Chi Square	Value	DF	Significance
Pearson	1.14368	2	.56449
Likelihood Ratio	1.29159	2	.52425
Mantel-Haenszel test for linear association	.97697	1	.32295

Minimum Expected Frequency - 2.236

Cells with Expected Frequency < 5 - 3 of 6 (50.0%)

Number of Missing Observations: 2

Figure H4

Amount of Course Change by Negative Attitude

		Negative Attitude		
	Count Row Percent Column Percent	no 1.00	yes 2.00	ROW Total
Amount of Change	.00 No change	17 73.9 34.7	6 26.1 26.1	23 31.9
	1.00 Some changes	16 61.5 32.7	10 38.5 43.5	26 36.1
	2.00 High change	16 69.6 32.7	7 30.4 30.4	23 31.9
	Column Total	49 68.1	23 31.9	72 100

Chi Square	Value	DF	Significance
Pearson	.89505	2	.63921
Likelihood Ratio	.89280	2	.63993
Mantel-Haenszel test for linear association	.09861	1	.75351

Minimum Expected Frequency - 7.347

Number of Missing Observations: 2

Figure H5

Amount of Course Change by Neutral Attitude

Amount of Change	Count / Row Percent / Column Percent	Neutral Attitude: no 1.00	Neutral Attitude: yes 2.00	ROW Total
.00 No change		20 87.0 30.3	3 13.0 50.0	23 31.9
1.00 Some changes		24 92.3 36.4	2 7.7 33.3	26 36.1
2.00 High change		22 95.7 33.3	1 4.3 16.7	23 31.9
Column Total		66 91.7	6 8.3	72 100

Chi Square	Value	DF	Significance
Pearson	1.16023	2	.55983
Likelihood Ratio	1.16390	2	.55881
Mantel-Haenszel test for linear association	1.12253	1	.28937

Minimum Expected Frequency - 1.917

Cells with Expected Frequency < 5 - 3 of 6 (50.0%)

Number of Missing Observations: 2

Figure H6

Amount of Course Change by Years of Experience

		Years of Experience		
	Count Row Percent Column Percent	1-15 years 1.00	>15 years 2.00	ROW Total
Amount of Change	.00 No change	13 54.2 35.1	11 45.8 29.7	24 32.4
	1.00 Some changes	16 61.5 43.2	10 38.5 27.0	26 35.1
	2.00 High change	8 33.3 21.6	16 66.7 43.2	24 32.4
	Column Total	37 50.0	37 50.0	74 100

Chi Square	Value	DF	Significance
Pearson	4.21795	2	.12136
Likelihood Ratio	4.28242	2	.11751
Mantel-Haenszel test for linear association	2.05518	1	.15169

Minimum Expected Frequency - 12.00

Cells with Expected Frequency < 12 - 3 of 6 (50.0%)

Number of Missing Observations: 0