A CONTENT ANALYSIS OF THE COMPUTER APPLICATIONS COURSES IN BUSINESS STUDIES PROGRAMS IN MICRONESIAN COLLEGES

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DEDICATION

I would like to dedicate this dissertation to the following people:

1. To Mr. Lawrence Addo Nartey, my step-father, who convinced my mother to let me stay with them after I ran away from staying with my paternal grandmother. That singular action laid the foundation of the process which has resulted in this dissertation;

2. To Mr. Samuel Antwi Agyei, my eldest brother, who paid the deposit needed to hold my place in the secondary school I attended. If he had not paid the deposit, I would not have had the chance to obtain secondary education in order to go to college and, finally, write a doctoral dissertation; and

3. To Dr. Melvin D. Miller, Professor and Director Emeritus of the School of Occupational and Adult Education, Oklahoma State University, the Chairperson of my Dissertation Advisory Committee, who helped me fashion out and concretize my philosophy of vocational business education; and whose support, encouragement, advice, and shrewdness led to the successful completion of this dissertation.

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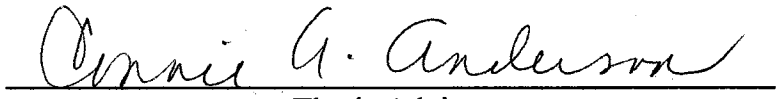

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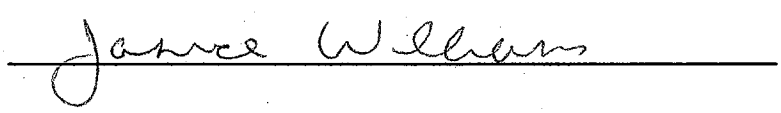

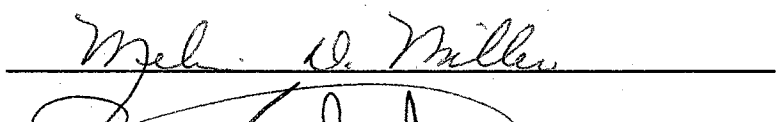

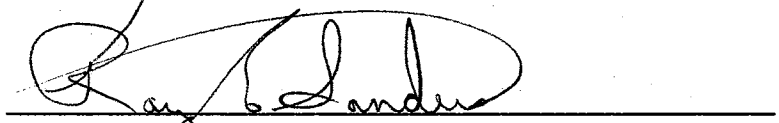

Dean of the Graduate College

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CHAPTER I

INTRODUCTION

The South Pacific Commission (1995) uses the term "Micronesian" to mean: "Broad ethnic classification of Pacific Islanders inhabiting the Northern-Western and Central Pacific zone, namely the island political entities of the Federated States of Micronesia (FSM), the United States (US) Territory of Guam, Kiribati, the Republic of the Marshall Islands, Nauru, the Commonwealth of the Northern Mariana Islands (CNMI), and the Republic of Palau" (p. 123). The term "Micronesia" is derived from two Greek words, "mikros," meaning small, and "nêsoi," which means islands. The term, first used by the Spanish discoverers, will translate into "small islands" (Kanost, 1980; Peacock, 1990). Micronesia is made up of three island chains in the western Pacific Ocean, namely, the Caroline Islands, the Mariana Islands and the Marshall Islands. The geographic location of these groups of islands range from one degree to 23 degrees north latitude and from 130 degrees to 171 degrees east longitude. The islands of Micronesia are, therefore, tropical islands, falling entirely within the eastern and northern hemisphere of the globe as shown in Appendix D (Bradley, 1937; Burroughs, 1972; Kanost, 1980; Karolle, 1988; Peacock, 1990).

The Marshall Islands, the easternmost of the Micronesian islands, are located about 2,000 miles southwest of Hawaii. The Caroline Islands are a scattered chain of islands stretching to a point about 600 miles from Mindanao in the Philippines, at their westernmost extreme. The Mariana Islands are the northernmost islands in Micronesia, with Guam being the most southern of the chain. Saipan, the largest of the northern islands in the chain, lies about 1,400 miles south of Tokyo and 1,500 miles east of Manila (Kanost, 1980).

According to Alexander Spoehr (cited in Kanost, 1980), through the carbon dating of artifacts excavated on Saipan, the certainty of human habitation of the Micronesian islands could be traced to about 1,500 B.C. Some of the islands were deemed to have been inhabited earlier than others. For example, Yap islands (part of the Caroline Islands) were believed to have been inhabited at about 176 A.D. from carbon dating of charcoal remains, postulated David Labby (cited in Kanost, 1980).

There does not appear to be consensus on the racial origins of the Micronesian people and the paths by which they migrated into the region. The preponderant strain among Micronesians is believed to be the Indonesian mongoloid element. The origins of Micronesians are believed to be Malaysia or the Philippines, with a possibility of some migrations from the Polynesian islands (Hawaii, American Samoa, Western Samoa, etc.) into the western Caroline Islands (Kanost, 1980).

Micronesian contact with Europe started with the sighting of the island of Guam in 1521 by Magellan which he claimed for Spain in the same year. Thus marked the

beginning of colonization of the Micronesian region (Peacock, 1990). According to Kanost (1980):

> The Mariana Islands were the first and most thoroughly colonized of the islands in Micronesia. They were occupied and missionized by the Spanish in the 17th century. Many of the other islands were not occupied by a foreign power until the late 19th century. (p. 56)

For Spanish ocean-going vessels traveling between Mexico and the Philippines, Guam became a major port of call. The domination of the Chamorros (the ethnic extraction of the people of the Mariana Islands) by the Spanish created an indigenous culture with Hispanic undertones and predominantly Catholic in religion. Spain began expanding into the Caroline and Marshall islands in the late 19th century but the Marshalls were claimed by the Germans who had set up copra businesses on the islands. The United States of America (USA) waged a war with Spain in 1898 and consequently acquired Guam. Thereafter, Spain sold the rest of its Micronesian colonies to Germany, which ruled the area for a short period of time, 1899 to 1914 (Peacock, 1990).

When the first world war started, Micronesia was seized by the Japanese navy. In 1919, Japan gained official control of Micronesia as a mandate area to be administered under the supervision of the League of Nations. After the second world war and in 1947, the United Nations created the Trust Territory of the Pacific Islands (TTPIs) made up of the Micronesian islands except Guam. The TTPIs was placed

under the administration of the USA in a trusteeship agreement (Peacock, 1990; Stewart, 1992).

The TTPIs has since ceased to exist with the various island-chains becoming different types of political entities. Guam is still a US territory and was never a part of the TTPIs, even though it is geographically and ethnically part of the Mariana Islands. The rest of the Mariana Islands became known as the Commonwealth of the Northern Mariana Islands (CNMI) in commonwealth association with the USA. Palau, in the west of the Caroline Islands, has become a republic and an independent state in free association with the USA. The rest of the Caroline Islands, mainly in the east, are now called the Federated States of Micronesia (FSM) which is in free association with the USA. The Marshall Islands are also a republic and an independent state in free association with the USA (Burroughs, 1972; Kanost, 1980).

The historical experience of Guam is different from the rest of Micronesia but its higher education system is linked with all of Micronesia, having the only four-year college in the region to which some of the students from the two-year colleges in Micronesia transfer. Since the time Micronesia was the TTPIs, certain island-areas historically evolved into administrative centers: Majuro in the Marshall Islands; Pohnpei, Kosrae, Truk and Yap in FSM; Koror in Palau; and Saipan and Rota in the CNMI. As a result, these islands became centers of a lot of political and educational activity (Peacock, 1990). The University of Guam (UoG) and the Guam Community College (GCC) were established on Guam. The College of Marshall Islands (CMI) was created on Majuro and the College of Micronesia (CoM) on Pohnpei with state

campuses on Kosrae, Truk and Yap. The Northern Marianas College (NMC) was established on Saipan with satellite campuses on Rota and Tinian while Palau Community College (PCC) evolved from the Micronesian Occupational College on Koror.

Background to This Study

According to the SPC (1995), ". . . there is a widespread belief that many school leavers [in the Pacific, including Micronesia] are inadequately prepared to undertake further education and training, to perform effectively in the [labor] force or to participate successfully in the subsistence sector" (p. 42). One area of inadequate preparation is the use of computers in business.

> Sweeney (1971) opened the first chapter of his book with the comment:
>
> Over the past two decades the computer has become an increasingly dominant part of our daily life. While management initially was enamored by the tremendous savings and prestige purportedly associated with computer possession, the processing and decision-making potential represents the truly significant impact which computers have had on business. (p. 1)

This observation, made in 1971 in the USA, is even more true today all over the world with the proliferation of all sorts of electronic gadgets.

The May 1993 issue of the *Communications of the ACM* was dedicated to "technology in education." As an introduction to the series of articles dealing with the issue, the guest editor, Soloway (1993) lamented that:

> As clearly documented in this issue, education stands in stark contrast to our other institutions where computing and telecommunications technologies are integrated into the daily fabric of activity. These technologies are the new infrastructure, the new way in which people communicate, make decisions and develop artifacts. (p. 28)

This statement actually referred to K-12 education but with the wave of discontent with the level of computer knowledge of business school graduates in the USA, the statement could be expanded to include colleges and universities, and the situation could even be worse in Micronesia. It is a widespread belief that the present business studies curricula in colleges and universities are not adequately preparing business professionals for the 21st century and beyond (American Accounting Association [AAA], 1986; Henderson & Jordan, 1991; Madison, 1989; Strait & Bull, 1992). One of the critical areas of inadequacy is computer skills (see, for example, Lewis & Ducharme, 1990; McGee, 1991).

There is an increasing shift from heavy industry to high technology goods and services in the world's advanced economies. As a result, business is changing to reflect a service-oriented, technology-based economy (Bandy, 1990). According to Drucker (1989), the natural consequence is that the meaning of education and the art of teaching will be drastically and irrevocably changed.

The discovery of the computer has put a powerful tool in the hands of managers, observed Jacobson and Armstrong (1991), and a critical factor for enabling a firm to remain competitive is its computer-based information systems. This suggests

that students preparing for managerial careers should recognize the value of the computer as a tool, and not just understand its technical aspects and basic operations. "These future managers need to realize the strategic value of the new technology for creating a more productive and profitable organization and for providing new services" (p. 208).

Pipho (1988) reported that David Kearns, chairman and chief executive officer of Xerox Corporation, remarked that: "Public education is failing in this country and that, as a result, we are at a terrific competitive disadvantage. 'We are running out of qualified people'" (p. 102). The comments above are general and refer to the USA but they can be narrowed down to many disciplines, including business school programs, and to Micronesia.

It has been indicated earlier that technology is causing work to change generally. Bedore and O'Brien (1991) reinforced this contention and maintained that there is the emergence of a new workforce with technology as the major job-creation phenomenon. They suggested a need for a major change in curriculum to meet the needs of the new workforce, saying: "The curriculum of this decade must provide the graduate with the tools to function in a truly global economy - in all academic disciplines" (p. 69). Business studies in Micronesian colleges are definitely a part of this change. There is a wide variety of technology available to business operations including computer systems. All these changes mean an increase in the expectations of the level of knowledge to be exhibited by the graduate of a business school (Bandy, 1990).

Albin and Crockett (1991) reviewed literature as a basis for initiating a program for integrating necessary skills and concepts into the accounting curriculum at the University of Southern Mississippi. They noted that there was some debate over the precise format of the ideal accounting curriculum, but what was certain was the agreement that some specific skills were necessary for success in accounting. One of the skills mentioned was computer skills.

It is gratifying to note that business schools in the U.S. are involved in significant initiatives to integrate computer and information technology into their curricula (Delone & Biles, 1991). Delone and Biles offered two reasons why these integration efforts are important: "(a) the widespread use of computer applications in industry demands computer-literate business school graduates; and (b) computer and information systems integration is a key prerequisite for American Assembly of Collegiate Schools of Business (AACSB) accreditation" (p. 111). The situation is, however, different in Micronesia, with many of the schools offering isolated courses in computer applications. Norris (1991) analyzed data to determine the areas of accounting faculty in demand over the past decade. The systems area was a "hot" area with an increase from 13% in 1980 to 26% in 1989.

Compared to the USA, the use of computers is a very recent phenomenon in Micronesia. In the last decade or so, however, Micronesia has seen a high incidence in the presence of computers and the acquisition continues to grow at tremendous proportions. This situation is logical since technological advancement is inextricable linked to the acquisition and use of computers (Ko, DeAmore & DeVera, 1995).

All over the developed world, computer use has become the order of the day, and especially so in the USA. A very large part of Micronesia used to be administered by the USA as the TTPIs. After achieving independence, virtually all of the island states have remained in some form of political association with the USA with a common currency - the US dollar. As a result of these factors, it is not surprising that the educational, political, governmental and economic systems of Micronesia are patterned closely along the lines of those of the USA. Consequently, the educational system of Micronesia is flawed by the same inadequacies as those of the US system. With the increase in the use of personal computers (PCs) in the USA, the trend is filtering into Micronesia and leading to "a surge of computer activity," according to Ko et al. (1995, p. 1). The down side of this trend in Micronesia is that there is an acute shortage of trained people to effectively and efficiently use the computers being acquired in business operations (Ko et al., 1995).

In the course of time, there have been numerous surveys to study the integration of computers into accounting and business courses in colleges around the U. S. (Hamilton, 1977; Prugh, 1980; Cook, 1983; Hiltebeitel & Harmon, 1984; Bialaszewski, Kocakulah & Bialaszewski, 1986; Jeska & White, 1986; Parmley & Parmley, 1986; Frand, McLean & Britt, 1988; Frand & Britt, 1989; 1990; 1992; Jacobson & Armstrong, 1991; Franz & Huang, 1992; Wong & Chong, 1992). These studies have all been limited in their scope. Frand's University of California Los Angeles (UCLA) annual surveys and Bialaszewski's study involved colleges of business of member-institutions of the AACSB. Jeska and White's study looked at the

institutional members of Region IV of the National University Continuing Education Association (NUCEA). The rest of the studies were limited to specific states in the USA.

Statement of the Problem

The specific problem of this study was that, in Micronesia, business studies students are not being effectively and efficiently prepared in the use of computers in the business studies programs in the post-secondary institutions in order to succeed at the workplace (Ko et al., 1995).

Purpose of the Study

The purpose of this research was to examine the contents of the computer applications courses in the business studies programs in Micronesian colleges.

Scope of the Study

The study covered the five two-year colleges and the only university awarding baccalaureate degrees in the Micronesian region of the Pacific.

Research Questions

Through content analysis of the catalogs, individual degree plans, and course guides/syllabi/outlines, the questions to be answered by this study were as follows:

1. What are the computer applications courses being offered in the business studies curricula of Micronesian colleges?

2. What are computer applications courses not being offered in the business programs of Micronesian colleges?

3. To what extent do the computer applications courses offered in the business studies programs of Micronesian colleges cover relevant concepts and skills?

Limitations

This study was limited to the colleges, schools, and departments of business in the five colleges and the one university serving Micronesia. The results are not applicable or generalizable to other states, territories, or countries.

Assumptions

The assumptions underlying this study included the following:

1. Course guides and syllabi are followed in providing instruction to students; and

2. Upon completion of a computer applications course with an average or higher grade, students would have acquired the competencies and skills specified.

Definition of Terms

1. Business studies is used in this research to mean programs of study leading to some diploma in a business-related discipline for the purpose of immediate

employment or further education. The definition does not include business education for business teacher preparation.

2. Examples of business-related disciplines may include accounting, data processing, economics, finance, marketing, and office technology courses.

3. Employment may be in the administrative or support unit of a business, industrial, or government establishment.

The Rationale and Need for this Study

Micronesian colleges have been structured along the lines of the US educational system. Further, many graduates from these colleges aspire to transfer to four-year colleges and graduate schools in the US. As a result, if US schools are undergoing changes, then it becomes imperative for Micronesian colleges to follow suit so that programs can articulate. Burroughs (1972) reported in the findings of his research that past research findings on the peoples and cultures of Micronesia are no longer valid in the present day. Further, Burroughs found that: "Existing occupational and vocational education programs in Micronesian schools have not been evaluated by any scientific process involving standards" (p. 124). Literature search for this dissertation did not yield any information on curriculum evaluation or assessment in recent times either.

Post-secondary business education in Micronesia needs to be re-examined to determine appropriate training programs for needed skills. It is believed that many Micronesian managers in the CNMI lack the specialized training needed for their jobs (USREI, 1982). It will be safe to say that this would include computer applications

skills. For example, the researcher was involved in a short-term computer applications training program for the personnel of the CNMI Department of Labor and Immigration. This training program was supposed to prepare the employees for an immigration academy which would train them in the use of a computerized system for labor and immigration purposes and which would link the CNMI with the US Immigration and Naturalization Service.

One of the reasons for setting up the Western Pacific Education Center (WPEC) in 1987 was to provide a training facility for the computerized accounting system which was being implemented for the various island governments by the US Federal Government. This was based on a number of findings of an earlier feasibility study. "Training in the use of the system was cited as high priority . . ." (CBPA, 1988, p. 5) by the Inspector General and also Touche Ross (an auditing firm).

The need to re-examine the curriculum of business studies in Micronesia has also been necessitated by the dependence of island governments on expatriate technical staff for financial and computer systems management. The earlier training processes implemented for local managers and staff were characterized as slow and non-systematic. This is where the colleges can come in and provide a systematic support. Among the three categories of training deemed critical for the island governments, data processing, including microcomputers, featured very prominently (CBPA, 1988). In discussions with government officials of the islands:

> Many officials indicated that microcomputers are being used, or planned to be used, for financial management of their departments or agencies. These

> managers are anxious to receive training in microcomputer software and in the use of microcomputers for business applications and communications. (p. 8)

The quotation above reflects sentiments that existed in 1988 but the situation has not changed much in 1995, at least on Guam (Ko et al., 1995).

Constant changes in technology, per se, has necessitated frequent revisions of the business studies curriculum. As noted by Musselman, Hanna, Weaver, and Kaluza (1979), that people working in an accounting function must have exposure to electronic data processing (EDP) methods to be effective cannot be overemphasized. They also said that there would be little disagreement to the fact that a knowledge of data processing methods is very much a part of the study of modern accounting. According to Petersen and Grimlund (1983), both routine and periodic accounting tasks are being regularly implemented using a wide range of computer technology. A number of writers also share this view by contending that new educational paradigms and courseware have been made possible or even necessary by technological developments (AAA, 1987; Bailey, 1990; Borthick & Scheiner, 1989; Ijiri & Kriebel, 1985).

Seymour (1983) postulated that there is agreement among experts that an accountant without EDP knowledge is of no use to an employer. He indicated that many valid arguments could be made for and against the computer but what is certain is that computers have already affected and would continue to affect the jobs involved in business operations.

In the report of the study by Bialaszewski et al. (1986) on the state of integration of computer usage into the accounting curriculum, they warned that schools

falling behind the provision of adequate computer-related training to their students might have difficulty placing their students. One of the reasons for introducing computers in the Department of Accounting and Finance at Manchester University was that technology and software are constantly changing with the result that the curriculum needs to reflect those changes. There is also the contention that most business courses are vocational in nature and that their course contents must be geared towards the needs of employers (Shaoul, 1988).

Raval (1988) was of the view that significant changes in the environment of business operations have created a need for the education of business graduates to change accordingly. One of such change, according to Chalupa (1988), is the extensive use of computers in business practice. Therefore, computers need to be incorporated into the business curriculum, she maintained. Dillaway and Savage (1988) believed that, in view of the fact that students would soon be expected to work in an environment in which computer skills are indispensable, failure to use microcomputers in business courses would be a genuine disservice to students. Knowing just computers was considered inadequate by Borthick and Scheiner (1989), and Bedore and O'Brien (1991). According to Borthick and Scheiner: "In today's technological society, accounting careers increasingly demand skill in using, creating, and evaluating accounting information systems" (p. 6). This trend was confirmed by Greene (1990) that 20% of accounting practice in the state of Kentucky was devoted to consulting work involving information-systems review.

Demographic changes in the American society, of which the CNMI and Guam are a part, has imposed a condition to train minorities as equally well as non-minorities because, as Wilma Randle predicted:

> Over the next 20 years, the U.S. population is expected to grow by 42 million. Hispanics will account for 47% of this growth. Blacks will account for 22%. Asians and other people of color will make up 18% of this increase, while whites will account for only 13%. (cited in Loden & Rosener, 1991, p. 6)

The CEO of Ford Motor Company, Donald Peterson, was reported to have said that the goal in changing America is to mobilize a core of human beings who have the skills, among other qualities, they need to live full lives, adapt to change, and preserve us as a nation. He said that: "we cannot afford to permit any minority or poor citizens to be wasted in the process" (Pipho, 1988, p. 103). Strait and Bull (1992) maintained that institutions need to be more sensitive to the market place and demographic changes to be successful.

The indigenous peoples of the CNMI and Guam fall under the US federal government minority classification of Native Americans/Pacific Islanders. Affirmative action and equal employment opportunity were designed to provide minorities a fairer chance at getting a job. Specifically, everybody has a right to be treated fairly when looking for a job; to get a job that one is qualified to do; to be paid a fair wage and other benefits; and to be advanced on the job and stay on the job based on one's ability and fitness to do the work (Munford, 1986). In business, if minorities do not have the opportunity to be trained in the state-of-the-art equipment, no amount of equal

opportunity rules would guarantee their employment. The skills would simply not be present.

In a special report in the January, 1990, issue of Ebony, it was indicated that one of the keys to success of African-Americans in corporate America would be adequate preparation. One of the measures of preparation emphasized was computer literacy (Blacks in Corporate America, 1990). Derryl Reed, president of the National Black MBA Association, was reported to have said that: "No one will have a chance of becoming successful in business in this day and age without having a basic understanding of computers" (p. 24).

The computer is not like the adding machine which only needs to be plugged in but requires a considerable amount of training (Taylor, 1992). Educators are called upon to prepare students to compete in the real world (Bice & McCharen, 1995; Lovejoy, 1995; Wolverton, 1984). There does not appear to be an agreement on how to implement the integration of computers into the business studies curriculum. But it is evident that everybody agrees that business students need to know some computers and those graduating from Micronesian colleges are no exception (Albin & Crockett, 1991; Delone & Biles, 1991; English, 1992; Howard, 1993; Main, 1988; Mangan, 1992; Moen, Powell & Davis, 1992; Nash & England, 1986; Quarstein, Ramakrishna & Vijayaraman, 1994a; 1994b).

> Future trends are clear -- entry-level jobs require workers with more sophisticated skills than ever before. Even simple clerical work demands computer literacy today. In addition to computers, technology has created

> opportunities for technicians who can operate sophisticated machinery and for people who can understand and translate technical information. (Peevers, 1990, p. 1)

The theme of this quotation, as it relates to Micronesia, was the thrust of the rationale for this study. In a reflection on the role vocational education plays in workforce preparation, Buzzell (1993) quoted Robert Reich, US Secretary for Labor, saying that the most difficult issue confronting employers and employees today is "the lack of connection between the skills needed in the workplace and the skills imparted through education and training" (p. 14).

Ko et al. (1995) reported that: "Computer use on Guam has rapidly increased, while training programs for technical support have not kept pace. The shortage of trained people is more acute than it has ever been" (p. 1). If business operations are being conducted with the computer, then teaching business studies should be done on the computer. ". . . educators recognize that the best method of learning computer applications is on the computer itself" (College of Business & Public Administration of UoG [CBPA], 1988, p. 13).

Other sophisticated uses of the computer have been discovered in the decision making realm, for example, artificial intelligence. Expert systems are believed to aid decision making tremendously and that a knowledge of expert systems by business executives is becoming necessary (Bandy, 1990; Moen et al., 1992). Steve Winters of Winters, Winters and Reeb, was reported to have said that the job of entry-level

accountants is changing from bookkeeper-type activities to duties including helping clients install accounting software (Dornbusch, 1992).

King, Lewis, and Abendschein (1990) commented that the microcomputer has and would continue to have a tremendous impact on all parts of auditing. According to them, auditors must be able to deal with the microcomputerized environment. King et al. believed that this ability would help the entry-level auditor to move up the ladder faster. As a result, they concluded that there is a new educational need for auditors in terms of training them to use the computer as an auditing tool.

In conclusion, Taylor (1992) opined that, the computer is not like the adding machine which only needs to be plugged in but requires a considerable amount of training. It is believed that technical knowledge and microcomputer skills are necessary for success in public accounting (Carcello, Copeland, Hermanson & Turner, 1991; Finch, Scheuermann, Cook & Reedy, 1991). From all indications, the use of microcomputers in business will grow and will become more sophisticated (Leepson, 1987). Educators are called upon to prepare students to compete in the real world (Bice & McCharen, 1995; Lovejoy, 1995; Wolverton, 1984). There does not appear to be an agreement on the modality for implementing integration of computers into the business studies curriculum (see, for example, Albin & Crockett, 1991; Delone & Biles, 1991; English, 1992; Howard, 1993; Main, 1988; Mangan, 1992; Moen et al., 1992; Nash & England, 1986; Quarstein et al., 1994a; 1994b). But what is certain is that, everybody agrees that business students need to know some computers and Micronesian colleges should pursue the issue with full force.

CHAPTER II

LITERATURE REVIEW

This chapter reviews the literature related to the issue of integrating computer applications in business studies programs in general and in Micronesian colleges in particular. Major sections covered under this review include: development of higher education in Micronesia; business education in Micronesia colleges; effects of technology on business operations; computer application skills training in business studies; inadequacy of related computer application skills of business graduates; initiatives at reforming business studies curricula to incorporate computers; surveys conducted on the integration of computers into business courses; content analysis as a research method; and a summary of the review of literature.

Development of Higher Education in Micronesia

During the TTPIs administration and before 1952, the only form of post-secondary education and training in Micronesia was the one offered by the US Navy in medical fields at the Naval Medical Center on Guam. The Center was closed in 1951 and the students studying medicine and dentistry were transferred to the Central Medical School at Suva, Fiji, while those in nursing were sent to the Guam Memorial Hospital (Peacock, 1990).

Until 1952, any Micronesian who wished to pursue any other form of post-secondary education other than medical related had to go abroad. This required a significant amount of financial resources to pay for transportation costs, tuition fees as foreign students, and living expenses. Many Micronesian families could not (and can still not) afford to send their children and relatives abroad for higher education. The few students who were able to travel abroad for higher education did so under TTPIs government scholarships and United Nations (UN) fellowships. The principal destinations for schooling were Hawaii, the US mainland, the Philippines, and Fiji. The majority of Micronesians who went to Fiji for higher education attended the medical school in Suva (Peacock, 1990).

Higher education for Micronesian students was beset with two major problems: lack of funding and inadequate student preparation to handle college work. Peacock (1990) explained how these problems affected the further education of Micronesians:

> The meager financial resources of the Trust Territory severely limited the number of available scholarships, a situation which was not remedied until the 1960s. Lack of qualified teachers and struggles with curriculum development discussed earlier produced students who were sometimes ill-equipped to handle university courses in a foreign language. (p. 35)

There were noticeable attempts to resolve these difficulties. Campus organizations of the University of Hawaii (UH) contributed $570 towards scholarships for Micronesian students in 1951. A more formal Micronesian Student Scholarship Fund was created to be supervised by UH. This helped a number of Micronesian

students to attend UH. Other private and religious entities offered some form of scholarships to assist Micronesian students in higher education. TTPIs government scholarships increased in number from one to two for the whole of Micronesia through one per district to two per district. The two-year limitation on the scholarships was expanded to four. The problem of student preparedness was attacked by expanding the Pacific Islands Central School (PICS) curriculum to three years instead of two (Peacock, 1990).

The University of Guam (UoG) was the only four-year college in Micronesia at the time of the study. It was a land-grant institution accredited by the Western Association of Schools and Colleges (WASC), a US accrediting agency (University of Guam Undergraduate Catalog [UoG], 1994). UoG started as the Territorial College of Guam (TCG) in 1952, a two-year institution established by the Department of Education to train teachers. In 1959, WASC granted it three years of accreditation as a junior college. Following its establishment, TCG became an alternative to colleges abroad for Micronesians seeking higher education. There was a lot of skepticism about the quality of the programs at TCG but it still was a welcome alternative and the educational authorities of the TTPIs were willing to give it a try. According to Peacock (1990):

> The Trust Territory government began seriously considering Guam as a site for college bound students and in April 1958, Gibson [then Director of Education of the TTPIs] informed educational administrators that Pedro Sanchez, Dean of the Guam Territorial College, would arrange room and board for one

> scholarship student from each district. Gibson was intrigued with the idea of a source of higher education closer to home. Given Trust Territory financial constraints, Guam's generous offer seemed quite appealing. (p. 419)

Even though the first attempt to receive Micronesian students at TCG failed, subsequent years saw the number of Micronesian students attending TCG growing. By some agreement, College of Guam (CoG - as TCG had then become) offered free tuition to Micronesian students. This became a significant factor drawing Micronesian students to attend, now, UoG (Peacock, 1990).

By the provisions of Guam Public Law (P.L.) 6-40 in 1961, TCG became known simply as the CoG. At this stage, CoG was allowed to offer courses of study up to and including four-year programs leading to the conferring of appropriate baccalaureate degrees upon those who completed the requirements (Carano, 1971; UoG, 1994). Administrative control of CoG was shifted from the Department of Education to a five-member Board of Regents in 1963. In the same year, CoG was accredited as a four-year, degree-granting institution. The accreditation was extended in 1965 for three years and also in 1968 for a five-year period.

By an Act of the Guam legislature, the name of CoG was changed to UoG in 1968. UoG became a land-grant institution by an Act of the US Congress in 1972. Under the provisions of Guam P.L. 13-194, UOG became administratively autonomous as a non-membership, non-profit corporation under the control of a nine-member Board of Regents (UoG, 1994). In addition to its undergraduate programs, UoG offers programs of graduate studies leading to Master of Arts (Art and Micronesian Studies);

Master of Business Administration; Master of Education (with several areas of specialization); Master of Public Administration; and Master of Science (Biology and Environmental Science) (UoG Grduate Bulletin [UoGGrad], 1994).

The 1960s and 1970s saw a bustling of activities leading to the creation of five two-year colleges in Micronesia. Funding for education for the TTPIs got a boost at the turn of the 1960s. Each year, the education administrators of the districts of the TTPIs held an education conference where they deliberated and composed resolutions concerning education. The resolutions were presented to the TTPIs government to help formulate educational policy. With the increase in funding, the administrators started thinking about expanding educational opportunities for Micronesians both at home and abroad. When the district education administrators met at their education conference in 1961, they proposed, among other things, the gradual establishment of a junior college at PICS. "This proposal laid the foundation of what grew to become the Community College of Micronesia (CCM)" (Peacock, 1990, P. 421).

In 1963, the TTPIs government and the University of Hawaii created the Micronesian Teacher Education Center (MTEC) to provide in-service teacher training to Micronesian teachers on Pohnpei (Caroline Islands). MTEC continued to expand its programs and, in 1969, it started offering a pre-service Associate of Science degree program in teacher training. In 1970, MTEC was renamed Community College of Micronesia (CCM) (College of Micronesia - FSM General Catalog [CoM], 1994).

The academic programs of CCM were expanded to include associate degree programs in business management and in-service teacher education in 1974. In that

same year, the Trust Territory School of Nursing on Saipan became part of CCM. A year later, in 1975, Associate of Arts degree programs in general studies/liberal arts were started to enable students to transfer to four-year institutions (CoM, 1994).

CCM and its School of Nursing joined with the Micronesian Occupational Center (MOC) on Palau to form the College of Micronesia (CoM) in 1978. Accreditation was granted in the same year to CoM by WASC. The UN trusteeship arrangement under US administration ended in the mid 1980s. In its wake came the disintegration of the CoM. The newly independent island-nations took control of the campuses located on their islands and converted them to autonomous full-fledged two-year colleges to serve their peoples. In 1986, CoM School of Nursing was moved from Saipan to Majuro, Marshall Islands. The following year, the newly independent nations of FSM, Republic of Marshall Islands, and the Republic of Palau signed a treaty affirming their desire to continue supporting CoM (CoM, 1994).

Two years after signing the treaty, in 1989, CoM School of Nursing separated from CoM to become CoM-Majuro. Then in 1991, an agreement was signed between the governments of FSM, Marshall Islands, and Palau restructuring CoM to allow more local autonomy. The next year, 1992, FSM established CoM-FSM as a public corporation and it became completely independent from the three-country CoM system in 1993 (CoM, 1994).

Palau Community College (PCC) started as the MOC in 1969. MOC was a two-year post-secondary vocational/technical institution with only one vocational program operating on a campus with limited facilities. By 1976, there had been

tremendous expansion in terms of physical facilities and the number of program areas of study being offered. "Training programs were provided in more than twenty specific vocational areas grouped into ten trade clusters" (Palau Community College General Catalog [PCC], 1994, p. 5).

MOC was granted full accreditation by WASC in 1977 and in October of the same year, it became part of a single post-secondary educational system in Micronesia under CoM, formerly CCM. Until this time, MOC and CCM were two autonomous post-secondary institutions serving Micronesia. In 1978, the name of MOC was officially changed to Micronesia Occupational College, a distinctive and complementary part of CoM. Following the treaty allowing more local control of the various campuses of CoM, the Republic of Palau gained more control over the Micronesian Occupational College which officially became PCC on April 2, 1993 (PCC, 1994).

The College of Marshall Islands (CMI) started as a continuing education center with the opening of the MTEC on Pohnpei in 1963. A branch of MTEC was opened on Majuro and was called the Marshalls Teacher Education Center (MARTEC). Following a directive of the High Commissioner for the TTPIs in 1970, CCM was created out of MTEC. MARTEC now became an extension of CCM organizing programs of study for students who wished to become elementary school teachers (College of Marshall Islands General Catalog [CMI], 1995).

In 1973, the CCM Extension on Majuro started offering a two-year degree program in education following the creation of the program on the main campus of the

CCM on Pohnpei. In the course of time, curriculum changes took place at the CCM Extension on Majuro. These led to a change in designation to Continuing Education Center (CEC) in 1981 (CMI, 1995).

After the CCM became part of the US Federal Land Grant system in 1981, a Cooperative Research and Extension (CRE) unit was established to operate from Majuro in 1983. The CCM School of Nursing (SoN) was moved from Saipan to Majuro in 1986. The following year, the CEC and the CRE program were transferred to join the SoN on the same premises and all three programs were placed under one administrator (CMI, 1995).

Somewhere along the line, the name of CCM was changed to the College of Micronesia (CoM). In 1989, the institution comprising the CEC, CRE unit, and the SoN was granted a charter by the Board of Regents of CoM. This charter allowed the institution to operate as an independent college within the CoM system and was named the CoM - Majuro. In 1991, CoM - Majuro became the CMI by an action of the CoM Board of Regents. In the same year, CMI was granted accreditation by WASC as a two-year college. CMI separated from the CoM system in 1993 to become a fully independent college governed by its own Board of Regents (CMI, 1995).

Unlike some of the other colleges in Micronesia, the Northern Marianas College (NMC) did not evolve from an earlier institution; it was established as such from its inception. NMC was established "to provide for the people of the [CNMI] the best possible postsecondary, continuing, and adult education in both academic and occupational areas" (Northern Marianas College General Catalogue [NMC], 1994,

p. 4).

NMC was created as an official governmental entity by an executive order in 1981, and as a division within the Department of Education of the CNMI. NMC's primary responsibility, at the time it was established, was to provide training programs for employees of governmental agencies. Later on, in the same year of its creation, NMC expanded its curriculum to include training programs for the teachers of the local public school system (NMC, 1994).

In the beginning years of the existence of NMC, it could not grant credits in its own name for the courses it offered because it was not yet accredited. As an alternative, arrangements were made with other accredited colleges to offer courses in the CNMI which NMC coordinated. In January 1983, two significant events occurred which were to enhance the future of NMC. In the first place, the CNMI legislature enacted P.L. 3-43 establishing NMC as a public non-profit corporation and designating it as the State Agency for Higher Education with the CNMI Board of Education serving as the College's Board of Regents. Secondly, NMC was accepted as a "candidate for accreditation" by the Accrediting Commission for Community and Junior Colleges of WASC. In the Fall Semester of 1983, courses were offered for NMC credit for the first time (NMC, 1994).

CNMI P.L. 4-34 was passed in 1985 establishing NMC as a public corporation governed by its own Board of Regents, and granting it autonomy to deal with its fiscal and personnel matters. In that same year, WASC granted full accreditation to NMC.

Accreditation was reaffirmed in 1990 and also in 1996 for the full six-year terms (NMC, 1994).

The main campus of NMC is located on Saipan, the Capital of the CNMI, with satellite campuses on Rota and Tinian, the other two major islands of the CNMI. Presently, NMC offers courses of study leading to Certificates of Completion, Certificates of Achievement, Associate of Arts degrees, and Associate of Applied Science degrees in a variety of academic and occupational areas. In addition to the certificate and associate degree programs offered by NMC in its own name, NMC also coordinates courses offered by the University of Guam on Saipan leading to a baccalaureate degree in elementary education.

The Guam Community College (GCC) started as an institution running secondary vocational education programs under the administrative responsibility of the Department of Education of the Guam territorial government. The institution was created in 1959 and called the Guam Trade and Technical High School (GTTHS). In 1966, GTTHS was moved to the site now occupied by GCC and renamed Guam Vocational-Technical High School (GVTHS) (AIA, 1981; Guam Community College Year Book, 1983).

The 14th Legislature of the Territory of Guam, by the Community College Act of 1977, P.L. 14-77, created GCC (AIA, 1981; Guam Community College Catalogue [GCC], 1979; GCC, 1994). According to AIA (1981):

> The Community College Act in its enactment consolidated training units from various agencies rather than creating new units. The entire Careers and

> Occupations Division and the GVTHS were transferred from the Department of Education. The Bureau of Apprenticeship Training was obtained from the Department of Labor, and the Community Careers College was transferred from the University of Guam. The net effect was that all publically [sic] sponsored skill training within the Territory of Guam was placed under the jurisdiction of the Guam Community College. (p. 6)

GCC, unlike a traditional community college, has a high school component, a post-high school curriculum, and an adult education program. Initial accreditation was granted to GCC in 1979 by the Accrediting Commission for Community and Junior Colleges of WASC. The accreditation has been regularly reaffirmed and was still current at the time of writing (GCC, 1979; GCC, 1994).

After these post-secondary institutions were established on the various islands of Micronesia, the question that arose was the focus of the programs of study of these colleges. "The territories are currently struggling to develop socially, politically, and economically. Although each is seeking its own, unique balance between traditional and modern life styles, all view postsecondary education as crucial to their development" (Urban Systems Research & Engineering, Inc. [USREI], 1982, P. 9). Some proponents supported the idea that programs of study in Micronesian colleges should be strictly tailored to satisfy the employment needs of the various island economies (USREI, 1982). One of the reasons given for this objective was that it would make it possible for the local population to "compete with and displace imported foreign and mainland workers" (p. 26). However, no identification was made of the

specific employment needs of the various island economies of Micronesia. According to USREI (1982): "Territorial plans to meet manpower development needs are sketchy and they have little data on these needs. No territory has a comprehensive plan to meet well-defined goals" (p. 22). That was in 1982, and 13 years later, in 1995, the situation is still the same. Extensive searches in the collection of the Micronesian Area Research Center (MARC) of UoG did not yield any published material on the subject.

Adherents to the other side of the goals of Micronesian post-secondary education, who really did not oppose the disposition in the previous paragraph, maintained that:

> . . . each country and territory has the right to develop its own curriculum for the majority of its people, based upon national needs, while specialized curricula to meet the needs of a few to go on for higher education should be built upon this basic foundation. (SPC, 1973, p. 1)

In its report to the Office of the Assistant Secretary for Postsecondary Education and the Office of Asian/Pacific American Concerns of the US Department of Education, (USREI, 1982) indicated that one of the goals for on-island post-secondary education was to: "prepare students for a successful transition into off-island colleges" (p. 31).

The study abroad issue generated a lot of debate among educational administrators in Micronesia in the mid 1950s. It was believed, in one direction, for example, by Robert Gibson, the then Director of Education in the Office of the High Commissioner for the TTPIs, that "sending students to 'more advanced, technological cultures' would run the danger of giving them education which would not meet

community needs and could result in an oversupply of educated persons" (cited in Peacock, 1990, p. 389). Even with this stance on off-island education for Micronesians, Gibson conceded the fact that there were some values in studying in abroad (Peacock, 1990).

There are genuine arguments in favor of off-island higher education and the need to design the curriculum of Micronesian colleges to form a basis for transfer to off-island colleges. Other than UoG, all the colleges in Micronesia are two-year institutions. With the advances in technology, and in all other facets of human endeavor, it is certain that skills beyond those provided by the two-year colleges would be needed on the various Micronesian islands sooner or later. As a result, many, if not all, of the island governments supported the need for Micronesian colleges to have programs to prepare those students who wished to transfer to off-island colleges (USREI, 1982).

One of the advocates for creating an avenue for Micronesian students to be able to transfer to off-island colleges after completing their two-year college programs at home was Bryan Bender of the Marshalls Department of Education in the mid-1980s. He believed that the fears of people like Gibson who thought that off-island higher education would "create expectations which could not be fulfilled in a Micronesian economy, or create difficulties in readjustment to life at home" (Peacock, 1990, p. 389) were unfounded. According to Bender: "The Marshallese seem perfectly capable of encountering a culture, learning much about it, and retaining for their own only

those parts which are definitely for their long-range benefit, all the while retaining what they want from their original culture" (quoted in Peacock, 1990, p. 390).

Another major dilemma which faced Micronesian post-secondary education was the system of education to adopt. There really was not much of a choice for the colleges because Micronesia had been operating as the TTPIs under the USA until the late 1970s and early 1980s when the islands assumed various political structures. The educational system in operation was fashioned along the lines of that of the US. When the trust-territory arrangement ended, the ensuing political entities continued to have one form of relationship or the other with the US. As a result, Micronesia continues to receive financial support and grants for specific programs, including education, from the US Federal Government. To be able to meet the terms of the educational grants and reporting requirements, it made sense for Micronesia to adopt the US system of education. According to Pearse and Bezanson (1970): ". . . the implications of increased financial dependence through the expansion of educational facilities does, de facto, impose a constraint upon the sorts of viable political alternatives available to Micronesia over the short-run" (p. 64).

Compared to the earlier systems of education that Micronesia was subjected to, for example, religious, German, and Japanese, the US system appeared to be a welcome alternative. "For many Micronesians, the advent of American education gradually brought an active role, with islanders participating as teachers, administrators, and community advisors" (Peacock, 1990, p. 8). In conclusion, it will be reasonably accurate to say that all the post-secondary institutions bear similar

characteristics to their US counterparts and are, in fact, accredited by a US accrediting agency, the WASC.

The standards to be used to determine the quality of the programs of study in Micronesian colleges became a controversy. As one of the goals of on-island post-secondary education: "It is hoped that on-island PSE [post-secondary education] will gear its programs to the level of academic performance of territorial students and bring them up to the level where they can later succeed in mainland colleges" (USREI, 1982, p. 31). A supporter of the idea of using US educational standards was Mr. N. R. Norwood, High Commissioner for the TTPIs, who said, in 1967, that:

> . . . it shall be the responsibility of the Government of the Trust Territory of the Pacific Islands to set educational standards and to support an educational system which will enable Territory students to develop educationally to a level comparable to United States standards. (quoted in Platt & Sorensen, 1967, p. 15)

Burroughs (1972), in the research for his dissertation, found, among other things, that: "It was believed that the standards and quality of vocational education programs should be maintained at a level of excellence comparable to those achieved in industry and in educational institutions in the United States" (p. 122).

The first issue raised by opponents of the so-called comparable US standards was the definition of what the standards in the US are. There is no clear definition of standards in the US with the wide rural-urban-suburban and regional differences (Platt & Sorensen, 1967). Therefore, to design a system that will compare with one that has

no defined standards will be tantamount to designing a system that will have no standards. Further, it was believed that placing emphasis on comparability with the non-existent US standards ". . . may even be harmful, building frustrations and invidious comparisons that may not be relevant to Micronesia's development needs" (Platt & Sorensen, 1967, p. 15). Finally, it was contended that: "In many instances American views of wants and needs of Micronesians were in no way consistent with Micronesian views" (Pearse & Bezanson, 1970, p. 60).

As a result of the nebulous nature of educational standards in the US, it appears that Micronesian colleges are content once WASC, the accrediting body, is satisfied with their standards and grants them accreditation. For example, NMC was visited by WASC's accrediting visitation team in March 1996 for another round of six-year accreditation. NMC engaged in a self-study prior to the visit and the standards used were those prescribed by WASC.

Business Education in Micronesian Colleges

USREI (1982) presented a report on post-secondary education in the US territories to the Office of the Assistant Secretary for Postsecondary Education and the Office of Asian/Pacific American Concerns of the US Department of Education in May 1982. In that report, it was indicated that there was a lack of identification of labor needs in many of the US territories. However, a number of skills needed for public and private sector employees in the territories were identified. Featuring conspicuously among them were: business mathematics; accounting and finance; administration and

management; information systems and records management; and clerical skills. These skill areas form the core of the curriculum of the colleges/departments/schools of business studies in the colleges of Micronesia.

Upon review of the catalogs of the various colleges in Micronesia, it was very evident that programs in business were very significant components of the courses of study in the colleges. The CMI has a Department of Business Studies which offers an Associate of Science (AS) degree in Business Studies with specializations in Accounting, Computer Science, and Management. Also offered are an AS degree in Office Administration and a Certificate of Achievement (CA) in Office Procedures (CMI, 1995).

The CoM-FSM, through its Department of Accounting and Business Studies, offers two AS degrees - one in Accounting and the other in Business Studies. The Department also offers two CA diplomas in Accounting and Business Studies (CoM, 1994). At the School of Business, Social Science, and Tourism of the GCC, programs of study leading to the following diplomas are offered: AS degrees in Accounting, Marketing, Office Administration, and Supervision and Management; and Certificates in Accounting Clerk, Information Systems, Marketing, Office Administration, and Supervision and Management (GCC, 1994).

NMC organizes its business courses at the School of Business and Hospitality Management. The School offers programs of study leading to an Associate of Arts (AA) degree in Pre-Business and an Associate of Applied Science (AAS) degree in Business Administration with emphases in Accounting, Business Management,

Computer Applications, Office Technology, and Sales and Marketing. A Certificate of Completion (CC) or a CA may be awarded to candidates who satisfy the requirements in Accounting, Business Management, Office Technology, and Sales and Marketing (NMC, 1994).

The School of Business at PCC offers programs of study leading to an AS degree in Business Education with an option in either Business Accounting or Secretarial Science. For those who wish to acquire short-term skills for entry-level clerical positions, a CA in Business Education is offered in Accounting or Secretarial Science (PCC, 1994).

For prospective students who wish to pursue courses of study leading to diplomas higher than associate degrees in business studies in Micronesia, UoG is the only choice. At the College of Business and Public Administration (CBPA), degrees offered include a Bachelor of Business Administration (BBA) with options in Accounting, Finance and Economics, International Business, Management, and Marketing; a Bachelor of Science in Public Administration (BSPA); a Master of Business Administration (MBA); and a Master of Public Administration (MPA) (UoG, 1994; UoGGrad, 1994).

The various diplomas awarded by the two year colleges in Micronesia (AA, AAS, AS, CA, CC, etc.) are for different levels with specific goals. The programs of study in the two-year colleges in Micronesia are offered in an educational-ladder approach. The starting point is the Certificate of Completion (CC), a 15 to 20 semester credit program. The CC is designed for persons whose goal is to acquire certain skills

for a specific job in a short period of time. Following the CC, a student may proceed to pursue the Certificate Achievement (CA) for additional 15 to 20 credits. The objective of the person pursuing the CA is, usually, to seek reasonably higher levels of job skills but not a degree.

There are two types of degree programs offered in Micronesian two-year colleges - Associate of Arts (AA) or Associate of Science (AS) and Associate of Applied Science (AAS). The AA or AS degrees are specifically designed for students who wish to transfer to four-year colleges to further their education. Students who pursue the AAS programs are usually seeking skills for immediate employment as entry-level supervisors or mid-level technicians.

As part of the courses of study leading to the various diplomas, students are required to take some computer application courses. This situation has been necessitated by the fact that computers have infiltrated every aspect of business operations and if business studies graduates are to be employable, then they need to have some computer application skills.

Effects of Technology on Business Operations

Technology is shaping our lives, altering the workplace and increasing our access to an ever-widening body of information. The American workplace is changing rapidly to keep pace with the increase in the complexity and sophistication of the world market (Ko et al., 1995; Peevers, 1990). According to Vermeulen (1994): "There

probably aren't many [business] operations left that have not been computerized to some extent, at least for accounting and record keeping functions" (p. 70).

In his summary of a survey report, Kundey (1991) observed that: "The application of computers in the management of financial accounting information has been a trend that has spawned dramatic changes in the way accounting is practiced" (p. 348). In the last few years, noted Taylor (1992), there has been a shift in office accounting from the adding machine toward personal, mid-range and even mainframe computers.

According to Franz and Huang (1992):

> For years, accountants have used computers to facilitate the tedious work of general ledger entries as well as to process payroll, receivables and payables. Similarly, accountants have been using worksheets or spreadsheets to summarize and analyze accounting data. (p. 377)

This situation took much of the drudge work that accountants use to do and changed the nature of the work of accountants (Dornbusch, 1992; Chalupa, 1988).

The changes in technology brought along some significant consequences for executives. In the opinion of Wyer (1993), changes in technology, among other changes, make the tasks of business professionals much more difficult. A number of other writers have shared the same view with Wyer. Leepson (1987), commenting on how accounting has grown in the last 100 years, indicated that clients want more than financial advice from their certified public accountants. In the view of Hodges (1987), the then "Big Eight" (now "Big Six") accounting firms made a lot of money certifying

the probity of corporate financial reports, but there is a good percentage of their income that comes from data processing consulting now. According to Hodges, the consulting activities range from designing information systems for customers, strategic sessions, coding, to installing and testing.

Specifically, the changes and developments that have resulted as a direct outgrowth of the information age include databases, electronic mail, automated banking and data communication. Examples of more sophisticated systems include decision support systems, expert systems, executive information systems, hypertext and so on. All these systems are affecting the way business is being conducted.

There are so many other ways in which computers and information technology have affected business. Petersen and Grimlund (1983), for example, noted that many businesses have on-line computation capability for audit, tax and management staff. This contention seems to have been supported by the observations of J. Michael Cook, chairman and chief executive officer of the then Deloitte, Haskins and Sells, in 1987, that "in the not too distant future, accounting firms and clients will exchange many different types of data easily and rapidly via computer" (Leepson, 1987, p. 48). This is what is presently called electronic data interchange (EDI).

Auditing is one area in business operations that has been affected by computers. According to Seymour (1983), due to their limited knowledge of data processing, auditors used to audit the books of the company up to where the information entered the computer and picked it up again when it came out. Computers were assumed to be infallible and the information that came out of it to be unquestionably correct. But with

the increase in the number and use of computers and as cases of computer fraud became numerous, auditors are "forced to look into that 'little black box' known as the computer to see what it was doing with the information it was given" (p. 66). Seymour suggested that to ensure the accuracy of the data, the auditor must go inside the computer and check the information and how it is handled.

King et al. (1990) commented on how amazing the impact of the microcomputer had been on auditing in a relatively short period of time. They noted that using the microcomputer to assist on an audit engagement was completely unknown barely ten years ago. But now auditors use personal computers as an audit tool to make examinations more efficient, King et al. maintained. In addition, they indicated that sophisticated computing techniques are being used to improve auditors' decision-making process and to enhance the scope of the audit. King et al. also mentioned that auditors need to concern themselves with computers because most clients now use computers in their operations.

Dornbusch (1992) reported that Steve Winters, managing partner of Winters, Winters and Reeb, an Austin, Texas, accounting firm, commented on one aspect of how computers are changing the nature of business activities. According to Dornbusch, Winters said that many companies prefer to keep their books in-house and just use consultants for more sophisticated activities, for example, forecasting. In the same article, Dornbusch mentioned how computer use has shifted from performing simple calculations such as preparation of income-tax returns to more complex programs such as financial modeling. In Dornbusch's view, this shift has allowed

executives to devote more time to analytical work. Dornbusch quoted Lester Sprouse, managing partner of Sprouse and Associates, another Austin, Texas, accounting firm as saying that: "Using computers to help with analysis is much quicker than traditional methods" (p. 1).

Artificial intelligence, according to Bandy (1990), is gaining a foothold in business operations. One aspect of artificial intelligence affecting business is expert systems. Moen et al. (1992) indicated that several expert systems have been developed for use in all branches of business decision making. They also mentioned that more are being developed all the time.

Earlier in this section of the literature review on the effect of technology on business operations, it was mentioned that computers have affected all aspects of business decision making. ". . . capabilities have extended to every aspect of operations from ordering stock to scheduling staff to producing up-to-the-second profit and loss statements" (Vermeulen, 1994, p. 70). Management accounting has also seen a dramatic impact of the use of computers in forecasting. Wilson (1991) observed that:

> Forecasting is a very data-intensive activity and without computers, it is very difficult to carry out the extensive data analysis required by most of the qualitative techniques.
>
> Desktop computers and powerful financial modeling software have entirely changed that situation. It is now technologically feasible for all accountants to use a wide range of quantitative forecasting techniques to enhance the information they provide to their clients. (p. 38)

Wilson mentioned that there is research evidence to support the fact that the use of sophisticated forecasting techniques is positively associated with superior organization performance. The implication of this is a higher incidence of computer use.

Coulthurst (1989) looked at the changes taking place in the manufacturing environment and the implications of these changes for management. According to him, the present cost and management accounting system, which developed as a by-product of transaction-based systems influenced by external reporting, is no longer adequate. With the advent of the computer, a wide variety of detailed information is available. Coulthurst suggested that, in the "new" factory with emphasis on quality and delivery performance, the challenge is to devise systems, among other things, that would contribute to the firm's success in the present competitive environment. Bennett, Reed, and Simmonds (1991) gave an example of how the introduction of a computer-integrated manufacturing (CIM) system has created the need for an automated accounting information system at the Micro Products Division of Tandem Computers, Inc. The meaning of these situations is that changes in technology have directly and indirectly impacted business activities in all their ramifications.

Ijiri and Kriebel (1985) provided five salient features of information technology that has impacted business activities:

1. Automated Data Input under which accounting data are entered automatically without accountants' intervention;

2. Flexible Databases which allow for ease of users' understanding, creation of a "conceptual database" that is quite different from a "physical database" and which is also capable of producing aggregated financial reports instantaneously upon request while maintaining the most unaggregated set of data;
3. Recording and Communications Standards which allow communication among databases both within a company as well as across companies;
4. Advance Security and Control Mechanism which reduces accountants' concern over data security and control issues, although they do not by any means eliminate the concern; and
5. New Educational Paradigms and Courseware which have been made possible or even necessary by the above technological developments.

As far back as 1968, Li (1968) held the view that technological advances have tremendously increased the number of computers, the complexity of computer capabilities, and the involvement of accountants in computer applications. Li believed that accountants would probably continue to play a major role in computer planning, computer operations, and computer integration. The review of literature above has confirmed these contentions. Today, "computers are used in just about every aspect of the business," said Winters (quoted in Dornbusch, 1992, p. 1). According to Leepson (1987): "The accounting industry as a whole bases much of its future planning on advances in computer technology" (p. 50). In short: "Developments in information

technology will continue to have an impact on the work of the accountant" (Curtis, 1990, p. 59).

In an article with a theme suggesting that today's technology is revolutionizing how one will do business tomorrow, Vermeulen (1994) quoted Leslie Hennessy, Jr. of Hennessy Wines and Spirits of San Francisco saying that: "A large part of our growth has been due to computerization" (p. 69). Hennessy recounted some specific benefits that have accrued to his organization as a result of computerization. He mentioned that the greatest advantage is the ability to access the gross profits of any department at any time. Another advantage is knowing when to order or not to order an item. Further, Hennessy indicated that computerization helps find external and internal theft.

Computer technology is enhancing the work of suppliers, and merchants are reaping many benefits from it. Using EDI, the supplier receives orders directly from the merchant via modem and invoices are sent back the same manner. This process eliminates "the need for forms. It's faster, cheaper because of the time saved, and much more efficient" (Vermeulen, 1994, p. 72).

In another report, Vermeulen (1994) indicated that some firms have developed systems which link salespeople in the field with marketing executives in the office. In this way, information needed for quick decisions are available. The advantage here is that planning can take place several times instead of once a year. In addition, a sales promotion can be terminated or revised while it is still in progress, rather than conduct an ex post facto rationalization after it has failed.

The use of computers in Micronesia dates back to the early 1970s when the US Department of Interior (DOI) funded the installation of an IBM-based financial system. The system was to be used to perform the financial management functions of the TTPIs government. The system, later on, became inadequate, and in 1983, DOI commissioned the installation of the Wang-based DILOG accounting system for the island governments of Micronesia. "For most of the islands, this is the first operational experience with computer systems" (CBPA, 1988, p. 2). Many Micronesian island governments also came in contact with the use of computers for processing population census data sponsored by the South Pacific Commission (CBPA, 1988; SPC, 1991).

According to Ko et al. (1995), computer use on Guam is a relatively recent phenomenon. Guam is the most developed of all the island political entities in Micronesia. Therefore, the contention that computer use on Guam is a recent development could be extended to the rest of Micronesia. Ko et al. indicated that, over the last ten years, computer use has increased rapidly on Guam. The same could be said for the other islands of Micronesia with the establishment of computer dealerships on some islands (IBM and Gateway in the CNMI Saipan, and Apple Computers in the FSM).

In the survey conducted by Ko et al. (1995) on end-user computer activities on Guam, it was found that, on the average, staff and management use computers for about 28 hours per week. This meant that the average person on Guam spent about 70% of his/her time in front of a computer in a normal 40-hour work week. In their discussion of the results of the survey, Ko et al. posited that, on the whole, there was a

satisfactory development of computer use for support purposes on Guam. They also observed that many of the organizations on Guam had an MIS department and required computer use for daily activities. As to whether these kinds of observations can be made for the other islands remains to be determined.

Despite the apparent high incidence of computer use on Guam, the use was actually limited to routine activities such as word processing and spreadsheet applications. According to Ko et al. (1995), using computers for strategic purposes was minimal. "Where computers are used for word processing and spreadsheets, competency is high" (p. 6). There was nothing in the presentation by Ko et al. that suggested a measurement of competencies in the use of computers or software packages. High incidence and frequency of use do not necessarily mean high competence.

The author conducted a survey on the computing environment on Saipan in early 1995. The results indicated that computers were being used mainly for word processing, spreadsheet applications, database management, computerized accounting, and operations in the tourism industry, for example hotel and travel reservations. Computer hardware, on the most part, was made up of stand-alone PCs, with an occasional network. The only utility corporation, local hospital, the CNMI Department of Finance, a local telephone company and a few other major corporations have IBM AS 400s.

In conclusion, the effect of technology in business operations in the world today is significant and there is no abatement in sight. Vermeulen (1994) asserted that: "The

technological explosion of recent years has completely transformed the possibilities of receiving and using data, and business owners who don't take full advantage of these possibilities are cheating themselves and their bottom lines" (p. 69). Vermeulen also posited that: "After you taste the efficiency of high tech, you'll never look back" (p. 70). Businesses and government agencies have surely not looked backed, reported Ko et al. (1995) on Guam.

Computer Application Skills Training in Business Studies

Bhaskar (1982) proposed three ways in which computers may become involved in business education. He gave them the terms: computer science (CS), computers as a computational tool (CCT) and computer-aided instruction (CAI). Bhaskar indicated that the aim of CS is to learn about the computer itself and the computer as an information processing tool.

In CCT, it was suggested by Bhaskar (1982) that the aim is to learn more about certain techniques such as mathematical programming or financial management. In situations like this, the computer is simply used to perform complex calculations, in Bhaskar's view. The aim, according to Bhaskar, in CAI is to learn and the computer is used to carry out some of the teaching functions.

Subsequent to the definitions above, Bhaskar (1983) categorized the use of computers in business, from the point of view of a practitioner, into two main categories. The first category, according to him, involved the routine processing of

transactions through the accounting system. It also included the preparation of financial and other reports from the data stored by the accounting system. Bhaskar called the process the accounting system usage of computers.

Bhaskar's (1983) second category of computer usage in business comprised of a variety of uses which are concerned with aiding the processes of decision-making and financial planning. His examples included financial modelling, forecasting and operations research tools. Bhaskar termed this category the decision support usage of computers. This category developed as a result of advances in technology, especially information technology.

On the basis of the previous paragraphs, it could, therefore, be postulated that training in computer application skills should be at two levels. The first level will correspond with Bhaskar's accounting system usage of computers and other routine processes such as word processing, spreadsheet applications, and data entry. The second level of computer application training will coincide with Bhaskar's decision support usage of computers. At this stage, the computer application curriculum will include more sophisticated concepts like using modems, remote accessing of databases for critical information, modeling, and operations management.

Many of the business schools in the USA are doing fine as far as teaching the fundamental routine skills in computer applications. The more advanced applications of computer skills have been a sore point with employers on business studies graduates in recent years (Frand & Britt, 1990; Wyer, 1993).

Formal training in computer applications in Micronesia started in 1987 when the Office of Territorial and Insular Affairs (OTIA) of the US DOI gave approval for the Memorandum of Understanding, G-38, to create the WPEC. WPEC was established to provide training in computerized financial management for the governments of American Samoa, the CNMI, the FSM, Guam, Republic of the Marshall Islands and the Republic of Palau. Following the establishment of WPEC, a number of organizations became involved in the training of personnel in key areas of governmental operations including data processing. These organizations included Information Development Consultants and Pacific Data Systems (CBPA, 1988).

When WPEC was created, the island governments wished to involve the local post-secondary institutions and trainers in programs of that nature, but it was reported that the institutions were not ready to provide such training at the time. However an interest was expressed by those institutions to develop the capabilities to do so in the future (CBPA). Now, all the six colleges of Micronesia have one form of computer business application training course or the other.

For the AS in Business Studies specializing in Accounting at the CMI, the computer applications courses required were CS 101 - Computer Applications I and CS 102 - Computer Applications II. The same two computer applications courses were required for the Management specialization as well. In addition to CS 101 and CS 102, the specialization in Computer Science required CS 104 - Computer Service Technology, CS 125 - Business Programming I, CS 213 - Systems Analysis and Design, CS 230 - Database Management, and CS 233 - Business Programming II. The

AS in Office Technology required BU 120 - Word Processing - in addition to CS 101 and CS 102 while the CA in Office Procedures requires CS 101 and BU 120 (CMI, 1995).

At the CoM - FSM, the AS in Accounting required CA 101 - Computer Applications I and CA 102 - Computer Applications II. If the candidate so chose, s/he could take AC 271 - Accounting Information Systems as an elective. To obtain the AS degree in Business Studies, the candidate was required to take CA 101 and CA 102. CA 101 and CA 102 were the required computer application courses for the CA in Accounting while CA 101 was the only required computer applications course for the CA in Business Studies (CoM, 1994).

At the GCC, for the AS degree in Accounting, three computer applications courses were required: AC 232 - Accounting on the Computer; CS 150 - Microcomputer Concepts; and OA 220 - Spreadsheet Systems. Only one computer applications course was required for the AS in Marketing - CS 150. The computer applications courses required for the AS in Office Administration were: CS 150; OA 130 - Information Processing; and OA 230 - Advanced Information Processing. The AS in Supervision and Management required only CS 150 (GCC, 1994).

The computer applications course required for the Accounting Clerk Certificate, Certificate in Marketing, and Certificate in Supervision and Management was CS 150. For the Certificate in Information Systems, OA 130, OA 210 - Database Systems, OA 220, and OA 230 were the required computer applications courses. The Certificate in

Office Administration required candidates to offer CS 150, OA 130, and OA 230 as the required computer applications courses (GCC, 1994).

The computer applications course required at NMC for the AA in Pre-Business, the AAS in Business Administration with emphases in Business Management, and Sales and Marketing was CS 103 - Introduction to Computers. Three computer application courses were required for the AAS degree with emphasis in Accounting. These were: AC 226 - Computerized Accounting; CS 103; and CS 150 - Spreadsheet Applications. Naturally, the AAS with Computer Applications emphasis would require several computer applications courses including CS 103; CS 140 - Database Applications I; CS 150; CS 223 - BASIC Programming; and three electives of some more computer applications courses. For the AAS degree with emphasis in Office Technology, most of the computer application courses were word processing courses. These included CS 103; CS 131 - Microsoft Word on the Mac; CS 132 - WordPerfect on the IBM; CS 240 - Advanced WordPerfect; and an elective in any Office Technology computer applications course (NMC, 1994)

To obtain a CA in Business Administration with Accounting emphasis, the candidate needed to offer CS 103 and CS 150 for computer applications courses. Only CS 103 was required for the CA with emphases in Business Management, and Sales and Marketing. The CA with emphasis in Office Technology required the same computer applications courses as its corresponding AAS except that no further electives in computer applications courses were required. There were only two business-related Certificates of Completion (CC) - CC in Business Administration with emphases in

Accounting and Office Technology. For the first one, CS 103 was the only computer applications course required while CS 103 and CS 131 were the required computer applications courses for the second CC (NMC, 1994).

PCC had a CA in Business Education with three areas of emphasis: Business Accounting, General Office Clerk, and Secretarial Science. For the emphasis in Business Accounting, the computer applications courses required were CS 100 - Computer Literacy; CS 212 - Microcomputer Applications; and BA 222 - Computerized Accounting. The General Office Clerk and Secretarial Science emphases both required CS 100 and CS 121 - Word Processing Application as computer applications courses. The AS in Business Education with emphasis in Business Accounting offered the same computer application courses as its counterpart CA: CS 100, CS 212, and BA 222. The AS in Business Education, Secretarial Science option required CS 100, CS 121, CS 211 - Advanced Word Processing, and CS 212 (PCC, 1994).

At UoG, MG 101 - Introduction to Computer Operations was the only computer applications course required for the BBA with options in Finance and Economics; International Business; and Marketing. For the BBA, accounting option, AC 425 - Accounting Systems, MG 101, and MG 438 - Management Information Systems were the required computer applications courses. The Management option of the BBA required MG 101, MG 201 - Microcomputer Applications, and MG 438. The BS in Public Administration required MG 101 and MG 201. Applied Database Management (MG 301) was offered but was not a requirement for graduation in any of the

programs. It probably might be used as an elective. At the graduate level, BA 565 - Management Information Systems was a requirement for the MBA program but an elective for the MPA course of study (Ko et al., 1995; UoG, 1994; UoGGrad, 1994).

Inadequacy of Related Computer Application Skills of Business Graduates

With the increasing impact of technology in the workplace, the skills demanded of the modern worker are changing and increasing. However, business and industry have been complaining that the quality of entry-level workers is declining every year, according to Peevers (1990). In general, American education has been under great fire lately. According to Denning (1992):

> University education is experiencing an enormous breakdown. An increasing number of students, employers, faculty, business executives, management specialists, public officials and taxpayers have declared their dissatisfaction with the education and research that is available in most of our universities. Commentators say we do not know how to educate graduates who know how to succeed in the new kinds of organization and shifting worldwide markets that are emerging.
>
> These complaints have a special poignancy for those of us who devote our lives to information technology, for information technology animates the very changes that drive the critics' dissatisfactions. (p. 83)

This was a global comment made concerning the generality of university education of which business studies is a part. Business education is particularly affected because it has been greatly impacted by information technology (see, for example, Ijiri, 1983; Ijiri & Kriebel, 1985; Burch, 1987).

Writing in 1983, Petersen and Grimlund posited that it is interesting to note that business education has not fully adopted the computer as a basis for teaching business concepts in the light of the proliferation of computers in business operations. In the same year, Ijiri (1983) also observed that accountants, for example, grossly lack the training needed to communicate with the computer and use it effectively. He proposed that this is due to the traditional use of illustrative method in accounting education.

Two years after the observations above were made, Ijiri and Kriebel (1985) commented that, "in spite of the revolutionary change in information technology that has taken place in recent decades . . . little progress has been made in fully integrating the information system issues in the accounting curriculum" (p. 3). Burch (1987) cataloged a number of information systems endeavors by public accounting firms and compared them with the activities of accounting professors. He conclude that: "Practice appears to be ahead of academia in the systems area" (p. 115).

Parmley and Parmley (1986) conducted a survey on computer applications in accounting in selected AACSB member-schools. Based on their findings, they concluded that there is awareness of the deficiencies in the curricula of business studies. The good news, however, is that business academicians are concerned with the need to better prepare business students in computer applications.

In an article inset entitled What Should B-Schools Teach?, Main (1988) described J. Brian Quinn, a professor at the Tuck School of Business of Dartmouth University, as a blunter. Professor Quinn said that business schools, including his, are turning out graduates who are ignorant of technology, especially information technology, and who know little about America's growing service economy. According to Dillaway and Savage (1988), although accountants have used computers for tax planning and preparation of tax returns for several years, tax education has been slow to reflect the increasing role of computers in tax accounting.

Madison (1989) was soliciting for articles to be published in The Woman CPA. In the solicitation article, Madison outlined areas of interest and the rationale behind the interest areas. As part of the rationale, he indicated that there are a number of problems and concerns faced by businesses and common to all areas of business operations. Specifically, Madison mentioned that problems exist in the development of leadership models, in communication skills and in computer literacy.

As an evidence of the dissatisfaction of the quality and quantity of accounting graduates, the CEOs of the then "Big 8" accounting firms coauthored a document directed toward the accounting education process and the academic community (Madison, 1990). Another document which indicted accounting education was the Bedford Committee Report of the American Accounting Association (AAA), in the opinion of Sundem, Williams, and Chironna (1990). The document concluded that accounting programs are not preparing students adequately for professional accounting careers in industry, government or public practice.

A survey was conducted by Lewis and Ducharme (1990) to determine how well business schools are meeting the needs of industry in terms of the training of business graduates. They found that there is agreement that business school undergraduates are least prepared in the more specific areas of the curriculum. These areas included computer usage. McGee (1991) looked at the accounting curriculum from the information systems end and concluded that the current accounting curriculum does not prepare IS professionals to work in an accounting environment. The implications of the situation here then is that, either way, accounting does not have the computer expertise needed for its operations.

It is believed that many business executives doubt the ability of the present business schools to train future business executives (Henderson & Jordan, 1991). Changes in the environment have caused an expansion in the scope of materials that need to be covered in the classroom. Some of the new topics being added include computer science and international business, claimed Henderson and Jordan. Poe and Bushong (1991) outlined the reactions of a number of groups calling for the overhaul of undergraduate business education. The contention was that current business students are not receiving a satisfactory education to prepare them for careers in the modern world of technology. Even though the criticism does not specify computer use, the suggested basic curriculum presented by Poe and Bushong clearly indicated an emphasis on accounting systems, among others.

With the outcry of displeasure with business education and the quality of business graduates, one would have expected to find concerted efforts at improvement.

Instead, the position held by Bastable (cited in Pillsbury, 1992) in 1977 still prevails to the effect that the present educational approach still has significant deficiencies. Strait (in a debate with Bull) contended that there is abundant documentation to show that academia lags behind practice, and the gap is still widening. Strait also indicated, as evidence, the willingness of the large Certified Public Accounting firms to commit $4 million to the Accounting Education Change Commision (AECC) since the present system did not yet meet their needs (Strait & Bull, 1992).

In the debate with Strait (Strait & Bull, 1992), Bull was the only business professional who believed that "The system that provided college educations [sic] for large numbers of competent professional accountants in the past still functions well" (p. 73). Apparently, teaching auditing at the University of Illinois, and having, what he called, intelligent students, Bull thought that the system is the same everywhere else.

A number of reasons have been advanced for the inadequacy of the business studies curriculum to prepare students for the increasingly complex business environment. Henderson and Jordan (1991) argued from the perspective of time. They contended that many new topics, for example, computer applications, are being added to the curriculum. On the contrary, very little is being deleted from the curriculum. There is support for William Weis (cited in Porter, 1992) that the AACSB shares in the blame for the inadequacy of the training of business students. The AACSB was charged with having "placed too much emphasis on arcane theories and too little emphasis on real world practices in the curriculum required to meet accreditation requirements" (p. 63).

Yale University recently released the results of a survey of businesses indicating that majority of employers are dissatisfied with college graduates' knowledge of the workplace. The Executive Director of the American Vocational Association, Bret Lovejoy, was featured on cable's NewsTalk Television commenting on the issue. A college professor on the show argued that college graduates are qualified but employers do not know what they want. Lovejoy disagreed, contending that "traditional college-degree programs do not prepare students for work" (Inside AVA, 1995, p. 16). The Corporate Chairman of General Motors, John Smith, Jr., said that: "We've got a problem here, because the education system in this country is not turning out people for the jobs of the future" (Hudelson, 1995, p. 14). Having computer applications skills in business will be considered knowing the workplace and having been trained for the future with regard to a business graduate. While these are indictments of the educational system of the US mainland, and since the degree programs of Micronesian colleges are patterned along the lines of those the US, they will not be absolved from the criticism.

Wyer (1993) helped in the apportionment of the blame for inadequate training. She said:

> A rapid increase in the use of computers to perform repetitive tasks made the existing focus on "debits and credits" seem to serve academic tradition more than the needs of the profession, classroom problems in "problem solving" were too narrow; professional exams trapped the curriculum in triviality. (p. 14)

The inadequacy in the training of computer use has its consequences, especially in present day technology-driven environment. Work would be ineffectively done with its attendant consequences. Translated into dollars, this could mean a lot of losses. Jaffe (1992) reported on the results of a survey conducted by the SBT Accounting Systems, a Sausalito, California, based maker of business software. The survey revealed that an estimated two percent of America's gross domestic product (GDP) or $97.4 billion, was lost by people who played or tinkered with their computers at work. Jaffe reported that David Harris, an SBT vice president, estimated that the loss in GNP would double in 1994 to 4% because futzing has become so widespread.

The inadequacy of computer applications skills in Micronesia is an age-old problem. In the audit reports on the computerized financial management systems of some of the island governments filed in 1985, some of the problems identified with operations of the systems included lack of personnel with systems skills and inadequate training programs (CBPA, 1988). In situations where some form of training existed, the processes were slow and haphazard. Further, it was indicated that no long-term educational programs had been planned to ensure a supply of adequately trained personnel for the future (CBPA, 1988; Platt & Sorensen, 1967; USREI, 1982).

The shortage of trained personnel in computer applications has still not abated in recent times. At the Fourth Regional Meeting of Population Census and National Development Planners in Noumea, New Caledonia, in 1991, under the auspices of the South Pacific Commission, it was reported that most of the island nations in the South Pacific (including Micronesia) continue to need some help, especially in the selection

and testing of both computer hardware and software for population census data processing (SPC, 1991). In the survey conducted by Ko et al. (1995), the results indicated that: "Computer use on Guam has rapidly increased, while training programs for technical support have not kept pace. The shortage of trained people is more acute than it has ever been" (p. 1). Guam is the most developed of all the islands in Micronesia and if the availability of trained personnel in computer applications is a problem, one can safely conclude that the situation could be worse on the other islands.

In summary, criticisms of the current business education system in the US have increased steadily, according to Jun-Lin and Hunter (1992) and the pressure is mounting for change. The same can be said for Micronesia.

Initiatives at Reforming Business Studies Curricula to Incorporate Computers

Due to the widespread criticisms and the realization by schools of business of the inadequacies of the existing business education system, there have been numerous initiatives aimed at reforming business education. Robert Sprouse, the President-elect of the AAA, requested funding from the Price Waterhouse Foundation in 1972 to hold a symposium of leading accounting educators. The purpose of the symposium was to discuss needed changes in accounting education and to suggest feasible areas of accounting education research (Flaherty, 1979).

Following the award of the grant, a two day symposium, devoted to the subject Researching the Accounting Curriculum: Strategies for Change, was held in 1974.

(Flaherty, 1979) reported that the principal objective of the symposium was to identify accounting curriculum problem areas and to suggest ways to deal with those problems. The proposal for the symposium giving rise to the Price Waterhouse Foundation grant was developed into a full-scale research. Flaherty was hired in late 1974 to conduct the research full-time.

According to Flaherty (1979): "The objective of the research effort was to gather data which could be utilized as a basis for making recommendations regarding the educational objectives and content of accounting curricula for individuals preparing to enter an accounting career" (p. 10). The questionnaire used to gather the information for Flaherty's research consisted of 197 topics, classified into auditing; financial accounting; management accounting and **management information systems**; and taxation. Accounting practitioners and educators were asked to indicate the importance of the questionnaire topics as necessary parts of the accounting curriculum. Flaherty found significant differences between the views of practitioners and those of educators. In spite of the differences, what was certain was that knowledge of information systems, and therefore computers, now became a necessary part of the accounting curriculum.

Perhaps the most significant calls for reform in business education occurred in the mid 1980s (Sundem et al., 1990). In 1986, the Committee on the Future Structure, Content and Scope of Accounting Education (Bedford Committee) of the AAA issued a report on the status of the accounting discipline. The report (AAA, 1986) criticized the existing accounting education programs as inadequate to meet the expanded demands of

the profession (Jun-Lin & Hunter, 1992; Wyer, 1993). In 1987, the AAA Committee on Contemporary Approaches to Teaching Accounting Information Systems was established: "1) to identify the unique problems of teaching information systems in an accounting environment; and 2) to propose ways and means of dealing effectively with these problems" (AAA, 1987, p. 129). The committee was established in response to the **technological and environmental changes** taking place in the conduct of business.

Not long after the Bedford Committee of the AAA issued its report, the American Institute of Certified Public Accountants (AICPA) unanimously adopted a proposal that would require a five-year, 150 credit-hour, undergraduate education for membership by the year 2000 (Bandy, 1990; Jun-Lin & Hunter, 1992; Wyer, 1993). The AICPA established a Strategic Planning Committee to address changes affecting the accounting profession and to recommend ways and means of meeting the challenges and opportunities of the future (AICPA, 1989). The committee agreed on 90 separate assumptions that could affect the accounting environment in general. The assumptions were grouped into four driving forces that would shape the future: 1) **technology**; 2) competition; 3) complexity; and 4) human resources. Twelve strategic thrusts were developed by the committee which included to "actively seek to improve the quality of accounting education and promote the availability of quality accounting programs" (p. 62).

In addition to the general restructuring of the business studies curriculum, there have been increasing efforts at a number of institutions directed specifically at integrating computers into the business studies curriculum, according to Thomas (cited

in Franz & Huang, 1992). Nash and England (1986) wrote that East Tennessee State University was involved in a major computerization project in which virtually all undergraduate and graduate business courses would be modified to include computer assignments within the next two years. Delone and Biles (1991) presented, in an article, the process followed by the Kogod College of Business Administration of the American University in Washington, D. C. to achieve its goal of integrating information technology into the business school curriculum. They also reported that there has been significant progress in the multilayer effort of integration.

Another effort at integrating computers into business school curriculum was the Simulab computer program used by the Carnegie Mellon University graduate business students, reported Mangan (1992). The program let the students compete against each other as traders in a simulated stock market. "Given the objective of introducing all business students to expert systems, a graduate class in microcomputer applications was assigned the responsibility of constructing three different experts systems, one each in the areas of accounting, business statistics and quantitative analysis" (Moen et al., 1992, p. 92). This project took place at the University of South Dakota.

According to Howard (1993), the School of Business and Economics at Eastern Montana College proposed a new master's level business degree to meet the proposed five-year accounting curriculum. The proposed degree would be designated Master of Science in Information Processing and Communications. Kent Kirby, Dean of the school, was reported saying that the students would get a lot of exposure to computers from the program.

Numerous examples also abound with regard to attempts at changes in business school curricula around the country. The Wharton School of Business of the University of Pennsylvania sought advice from William Galvin, Xerox Vice Chairman, to determine how it needed to change by the year 2000. At the same time, the Sloan School of Business of the Massachusetts Institute of Technology had finished a five-year study of information technology (Main, 1988). Colleges and universities in Western New York responded to the changes in business and industry by proposing changes in their curriculum to atune them to the employment marketplace of the 1990s and beyond, reported English (1992). At Niagara University, "computer training, once a course called Introduction to Computing, is being integrated into other coursework such as accounting so that students understand the concept and the application of this technology" (p. 4).

Business and industry have not been left out in the clamor for a better business education curriculum. According to Pipho (1990):

> Business involvement - through contributions of money and equipment and through the provision of programs - will continue of course. But the new effort will focus on policies and programs for producing a world-class education system that can prepare students for the 21st century. (p. 582)

In Micronesia, an attempt has been made to streamline the curriculum at the School of Business and Hospitality Management at the Northern Marianas College on Saipan to reflect the computer applications needs of the community in the CNMI. This resulted from a survey of the computing environment conducted by the author in early

1995. The University of Guam has recently introduced a course in Accounting Information Systems at the College of Business and Public Administration.

Changes in technology is not impacting the U. S. alone. Other industrialized nations are also bearing their share of the brunt. Similarly, attempts have been made to effect revisions in the business studies curricula. In the U. K., for instance, Bhaskar (1983) reported innovations in the accounting systems and decision making uses of computers at the University of East Anglia. The accounting department of the University of Manchester, also in the U. K., has made significant efforts at incorporating computers into its accounting curriculum (Shaoul, 1988; 1989a; 1989b; 1989c). Jun-Lin and Hunter (1992) reported that the faculty in the accounting division of the University of Lethbridge in Canada began the study of accounting education changes in late 1989. This has led to the development and experimenting with a new accounting program in the light of the demands of the profession. Jun-Lin and Hunter also reported of a conference jointly sponsored by the Faculty and Education Committee of the Canadian Academic Accounting Association (CAAA) in 1991. The theme of the conference was Curriculum Development in Accounting: Preparing for the Next Century. There were 130 accounting educators from Canada, U. S., Ireland, U. K. Germany and some other countries who attended the conference.

In conclusion, the opening statement of Part II of the Perspectives paper (Arthur Anderson et al., 1989) is apt. According to the statement: "The current environment makes real curricular change essential and necessitates response from a dynamic partnership between practitioners and academicians" (p. 3). A systematic approach to

the computerization of business studies curricula is not only desirable but also overdue (Raval, 1989). The review of literature in this section has indicated that there has been significant efforts at integrating computers into business studies curricula in the USA, Micronesia, and other parts of the world.

Surveys Conducted on the Integration of Computers into Business Courses

There have been a number of surveys conducted and studies done to determine the extent of integration of computers into business courses in the US. Some have been nation-wide but restricted to certain specific schools; others have been restricted to specific regions of USA and many others limited to specific states in the USA. Lewis and Ducharme (1990) did a study to determine if a gap existed between the expectations of academicians and practitioners with regard to business undergraduates. They found that computer usage was one of the areas the students were least prepared. A survey was conducted by Jacobson and Armstrong (1991) to determine the degree of computer usage in management courses compared to other business disciplines. Among their findings was the fact that a little more than 50% of the business professors responding required students to use computer applications in their courses. They also found that majority of the faculty in the quantitative disciplines like accounting incorporated computer applications in their classes.

From 1984, Jason L. Frand and some of his colleagues at UCLA started publishing the results of annual surveys of business school computer usage. In their

summary of the second annual survey (Frand & McLean, 1986), they found that less than 50% of the schools surveyed required some use of computers as a regular part of the course in certain business courses. The population of business schools used was largely AACSB-accredited schools with a few prominent non-AACSB-accredited schools. The fourth annual UCLA survey gathered data from only AACSB-accredited schools. The extent of computer usage was compared with the results from the second annual survey to measure the aggregate growth in required computer usage. Required computer usage in business courses rose from 62% in 1985 to 84% in 1987 at the undergraduate level and from 55% to 70% in the same years for graduate business courses (Frand et al., 1988).

The fifth annual UCLA survey still concentrated on AACSB-accredited and a few Canadian schools. As far as curriculum was concerned, the thrust of the survey was where business schools were with respect to the use of computers in courses and electronic/computer-linked equipment in the classroom (Frand & Britt, 1989). Results of the fifth annual survey, according to Frand and Britt, indicated that 70% of the schools were in growth phases for computer integration while 50% were in growth phases for equipment in the classroom. Once again, the schools surveyed in the sixth annual UCLA survey were all AACSB-accredited and seven of them were Canadian. At this time, more sophisticated computer applications started appearing as part of computer usage. Specific examples included artificial intelligence, expert systems, database management and communications software (Frand & Britt, 1990). Growth of required computer usage in specific academic areas were measured by comparing the

data of the 1987 survey with those of 1989. Computer usage in undergraduate business courses rose only 2%, from 84% to 86% while usage in graduate business course rose 10%, from 70% to 80%. Another dimension to the sixth annual survey was the increase in the percentage of business school classrooms that were equipped to display interactive computer output.

The seventh annual UCLA survey used the same population as the previous year. According to Frand and Britt (1992), the particular focus of the seventh annual survey was to identify how business schools allocated their computing dollars with regard to staff, services and resources. However, there was a significant aspect of computer use that was noted; the innovative uses of information technology. Frand and Britt (1992) cautioned that the UCLA annual surveys were not longitudinal studies since they did not use the same sample of business schools each year. Therefore, they warned that comparisons between the years are to be made with caution.

Brown and Balke (1983) conducted a survey of schools intending to seek AACSB accreditation and compared their accounting curriculum by degree program. AACSB has a curriculum standard which specifies that accredited programs must include certain specific areas of accounting of which management information and computer systems (MICS) features prominently. Brown and Balke (1983) found that, generally, one MICS course was required in the bachelor's, MBA and all master's of accounting degree programs. Forty-two percent of the respondent schools offering MBA, 14.5% of those offering bachelor's and more than 26% of the schools offering master's degrees in accounting required no systems-oriented courses.

Hiltebeitel and Harmon (1984) conducted a survey to study current and planned usage of microcomputers in accounting education in Pennsylvania. The sample used for the study represented a cross-section of schools, form two-year colleges to Ph.D granting institutions at several different locations in the US. Hiltebeitel and Harmon found that no two-year colleges used microcomputers as an integral part of the accounting course and none of them planned to use the computer as such. With regard to the four-year colleges, 54% did not use the computer at all, but 22% of them planned to integrate microcomputer use into the accounting curriculum. In a survey conducted by Jeska and White (1986) of NUCEA members schools in Region IV, business and professional applications of computers such as financial planning were projected to increase sharply.

Bialaszewski et al. (1986) surveyed all AACSB-accredited undergraduate schools of accounting and found that almost all the 135 respondent institutions required computers in their courses in principles of accounting, intermediate accounting, cost accounting, auditing and tax. A survey involving some AACSB-accredited and some non-AACSB-accredited schools was conducted by Parmley & Parmley (1986). They found that 71% of the respondents were using computers applications in accounting courses, while 29% indicated that they were not presently using computers in their accounting courses.

A survey was conducted by Campbell (1987) to study the trends and projections of information systems/management advisory services (IS/MAS) faculty and courses. According to Campbell, the respondents indicated that the accounting academic unit

had an overall average of 1.43 accounting faculty offering IS courses. He suggested that the difference between respondents reflected accreditation status: "Institutions with accounting-accreditation status have more accounting faculty (2.35) offering IS courses on the average than non-accredited (.96) and business-accredited (1.23) combined.

In an attempt to address the lack of knowledge of expert systems on the part of accounting graduates, Wong and Chong (1992) surveyed 38 U. S. doctoral accounting schools. They found that 50% of the schools included at least one expert-systems related course in their curricula. Only one out of the other half indicated an intention to add an expert systems-related course within two years.

The review of literature concerning surveys conducted on the integration of computers into the business studies curriculum suggested that considerable efforts are being made in mainland USA. Also revealed was the fact that the rate of integration is not keeping pace with advances in business and industry. There has been no study of any sort in any of the Micronesian colleges to determine the extent of integration of computer applications in business courses.

Content Analysis as a Research Method

The type of research conducted for this study was content analysis. Institutions of higher education use many different ways to communicate course objectives and expected competencies to be achieved. Course guides or course outlines or course syllabi are the most commonly used instruments to provide information on the overall rationale of a course, the organization of the course, course contents, instructor's

expectations, and the methods of instruction and evaluation. In short, a course outline is supposed to indicate course information and instructor views of the content areas to be covered (Lowther, Stark & Martens, 1989).

It is expected that a carefully designed and effective course outline should provide the reader with enough information for a projection to be made about the kinds of skills that may be achieved upon completion of that course. For example, "an effective syllabus explains to students the rationale and purpose of the course as well as course content and procedures" (Lowther et al., 1989, p. iv). In computer applications in business courses, a content analysis of course outlines may suggest, to a large extent, the types of tasks a person who has completed the course could perform using a computer in business operations.

There are as many definitions of content analysis as there are authorities on the subject (Holsti, 1969). According to Krippendorff (1980): "Content analysis is a research technique for making replicable and valid inferences from data to their context" (p. 21). North, Holsti, Zaninovich, and Zinnes (1963) categorized content analysis into four variations, namely: a) conventional frequency count and qualitative identifications; b) Q-Sort; c) pair comparisons; and d) evaluative assertion analysis. North et al. maintained that conventional identifications of qualitative characteristics of contents and counts of their appearance are valuable for accurate and operational summaries of documents.

The purpose of Q-Sort, a variant of content analysis and limited to certain kinds of data, is to measure the intensity and attitudinal and behavioral characteristics of the

subjects being studied and not merely to identify or count them. When the assumptions for the use of Q-Sort breaks down, other scaling techniques may be employed, for example, pair comparisons. When a dimension is defined as a continuum between polar opposites, such as strong-weak, like-dislike, decisive-indecisive, and so on, evaluative assertion analysis, another variation of content analysis, may be utilized (North et al., 1963).

Krippendorff (1980) identified three types of content analysis research designs which he based on the results of the content analysis embedded in larger research efforts. The designs identified included: a) designs to estimate some phenomena in the context of data; b) designs to test the substitutability of one method by a content analysis; and c) designs to test hypotheses. In the first set of designs, a researcher could establish whether some parameter is estimated or whether hypotheses between many estimated parameters are being tested. In situations where two or more methods are applied to the same data or to different data obtained from the same situation to test whether the two methods produce comparable results or, when more than two methods are involved, which one is the best, the researcher may be using a design to test substitutability. Designs to test hypotheses compare results of a content analysis with data obtained independently and about phenomena not inferred by the technique.

After the specific variant of content analysis to be utilized has been identified, another critical process to be examined is data collection. The components of the data collection process of the content analysis research to be utilized include:

- Unitizing - identifying the phenomena of interest and segmenting them into separate units of analysis;
- Sampling - selecting a smaller portion from all possible units;
- Recording - coding and describing each unit in analyzable forms;
- Analyzing - identifying and representing patterns that are noteworthy, statistically significant, or descriptive of the content analysis results;
- Establishing validity - making sure that the analysis measures what it is intended to measure; and
- Determining reliability - ensuring that repeated measures with the same instrument on a given sample of data should yield similar results (Holsti, 1969; Krippendorff, 1980; North et al., 1963; Williams & Evans, 1986).

Unitizing

According to Williams and Evans (1986): "Unitizing involves defining units of data, separating them along some boundary, and identifying them for subsequent analysis" (p. 8). Three types of units may be distinguished on the basis of the functions they perform: Context units limit the information that may enter the description; recording units organize the data; and sampling units serve as the basis for the analysis (Krippendorff, 1980; Williams & Evans, 1986).

Sampling

Narrowing a research problem to a manageable size requires the researcher to sample the total universe of available data. The initial impetus for sampling may be the

very practical requirement of reducing the volume of data to manageable proportions, but sampling is not merely a process of data reduction. Ordinarily, the universe of available data may be a mass of relevant and irrelevant data. In situations of this nature, the content analyst has to make two kinds of decisions. First, s/he must employ all knowledge that may be possibly obtained to distinguish between relevant and irrelevant material. Second, if after exhausting all available knowledge, the volume of relevant material is still too large, a random method may be employed to select a sample that is large enough to contain sufficient information and small enough for analysis (Holsti, 1969; Krippendorff, 1980; North et al., 1963).

Recording

In addition to defining the categories into which content data are to be classified, the analyst must designate the units to be coded. The initial choice is that of a recording unit, the specific segment of content that is characterized by placing it in a given category. Almost all content analysis studies use one of five units (Holsti, 1969; Krippendorff, 1980; North et al., 1963).

The single word or symbol is generally the smallest unit that is used in content analysis research. For many purposes, the theme, a single assertion about some subject, is the most useful unit of content analysis. Character has been used as the unit of recording in certain circumstances. In this case, the coder tallies the number of persons, rather than the number of words or themes, into appropriate categories. Another recording unit that can be used is the grammatical unit such as the sentence or

paragraph. This, however, does not lend itself to classification into a single category and so is rarely used. The item is the recording unit when the entire object of analysis is characterized. This unit is too gross for most research, and may present problems when items fall between two categories (Holsti, 1969; Krippendorff, 1980; North et al., 1963).

Analyzing

The next step in the data gathering process after coding is analyzing the data. Krippendorff (1980) postulated that, after the meaning of data has been established, there is the need

- to summarize the data, to represent them so that they can be better comprehended, interpreted, or related to some decision the user wishes to make; and
- to discover patterns and relationships within data that the "naked eye" would not easily discern, to test relational hypotheses. (p. 109)

There are several analytical techniques used in content analysis but a complete review of all of them will not be wieldy. Examples of the most common ones used are presented. By far, the most common form of representation of data, serving primarily the summarizing function of analysis, is in terms of frequencies. Variants of the frequency measure will include absolute frequencies, such as the numbers of incidents found in the sample, or relative frequencies such as the percentages of the sample size (Krippendorff, 1980).

The next most common form of representing data is in terms of relations between variables. Such relations may be seen in cross-tabulation of the frequencies of co-occurrence of the values of one variable and of the values of another. Some content analysis research focus on a special entity, person, idea, or event and attempt to find out how it is depicted or conceptualized, what its symbolic image is. There are two approaches to this form of analysis: a) attributes, frequency profiles, and distributional properties; and b) associations. From An attributional point of view, an image of something is a systematic presentation of all that is known or said to be unique about that something. From an associational point of view, an image consists of all the things with which it is associated and excludes all the things with which it is dissociated (Krippendorff, 1980).

Contingency analysis aims to infer the network of a source's associations from the pattern of co-occurrences of symbols in messages. It presumes that symbols, concepts, or ideas that are closely associated conceptually will be also closely related statistically. Clustering, on the other hand, seeks to group or lump together objects or variables that share some observed qualities or, alternatively, to partition or to divide a set of objects or variables into mutually exclusive classes whose boundaries reflect differences in the observed qualities of their members. Contextual classification is a multivariate technique for eliminating a certain kind of redundancy in data and thereby extracting from them what seems to be the underlying conceptualization (Krippendorff, 1980).

Establishing Validity

Validity refers to the extent to which an instrument measures what it is intended to measure. The validity of an instrument will depend upon a number of factors such as the research design. In content analysis research, valid inferences would depend upon carefully planning the comparisons to be made with content data. Choice of categories and content units enhance or diminish the likelihood of valid inferences. Other factors influencing the validity of an instrument include sampling design and reliability. to be discussed below (Holsti, 1969).

Holsti (1969) reported that the American Psychological Association (APA) distinguishes between content validity, predictive validity, concurrent validity, and construct validity. Content validity deals with the plausibility of the results of the research and the consistency of the results with other information about the phenomenon being studied. Predictive validity is concerned with the ability of an instrument to predict events for which evidence is not at present available to the analyst. Concurrent validity, like predictive validity, is also established by prediction to an external criterion. If a measure is able to distinguish between sources with know differences, the validity of the measure for that purpose is confirmed. Construct validity is concerned not only with validating the measure, but also the theory underlying the measure.

Based on review of literature, it appears that content validity, also sometimes referred to as face validity, has been relied upon the most in content analysis. "If the

purpose of the research is a purely descriptive one, content validity is normally sufficient" (Holsti, 1969, p. 143).

Determining Reliability

If research is to satisfy the requirement of objectivity, measures and procedures must be reliable, that is, repeated measures with the same instrument on a given sample of data should yield similar results. Reliability is a function of coders' skill, insight, and experience; clarity of categories and coding rules which guide their use; and the degree of ambiguity in the data (Holsti, 1969; North et al., 1963; Williams & Evans, 1986).

In content analysis, the two most common reliability tests are individual reliability and category reliability. Individual reliability reflects the extent of agreement between coders. Category reliability, on the other hand, depends upon the analyst's ability to formulate categories "for which the empirical evidence is clear enough so that competent judges will agree to a sufficiently high degree on which items of a certain population belong in the category and which do not" (Holsti, 1969, p. 136).

Content analysis as a research method was reviewed. Various definitions of the subject were presented as well as several variants of the method. The components of the data collection process in a content analysis research were also presented to include unitizing, sampling, recording, analyzing, establishing validity, and determining reliability.

CHAPTER III

METHODOLOGY

In this chapter, permission from the Institutional Review Board, the research design, population and sample, development of the criteria, collection of data, and methodology limitations are presented.

Institutional Review Board Permission

Federal regulations and Oklahoma State University (OSU) policy require review and approval of all research studies that involve human subjects before investigators can begin their research. The OSU Research Services and the Institutional Review Board (IRB) conduct this review to protect the rights and welfare of human subjects involved in biomedical and behavioral research. This study involved no human subjects but it was deemed appropriate to formally ask for waiver for the permission from the IRB. In compliance with the aforementioned policy, this study was granted permission to continue and was assigned the following number: ED-97-005 (Refer to Appendix A).

The Research Design

The type of content analysis design utilized in this study was the design to estimate some phenomena. The variant of content analysis method adopted for the study was the conventional frequency count and qualitative identifications. On the basis of the choice of content analysis design and method, the definition presented by Borg and Gall (cited in Stahl, Simpson, & Brozo, 1988) is the most appropriate one for this study and was, therefore, adopted. According to that definition, content analysis in educational research is "an objective, systematized examination of a particular document or [a] set of instructional materials to determine the quantitative and qualitative characteristics present" (p. 16). The process of this method of content analysis adopted involved: a) perusing a representative sample of documents and coding information into categories so that frequency counts can be undertaken and b) interpreting the data as it relates to theory, research, and educational practice (North et al., 1963).

Population and Sample

Most-recent catalogs and program plans of study from all six Micronesian post-secondary institutions were obtained. The colleges involved were: the College of Marshall Islands (CMI), the College of Micronesia - FSM (CoM-FSM), the Guam Community College (GCC), the Northern Marianas College (NMC), the Palau Community College (PCC), and the University of Guam (UoG). The computer applications courses offered in the business related programs of the colleges were

identified. The courses offered by each college have been outlined in the section titled Computer Applications Skills Training in Business Studies of Chapter II of this dissertation. Course guides/course outlines/course syllabi of the identified courses were obtained to form the objects of the content analysis research.

Development of the Criteria

The first task was to identify the objectives to be achieved and competency skills (tasks performed on the job) to be acquired upon the completion of a particular course that would be relevant and useful in a typical business environment - the criteria (Avani, 1986; Lucal, 1994). This task was accomplished in a number of steps: first, literature was reviewed to determine the categories of computer applications used in normal business operations, referred to as end-user computing (EUC). This resulted in the following categories of courses of study: a) Introduction to Computers; b) Word Processing; c) Spreadsheet Applications; d) Database Applications; e) Computerized Accounting; f) AIS; and g) MIS (Lowman & Mathie, 1993; Lucal, 1994; Pyrczak, 1990). This categories are consistent with the examples of applications listed in the top ten identified by McLean, Kappleman, and Thompson (1993) as being part of EUC.

Secondly, textbooks and other reference materials on each of the courses were consulted for objectives and content to be covered under each objective. For Introduction to Computers, the reference materials used included Blanc (1990), Pyrczak (1990), Shelly, Cashman, and Quasney (1990), and Waggoner (1991). Blanc (1990), Foster (1990), Groneman and Owen (1988), Rutkosky (1991), and Waggoner (1991)

were the resources used for Word Processing. The Spreadsheet Applications category was derived from Blanc (1990), Blanc and Vento (1986), Foster (1990), Groneman and Owen (1988), Mason (1991), and Waggoner (1991). Sources consulted for the Database Applications category included Blanc (1990), Blanc and Hildebrandt (1990), Foster (1990), Groneman and Owen (1988), Littlefield (1993), Mason (1991), Pratt (1991), and Waggoner (1991).

While Anders, Spiegelberg, and Nelson (1994), McEntee, Schaber, and Fisk (1993), and Spiegelberg, Yacht, Schaber, and Lent (1995) were utilized for the Computerized Accounting category, the AIS category was drawn from Bodnar (1980), Bower, Schlosser, and Newman (1985), Cope (1986), Edwards and Sutton (1992), Macintosh (1985), and Quarstein et al. (1994a). To assemble the objectives and contents for the MIS category, literature reviewed included Awad (1988), Ahituv and Neumann (1986), Cope (1986), Edwards and Sutton (1992), Galbraith (1973), Hartman, Mattner, and Proeme (1972), Hicks (1986), Kroeber and Watson (1987), Lucas (1978), Quarstein et al. (1994a), Sprague (1982), and Walton (1989). There were many objectives in the textbooks and reference materials which varied in wording, specificity and organization. Therefore, considerable subjectivity was required in order to produce a synthesis on which to categorize the objectives and contents (Lowman & Mathie, 1993; Lucal, 1994; Pyrczak, 1990).

Drafts of model course outlines were produced and circulated among a panel of twelve reviewers chosen to provide a wide spectrum of backgrounds in the field of computer applications in business. The panel included professors from four-year and

two-year colleges, computer professionals in private and public business establishments, and a recruitment officer. The process of the composition of the panel was as follows: A pool of potential panel reviewers was established from three lists. Members (25) of the Northern Marianas Computer Society (NMCS) made up one list. Another list of potential members of the panel was that of all computer applications instructors in all the colleges (10). A third list (18) consisted of the persons-in-charge of the computer units of the major corporations in Micronesia which included the local telephone and utility companies in Micronesia. Everyone in the pool (a total of 53) was sent a letter inviting all of them to participate. Definite commitment to participate was obtained from twelve persons.

The panel was asked to review the draft course outlines and offer suggestions as to the adequacy or otherwise of the skill areas identified for success in the work environment. In open-ended sections, members of the panel were asked to provide comments that would help design courses for students who would become highly competent upon graduation (Leventhal & Mynatt, 1987).

Each of the twelve reviewers was sent a set of seven draft model course outlines. One senior college professor declined to provide input on account of the fact that he had not taught for quite a while. Another college professor died before he had the chance to send in his reviews. Some reviewers sent in their comments very promptly while others had to be prodded by various means of follow-up. Reminder letters, faxes, and electronic mail were sent and telephone calls were made on several occasions. Finally, reviews were received from seven of the twelve panelists (see

Appendix B). Some reviewed all the six model course outlines but others reviewed only the courses they felt competent enough to deal with. Based upon the reviewers' comments, only minor editorial changes were made in the objectives of the seven original categories. The categories were Accounting Information Systems (AIS), Computerized Accounting, Database Applications, Introduction to Computers, Management Information Systems (MIS), Spreadsheet Applications, and Word Processing. The reviewers pointed out a number of technical flaws in specific skill content areas. On the basis of these comments, those content areas were revised (Lowman & Mathie, 1993).

Data Collection

The components of the data collection process of the content analysis research utilized included:

- Unitizing - identifying the phenomena of interest and segmenting them into separate units of analysis;
- Sampling - selecting a smaller portion from all possible units;
- Recording - coding and describing each unit in analyzable forms;
- Analyzing - identifying and representing patterns that are noteworthy, statistically significant, or descriptive of the content analysis results;
- Establishing validity - making sure that the analysis measures what it is intended to measure; and

- Determining reliability - ensuring that repeated measures with the same instrument on a give sample of data should yield similar results (Holsti, 1969; Krippendorff, 1980; North et al., 1963; Williams & Evans, 1986).

Unitizing

For this study, the context units were the catalog descriptions of the major programs and business related courses offered (Edwards, 1984; Rochin & dela Torre, 1986; Wilson, 1991). These were discussed in the section titled Business Education in Micronesia in Chapter II of this dissertation. The recording units consisted of seven categories for types of courses: a) Introduction to Computers; b) Word Processing; c) Spreadsheet Applications; d) Database Applications; e) Computerized Accounting; f) AIS; and g) MIS. These categories were identified from a review of literature concerning generic competencies in computer skills for business graduates. They are categories in which one would expect to find courses if the college is preparing business graduates for today's business work environment. The sampling units were the specific computer applications courses identified in the college catalogs (Edwards, 1984; Rochin & dela Torre, 1986; Krippendorff, 1980; Williams & Evans, 1986; Wright & Kim, 1988).

Sampling

In a similar fashion to the research conducted by Faherty (1987), data on the educational content of all the computer applications courses were obtained from all

course outlines/course guides/course syllabi of all six Micronesian colleges. In effect, the whole population of available data was used. According, to Krippendorff (1980): "When the whole population of data is [sic] analyzed, sampling is not needed" (p. 54).

Recording

Theme was used as the unit of analysis for this content analysis research. The contents of each course under review were organized into a number of major objectives to be achieved. The objectives were then broken down into several specific tasks that must be undertaken in order to achieve that particular overall objective.

Analyzing

The data were analyzed using absolute and relative frequencies in this content analysis research (Williams & Evans, 1986). The table used can be found in Appendix C.

Establishing Validity

In this content analysis research, validity of the data would be assured if the catalog descriptions and course guides/course outlines/course syllabi were accurate representations of course contents (Williams & Evans, 1986).

Determining Reliability

There were no changes in the categories of the various model course outlines suggested by the panel of reviewers. The panel of reviewers made suggestions to correct some typographical errors and the reordering of some of the content topics in some of the draft model outlines. These corrections did not affect the categorization of the computer applications courses. Therefore, category reliability was largely satisfied.

Methodology Limitations

Since there were many objectives in the reference materials which varied in wording, specificity and organization, considerable subjectivity was required in order to produce a synthesis on which to base the course objectives and content areas. Further, due to limited resources, time constraints, lack of cooperation from some potential reviewers and the distance between Saipan and mainland USA, it was not possible to have others review the synthesis of objectives in order to establish the interrater reliability of the process for selecting objectives (Edwards, 1984; Pyrczak, 1990).

While the number of courses studied and the population utilized may yield no descriptive significance in the technical sense, it is believed that the results of this analysis could shed light on some areas of computer skills training that need improvement in Micronesian colleges. Further, is believed that this research may be a prototype for other content analysis research of other courses of study in Micronesian colleges.

CHAPTER IV

FINDINGS

The specific problem of this study was that, in Micronesia, business studies students are not being effectively and efficiently prepared in the use of computers in the business studies programs in the post-secondary institutions in order to succeed at the workplace (Ko et al., 1995). On the basis of the problem statement, the purpose of this research, therefore, was to examine the contents of the computer applications courses in the business studies programs in Micronesian colleges. This resulted in the following research questions:

1. What are the computer applications courses being offered in the business studies curricula of Micronesian colleges?

2. What are computer applications courses not being offered in the business programs of Micronesian colleges?

3. To what extent do the computer applications courses offered in the business studies programs of Micronesian colleges cover relevant concepts and skills?

Literature was reviewed to determine the categories of computer applications used in normal business operations. This resulted in the following categories of courses of study: a) Accounting Information Systems (AIS); b) Computerized Accounting; c) Database Applications; d) Introduction to Computers; e) Management Information

Systems (MIS); f) Spreadsheet Applications; and g) Word Processing (Lowman & Mathie, 1993; Lucal, 1994; Pyrczak, 1990). Model course outlines were developed in these seven categories of courses of study. Course guides/course outlines/course syllabi of the identified courses were obtained from the colleges under study to form the objects of the content analysis research. If the incidence of the competencies and tasks to be covered was 85% or higher, the course outline was considered above average. If the rate of incidence was between 70% and 84%, students who completed the course would be minimally successful at work.

The colleges concerned were the College of the Marshall Islands (CMI), the College of Micronesia - FSM (CoM-FSM), the Guam Community College (GCC), the Northern Marianas College (NMC), the Palau Community College (PCC), and the University of Guam (UoG). Upon examination of the course guides/course outlines/course syllabi, and as was also found in the research by Lowther et al. (1989), a wide variability in format and content was found, "ranging from one-page listings of student assignments to ten-page documents containing detailed information about course purposes and goals, content, textbooks, assignments, teaching techniques, and the like" (p. vi).

One of the colleges (CoM-FSM) offered courses in only two of the categories, two (CMI and UoG) offered courses in four of the categories, and three (GCC, NMC, and PCC) offered courses in five of the categories. No college offered courses in all seven categories (CMI, 1995; CoM, 1994; GCC, 1994; NMC, 1994; PCC, 1994; UoG, 1994; UoGGrad, 1994).

UoG was the only institution which offered a course in AIS in one semester for three credits. Three colleges (CoM-FSM, GCC, and NMC) offered courses in Computerized Accounting in one semester for three credits. Database Applications courses were offered by four colleges, two (CMI and NMC) of which offered them over two semesters for six credits. The other two colleges (GCC and UoG) offered the courses in one semester for three credits. All the colleges offered courses that were classified under Introduction to Computers. Four of the colleges (CMI, CoM, GCC, and UoG) offered the courses over two semesters for six credits. The other two (NMC and PCC) offered those courses for three credits over one semester. UoG and CMI were the only two institutions which offered courses in the MIS category for three credits over one semester. Two colleges (GCC and NMC) offered courses in Spreadsheet Applications in one semester for three credits. The Word Processing category was offered by three of the colleges (GCC, NMC, and PCC) in two semesters for six credits. CMI offered one course for three credits in one semester in the word processing category (CMI, 1995; CoM, 1994; GCC, 1994; NMC, 1994; PCC, 1994; UoG, 1994; UoGGrad, 1994).

The two-year colleges in Micronesia offered their business studies programs in a career-ladder fashion. One could take between 30 to 34 semester-credit hours to obtain a Certificate of Achievement (CA) in a particular business discipline. With additional 30 to 34 credits, the student may obtain an associate degree of some sort, for example, Associate of Arts (AA), Associate of Science (AS), or Associate of Applied Science (AAS). NMC had another certificate before the CA: the Certificate of Completion

(CC) with the completion of 15 to 17 semester-credit hours of course work. UoG offered its four-year and master's degree programs in the same fashion as any other regular four-year college in the US (CMI, 1995; CoM, 1994; GCC, 1994; NMC, 1994; PCC, 1994; UoG, 1994; UoGGrad, 1994).

With the CA, one may find a job as a clerk or an office technician in the discipline. Holders of an associate degree may find employment as middle-level technicians or first-level supervisors in their discipline. Four-year and graduate degree holders of Micronesian origin can start at middle-level managements positions (CMI, 1995; CoM, 1994; GCC, 1994; NMC, 1994; PCC, 1994; UoG, 1994; UoGGrad, 1994).

To answer the three research questions, each of the colleges would be taken in turn to present the data of findings.

College of the Marshall Islands (CMI)

The business program at the CMI offered one CA in Office Procedures and a number of associate degrees. There was the AS in Business Studies with a specialization in Accounting, Computer Science, or Management. One could also obtain an AS in Office Administration (CMI, 1995).

The computer applications courses required for the CA in Office Procedures were CS 101 - Computer Applications I, and BU 120 - Word Processing. To obtain an AS in Business Studies with specialization in either Accounting or Management, the student had to take CS 101 and CS 102 - Computer Applications II - as the required

computer applications courses. The specialization in Computer Science required four computer applications courses in addition to CS 101 and CS 102, namely: CS 125 - Business Programming I, CS 233 - Business Programming II, CS 213 - Systems Analysis and Design, and CS 230 - Database Management. The AS in Office Administration required CS 101, CS 102, and BU 120 as the computer applications courses needed to graduate (CMI, 1995).

As can be seen in Table 1, the CMI offered four categories of computer applications courses in its Business Studies Department - Database Applications, Introduction to Computers, MIS, and Word Processing. The database and introduction to computers categories were each made up of two three-credit courses for a total of six credits. In each of those categories, one of the courses was the prerequisite to the other. Therefore, covering the concepts, skills and competencies involved would require two semesters of instruction. The MIS and word processing categories were covered in one semester for three credits each.

To cover the database applications area of the computer applications in business studies curriculum, the student had to take CS 223 and CS 230. CS 223, which itself had a prerequisite (CS 125), was the prerequisite to CS 230. CS 223 was designed to

TABLE 1

SUMMARY OF THE DATA OF FINDINGS FOR THE COLLEGE OF THE MARSHALL ISLANDS

	Accounting Information System	Computerized Accounting	Database Applications	Introduction to Computers	Management Information System	Spreadsheet Applications	Word Processing
No. of Credits	-	-	6	6	3	-	3
No. of Semesters	-	-	2	2	1	-	1
No. of Diplomas	-	-	1	5	1	-	2
Year of Last Update	-	-	1994	1989	?	-	?
Total Tasks Expected	-	-	47	18	35	-	
No. of Tasks Present	-	-	36	17	?	-	
% of Tasks Present	-	-	77	94	?	-	

Legend: - = Does not offer course.
? = Information not available.

teach students how to program in dBASE while CS 230 emphasized the acquisition of skills for the application and implementation of dBASE concepts.

The course outlines for the courses making up the database applications category were last updated in 1994. The model course outline for database applications established 47 tasks expected to be completed in courses seeking to teach database management applications. Of the 47, 36 (77%) were present in the combined course outlines obtained from the CMI for database applications.

The introduction to computers category was covered under two courses - CS 101 and CS 102. Since CS 101 was the prerequisite to CS 102, the courses must be taken over a two-semester period for a total of six credits. The latest update of the course outlines for the introductory computer courses took place in 1989. Of the 18 broad topics specified in the model course outline, 17 (94%) were presented in CS 101 and CS 102 combined for the introduction to computers category.

The CMI offered a three-credit, one-semester course each in the MIS and word processing categories. When course syllabi were obtained from the CMI, the Dean of Instruction specifically wrote to say that no course outline or syllabus was available for Word Processing. Nothing was said about the course (CS 213) offered under the MIS category and no outline was received either. The CMI does not offer any courses in AIS or Spreadsheet Application.

College of Micronesia - FSM (CoM-FSM)

The Department of Accounting and Business at the CoM-FSM offered programs of study in two business related disciplines. The student could obtain a CA in Accounting or Business Studies and go on to also obtain the corresponding AS as well (CoM, 1994).

The computer applications courses required to obtain the CA in Accounting were CA 101 - Computer Applications I, and CA 102 - Computer Applications II. For the AS in Accounting, AC 271 - Accounting Information Systems - may be offered as an elective in addition to CA 101 and CA 102. CA 101 was the only computer applications course required for graduation in the CA in Business Studies. If the student proceeded to pursue the AS in Business Studies, then CA 102 would be an additional required computer applications course (CoM, 1994).

Table 2 presents the frequency counts of the content analyzes of the course outlines obtained from the CoM-FSM of its computer applications courses. Only two of the categories were offered, namely: Computerized Accounting and Introduction to Computers. No courses were offered in the other five, namely: AIS, Database Applications; MIS, Spreadsheet Applications, and Word Processing.

The computerized accounting category was covered by CoM-FSM under a course titled Accounting Information Systems (AC 271) using Peachtree Complete Accounting and Quicken accounting softwares. The contents of the course outline of AC 271 suggested that it was more of a computerized accounting course than an accounting systems course. The date AC 271 was last updated was not available.

TABLE 2

SUMMARY OF THE DATA OF FINDINGS FOR THE COLLEGE OF MICRONESIA - FSM

	Accounting Information System	Computerized Accounting	Database Applications	Introduction to Computers	Management Information System	Spreadsheet Applications	Word Processing
No. of Credits	-	3	-	6	-	-	-
No. of Semesters	-	1	-	2	-	-	-
No. of Diplomas	-	1	-	4	-	-	-
Year of Last Update	-	?	-	1994	-	-	-
Total Tasks Expected	-	60	-	18	-	-	-
No. of Tasks Present	-	36	-	17	-	-	-
% of Tasks Present	-	60	-	94	-	-	-

Legend: - = Does not offer course.
? = Information not available.

Thirty-six (36), that is 60%, of the tasks to be covered, as suggested by the model course outline, were presented in the course outline of AC 271.

CA 101 and CA 102 were the courses offered to cover the introductory computer concepts. CA 101 was the prerequisite of CA 102, suggesting that the courses must be taken sequentially over two semesters at three credits each for a total of six credits. The latest update of the course contents of CA 101 and CA 102 was in 1994. The model course outline suggested 18 broad topics to be covered by any introductory computer course out of which 17 (94%) were presented by CA 101 and CA 102 combined.

Guam Community College (GCC)

GCC offered the following diplomas in business studies in its School of Business, Social Science, and Tourism: Accounting Clerk CA, AS in Accounting, Information Systems CA, Marketing CA, AS in Marketing, Office Administration CA, AS in Office Administration, Supervision and Management CA, and AS in Supervision and Management (GCC, 1994).

For the Accounting Clerk certificate, the only computer applications course required was CS 150 - Microcomputer Applications. The AS in Accounting required two computer applications courses in addition to CS 150. These were AC 232 - Accounting on the Computer - and OA 220 - Spreadsheet Systems (GCC, 1994).

The five categories of computer applications courses included in the business studies programs at GCC are presented in Table 3. They were: Computerized

TABLE 3

SUMMARY OF THE DATA OF FINDINGS FOR THE GUAM COMMUNITY COLLEGE

	Accounting Information System	Computerized Accounting	Database Applications	Introduction to Computers	Management Information System	Spreadsheet Applications	Word Processing
No. of Credits	-	3	3	3	-	3	5
No. of Semesters	-	1	1	1	-	1	2
No. of Diplomas	-	1	1	9	-	2	3
Year of Last Update	-	1995	1989	1994	-	1989	1993
Total Tasks Expected	-	60	47	18	-	43	76
No. of Tasks Present	-	34	25	18	-	30	25
% of Tasks Present	-	57	53	100	-	70	33

Legend: - = Does not offer course.
? = Information not available.

Accounting, Database Applications, Introduction to Computers, Spreadsheet Applications, and Word Processing. GCC does not offer any courses in AIS and MIS.

AC 232 is the only course offered by GCC in the computerized accounting category. It is a three-credit, one-semester course required only for the AS in Accounting degree. The contents of the course outline were established in 1995 when it was taught for the first time, just as the research for this dissertation was being conducted. A little over half, 34 out of 60 (54%) of the skills and competencies expected to be covered as suggested by the model course outline were present.

Database management application concepts were introduced in the introductory computer course in GCC but the detailed course covering advanced applications was found in OA 210. This was the way the database applications category of the computer applications in business courses was covered. OA 210 was offered in one-semester for three-credits and was last updated in 1989. The model course outline expected that 47 tasks and competencies be covered in a database applications course(s), but OA 210 presented just about half, 25 (53%), of those competencies.

To cover the skills and concepts outlined by the model course outline for the introductory computer course(s) category, GCC offered CS 150. This was a one-semester, three-credit course required for graduation in all nine diplomas offered in the business studies programs. CS 150, which was last updated in 1994, covered all 18 (100%) skill areas and concepts proposed by the model course outline for introductory computer course(s). In addition to CS 150, GCC offered three other introductory computer courses: CS 100 - Computer Literacy, CS 101 - Introduction to Data

Processing, and CS 102 - Computer Operations. These were not required courses for any business studies program but may be available as electives or precursors to the required computer applications courses.

GCC also offered a course designed to impart spreadsheet applications skills - OA 220. The course, offered as a one-semester, three-credit course, was last updated in 1989. Of the 43 tasks and competencies expected by the model course outline, OA 220 presented 30 (70%) of them.

The word processing category was covered by two three-credit courses for a total of six credits. The courses were OA 130 and OA 230. Since OA 130 was the prerequisite of OA 230, they would be taken over two semesters. Year of last update for the two courses was 1993. Combined, OA 130 and OA 230 presented 25 (33%) of the 76 skills and competencies expected to be covered as suggested by the model course outline.

Northern Marianas College (NMC)

The programs of study offered by NMC at its School of Business and Hospitality Management in business studies included two CCs in Business Administration with emphases in Accounting and Office Technology; four CAs in Business Administration with emphases in Accounting, Business Management, Office Technology, and Sales and Marketing; five AAS in Business Administration with emphases in Accounting, Business Management, Computer Applications, Office Technology, and Sales and Marketing; and an AA in Pre-Business (NMC, 1994).

CS 103 - Introduction to Computers - is the only computer applications course required for the CA and AAS with emphases in Business Management, Sales and Marketing, and the AA in Pre-Business. There were three diplomas which may be earned in a career-ladder fashion with Accounting emphasis. The first step was the CC in which CS 103 was the only required computer applications course. In addition to CS 103, the student had to take CS 150 - Spreadsheet Applications - to meet the computer applications requirements of the CA. The AAS with emphasis in Accounting required a third computer applications course, AC 226 - Computerized Accounting (NMC, 1994).

The AAS with emphasis in Computer Applications required the largest number of computer applications courses. These included CS 103, CS 140 - Database Applications I, CS 150, CS 223 - Programming in BASIC, and three electives in computer applications. The electives may be drawn from the following list: AC 226, CS 131 - Word Processing with Microsoft Word on the Apple Macintosh computer, CS 132 - Word Processing using WordPerfect on the IBM or compatible computer, CS 225 - Programming in C, CS 226 - Programming in Pascal, CS 240 - Advanced Word Processing with WordPerfect on the IBM or compatible computer, and CS 246 - Database Applications II (NMC, 1994).

One could pursue the Office Technology program also in a career ladder fashion. The beginning point was the CC with emphasis in Office Technology which required CS 103 and CS 131 as the computer applications courses. The next step, the CA, required CS 132 and CS 240 in addition to the two listed for the CC. No

additional computer applications courses were required for the AAS after taking the four needed for the CA (NMC, 1994).

As can be seen from Table 4, NMC offered computer applications courses which satisfied five of the categories: Computerized Accounting, Database Applications, Introduction to Computers, Spreadsheet Applications, and Word Processing. In the computerized accounting category, one course was offered in one semester for three credits. The course outline was last updated in 1995 and 56 (93%) of the 60 tasks recommended by the model course outline were present. There were no courses offered in AIS and MIS at NMC.

The database applications category was covered under two three-credit courses for a total of six credits. One course was the prerequisite of the other, therefore, the duration to cover the database applications was two semesters. The last update of the course outlines was in 1995. The model course outline expected that 47 tasks may be completed for the database applications category. Of these, 39 (83%) were presented in the combined course outlines of the two courses making up the database applications category.

NMC offered CS 103 to cover the skills and concepts outlined by the model course outline for the introductory computer course(s) category. This was a one-semester, three-credit course required for graduation in all twelve diplomas offered in the business studies programs. CS 103, which was last updated in 1995, covered only 12 (67%) out of the 18 skill areas and concepts proposed by the model course outline for introductory computer course(s).

TABLE 4

SUMMARY OF THE DATA OF FINDINGS FOR THE NORTHERN MARIANAS COLLEGE

	Accounting Information System	Computerized Accounting	Database Applications	Introduction to Computers	Management Information System	Spreadsheet Applications	Word Processing
No. of Credits	-	3	6	3	-	3	6
No. of Semesters	-	1	2	1	-	1	2
No. of Diplomas	-	1	1	12	-	3	4
Year of Last Update	-	1995	1995	1995	-	1995	1995
Total Tasks Expected	-	60	47	18	-	43	76
No. of Tasks Present	-	56	39	12	-	39	49
% of Tasks Present	-	93	83	67	-	91	64

Legend: - = Does not offer course.
? = Information not available.

CS 150 was the course offered by NMC to cover the spreadsheet applications category. The course, last updated in 1995, was offered as a one-semester, three-credit course. Of the 43 tasks and competencies expected by the model course outline, CS 150 presented 39 (91%) of them.

CS 131, CS 132, and CS 240 were the courses offered to cover the word processing category. At the time of this content analysis, the courses were all two-credit courses. They were, however, under review to increase the number of tasks required to be completed and to increase the number of credits to three each. CS 131 and CS 132 could be taken simultaneously but CS 132 must be taken before CS 240. Therefore, the three wordprocessing courses may take between two and three semesters for a total of six credits (nine, after approval is received to upgrade). Year of last update for the three courses was 1995. Combined, CS 131, CS 132, and CS 240 presented 49 (64%) of the 76 skills and competencies expected to be covered as suggested by the model course outline.

Palau Community College (PCC)

The School of Business at PCC offered programs of study in business studies in a career-ladder fashion also. The student could obtain a CA in Business Education with emphases in Business Accounting, General Office Clerk, or Secretarial Science and go on to also obtain an AS in Business Education with emphases in Business Accounting or Secretarial Science. In sum, PCC offers five diplomas in business studies (PCC, 1994).

The computer applications courses required to obtain the CA and AS in Business Education with an option in Business Accounting were BA 221 - Payroll and Tax Accounting, BA 222 - Computerized Accounting, CS 100 - Computer Literacy, and CS 212 - Microcomputer Applications. CS 100 and CS 121 - Word Processing Application - were the required computer application courses for the CA in Business Education with options in either General Office Clerk or Secretarial Science. If the student proceeded to pursued the AS in Business Education with an option in Secretarial Science, then CS 211 - Advanced Word Processing - and CS 212 will be the required computer applications courses in addition to CS 100 (PCC, 1994).

Table 5 presents the frequency counts of the content analyses of the course outlines obtained from the PCC of its computer applications courses. There were five of the categories being offered, namely: Computerized Accounting, Database Applications, Introduction to Computers, Spreadsheet Applications, and Word Processing. No courses were being offered in AIS and MIS.

The computerized accounting category was covered by PCC under BA 221 and BA 222 which course outlines were not obtained. The date the courses were last updated and the number of recommended tasks present were, therefore, not available. The database and spreadsheet applications categories were both covered in a single one-semester, three-credit course - CS 212. The course outline was not obtained and, therefore, the date of last update and the number of recommended tasks present were not available.

TABLE 5

SUMMARY OF THE DATA OF FINDINGS FOR THE PALAU COMMUNITY COLLEGE

	Accounting Information System	Computerized Accounting	Database Applications	Introduction to Computers	Management Information System	Spreadsheet Applications	Word Processing
No. of Credits	-	6	3	3	-	3	6
No. of Semesters	-	2	1	1	-	1	2
No. of Diplomas	-	2	3	2	-	3	2
Year of Last Update	-	?	?	1990	-	?	1995
Total Tasks Expected	-	60	47	18	-	43	76
No. of Tasks Present	-	?	?	10	-	?	22
% of Tasks Present	-	?	?	56	-	?	29

Legend: - = Does not offer course.
? = Information not available.

The introduction to computer category was presented in CS 100. The course was last updated in 1990 and was offered for three credits in one semester. Of the 18 recommended tasks, 10 (56%) were present. The word processing category was covered by two three-credit courses - CS 121 and CS 211. The first one was the prerequisite of the second one, therefore, they were offered over two semesters for a total of six credits. The course outline for CS 121 was not obtained and the one for CS 211 showed 22 (29%) out of the 76 recommended tasks present. The year of last update of CS 211 was 1995.

University of Guam (UoG)

UoG was the only institution offering four-year and graduate degrees in business studies in Micronesia. The degrees offered at the College of Business and Public Administration included Bachelor of Business Administration (BBA) with specializations in Accounting, Finance and Economics, International Business, Management, and Marketing; a Bachelor of Science in Public Administration (BSPA); Master of Business Administration (MBA); and Master of Public Administration (MPA), for a total of eight types of diplomas (UoG, 1994; UoGGrad, 1994).

For the BBA with specialization in Accounting, three computer applications courses were required: AC 425 - Accounting Information Systems, MG 101 - Introduction to Computer Operations, and MG 438 - Management information Systems. MG 101 was the only computer application course required for the BBA with specializations in Finance and Economics, International Business, and Marketing.

The BBA with specialization in Management required three computer applications courses, namely: MG 101, MG 201, and MG 438. MG 101 and MG 201 were the computer application courses required for the BSPA. The MBA required BA 565 - Management Information Systems (graduate level) as a computer applications course while BA 565 was an elective for the MPA program.

Four of the categories, as shown by Table.6, were covered by the course outlines obtained from UoG: AIS, Computerized Accounting, Database Applications, Introduction to Computers, and MIS. UoG does not offer any computer applictions courses in Computerized Accounting, Spreadsheet Applications, and Word Procesing. The course covering the AIS category was a one-semester, three-credit course. The course outline obtained for this content analysis was developed in 1995 when it was taught for the first time by the professor who sent it to this researcher. The course outline presented 18 (33%) of the 55 tasks expected by the model course outline.

MG 301 - Applied Database Management was the course established to cover the database category of the computer applications in business courses. This course was offered as a three-credit, one-semester course. It was not required for graduation in the programs of study of any of the business studies programs. The year of latest update of the course was not indicated on the course outline. It was not possible to determine the coverage of the tasks recommended by the model course outline because

TABLE 6

SUMMARY OF THE DATA OF FINDINGS FOR THE UNIVERSITY OF GUAM

	Accounting Information System	Computerized Accounting	Database Applications	Introduction to Computers	Management Information System	Spreadsheet Applications	Word Processing
No. of Credits	3	-	3	6	3	-	-
No. of Semesters	1	-	1	2	1	-	-
No. of Diplomas	1	-	1	6	3	-	-
Year of Last Update	1995	-	?	?	?	-	-
Total Tasks Expected	55	-	47	18	35	-	-
No. of Tasks Present	18	-	?	?	?	-	-
% of Tasks Present	33	-	?	?	?	-	-

Legend: - = Does not offer course.
? = Information not available.

the portion dealing with the course content was a description of the mode of instruction. The paragraph specified that:

> COURSE CONTENT
>
> The course is taught with a mixture of lectures, discussions, and labs. Demonstrations of the software using the projection panel and overhead projector will be provided in the lab. Exercises will be demonstrated in this way and then assigned to the students as hands-on exercises during class time. Students will be able to build a competency in [dBASE] in our lab with direct supervision (assistance). I think you will be pleasantly surprised that most of our hands on exercises will be interesting and enjoyable. (Course Syllabus of MG 301 - Applied Database Management, p. 1)

The category relating to introductory computer concepts was covered by two three-credit courses at UoG for a total of six credits over two semesters. One of the courses was the prerequisite of the other, threfore, the courses must be taken sequentially. The year of last update of the course syllabi was not indicated on any of them. Further, since the course content sections of the course syllabi were descriptions of how the courses were to be taught, it was not possible to determine the number of tasks the courses covered compared to the model course outline.

The last category presented by UoG was the MIS category. UoG covered this category with a one-semester, three-credit course. The date when the course outline was last updated was not indicated on the course syllabus. Similar to all other course syllabi analyzed from UoG, the course content was a simple description of how the

course would be taught. There was no indication as to what concepts and skills would be presented. As a result, there was no way to determine how many of the tasks proposed by the model course outline were present.

Summary of Findings

Table 7 summarizes the answers to the three research questions. As an answer to the first research question of courses offered by the various colleges, CMI offered courses in Database Applications, Introduction to Computers, Management Information Systems (MIS), and Word Processing. CoM-FSM offered courses in Computerized Accounting and Introduction to Computers. GCC, NMC and PCC offered courses in the same categories, namely: Computerized Accounting, Database Applications, Introduction to Computers, Spreadsheet Applications, and Word Processing. The categories in which UoG offered courses in included Accounting Information Systems (AIS), Database Applications, Introduction to Computers, MIS, and Spreadsheet Applications.

In order to answer the second research question dealing with the courses not being offered, Table 7 could also be the reference. CMI did not offer any courses in AIS, Computerized Accounting, and Spreadsheet Applications. Categories in which the CoM-FSM did not offer courses in included AIS, Database Applications, MIS, Spreadsheet Applications, and Word Processing. GCC, NMC, and PCC did offer courses under the AIS and MIS categories while UoG did not offer any courses in Computerized Accounting and Word Processing. In general, none of the schools had

TABLE 7

SUMMARY OF COURSES OFFERED, THOSE NOT OFFERED, AND RATE OF COVERAGE FOR ALL SCHOOLS

	Accounting Information System	Computerized Accounting	Database Applications	Introduction to Computers	Management Information System	Spreadsheet Applications	Word Processing
College of the Marshall Islands	-	-	77%	94%	?	-	?
College of Micronesia - FSM	-	60%	-	94%	-	-	-
Guam Community College	-	57%	53%	100%	-	70%	33%
Northern Marianas College	-	93%	83%	67%	-	91%	64%
Palau Community College	-	?	?	56%	-	?	29%
University of Guam	33%	-	?	?	?	?	-
No. of Schools Offering Courses	1	4	5	6	2	4	4

Legend: - = Does not offer course.
? = Course offered but no course outline was obtained.

tasks and competencies in any of their course outlines which dealt with desktop publishing, computer-to-computer communication (or remote computing), nor presentation graphics.

The third research question involved the coverage of relevant topics, concepts, tasks, and competencies which would make graduates succeed at work. As was presented earlier in this chapter, the rate of incidence in comparison with the model course outlines was used to answer the question. If the incidence of the competencies and tasks to be covered was 85% or higher, the course outline was considered to be able to provide students with above average skills and competencies. If the rate of incidence was between 70% and 84%, the outline was considered satisfactory in the provision of necessary competencies for students to minimally succeed at work.

CHAPTER V

SUMMARY, DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

Summary

In Chapter I, a brief historical overview of the Micronesian region was presented. The islands went through periods of colonialization by foreign powers including Spain, Germany, and Japan. The US acquired Guam after defeating Spain in a war and was mandated by the UN, under a trusteeship arrangement, to rule the rest of the islands after World War II. The islands, other than Guam, have since evolved into different political entities following the dissolution of the trusteeship. How the schools got established on particular islands was also presented as a planned process.

Also discussed in Chapter I was a brief overview of the background setting the stage for this study. There have been concerns about the inadequate training in computer skills of graduates of business studies programs in the US in general and Micronesia in particular. This was found to be in sharp contrast to the advances in technology and the proliferation of computers in business operations. Therefore, the specific problem of this study was that, in Micronesia, business studies students are not being effectively and efficiently prepared in the use of computers in the business studies programs in the post-secondary institutions in order to succeed at the workplace (Ko et

al., 1995). The problem statement led to the purpose of the research which was: to examine the contents of the computer applications courses in the business studies programs in Micronesian colleges.

Three research questions guided the study: 1) What are the computer applications courses being offered in the business studies curricula of Micronesian colleges? 2) What are computer applications courses not being offered in the business programs of Micronesian colleges? 3) To what extent do the computer applications courses offered in the business studies programs of Micronesian colleges cover relevant concepts and skills? The need and rationale for this study were established to the effect that the computer applications courses in the business studies programs of Micronesian colleges needed to be reviewed to determine their coverage of the competencies and skills needed for business graduates to succeed at work.

The review of related literature was the subject of chapter II, starting with tracing the development of higher education in Micronesia. The US Navy provided medical training programs on Guam before 1952 as the only form of post-secondary education. Micronesians had to travel abroad to receive post-secondary education other than medical related amid many difficulties. In 1952, the processes that would result in the creation of UoG as the first post-secondary institution in Micronesia was started. A review of the catalogs of the colleges in Micronesia indicated that all the six colleges have business studies programs which form significant components of their curricula.

Advances in technology have had a great impact on the way business is conducted. Several authors were cited to support the proliferation of computers and

information technology in every facet of the business world. The case of increased use of computers in Micronesia was noted by Ko et al. (1995). Related to the increase in the use of computers at the workplace is the training of students who would graduate to enter the workforce. It was observed that formal training in computer applications in Micronesia started in 1987 with the establishment of Western Pacific Educational Center (WPEC). An examination of the suggested plans of study of the business studies programs revealed that all six colleges required a completion of, at least, one computer applications course as at the time of writing.

The literature review indicated that business graduates in Micronesia are not adequately prepared, especially in the use of computers, to occupy positions in both public and private enterprises. At the same time, computer use for business operations in both the private and public sectors in Micronesia is on the rise. Furthermore, there is an acute shortage of personnel to support the use of the computers (Ko et al., 1995).

US business educators appear to have acknowledged the inadequacies in the existing business studies curriculum and there have been initiatives to incorporate computers into the curricula (see, for example, Delone & Biles, 1991; Lewis & Ducharme, 1990; McGee, 1991). The Accounting Education Change Commission (AECC), for example, has provided grants to some schools to revise their accounting curricula. There are also a number of schools that have started projects to revise their curricula on their own. The Northern Marianas College (NMC) and the University of Guam (UoG) conducted surveys of employers on Saipan and Guam to determine their

computer applications usage. The Guam Community College actively seeks the input of its Advisory Committee on the type computer courses to offer.

In the course of time, there have been numerous surveys to study the integration of computers into business courses in colleges around the United States. These studies have all been limited largely to the North American continent. The UCLA annual surveys and Bialaszewski et al.'s study involved only member institutions of the AACSB. Jeska and White's study looked at the 57 institutional members of Region IV of the NUCEA. The rest of the studies were limited to specific states, for example Alabama, Missouri, Oklahoma and Pennsylvania. Meanwhile, there is little information on the extent of integration of computers into the business studies curriculum of Micronesian Colleges. The purpose of this research, as stated earlier, was to examine the contents of computer applications courses in the business studies programs in the six post-secondary institutions serving Micronesia.

Content analysis, as a research method, was deemed appropriate for the examination of the contents of the computer applications courses in the Micronesian colleges. There are several types of the research design for content analysis research and also a number of variants of analysis methodology. On the basis of a literature review, the type of content analysis utilized in this study was the design to estimate some phenomena while the variant of content analysis adopted for this study was the conventional frequency count and qualitative identifications.

The first step in content analysis research is to establish the population of documents which contents are to be analyzed. Following that is the development of the

criteria to be used to measure the content items. The next step involves data collection - the actual content materials to be analyzed - and the final step is to do the analysis. The population and sample were the same as all six colleges in Micronesia were studied.

The variants of research design and method adopted for this content analysis research were based on the definition of Borg and Gall (cited in Stahl et al., 1988): "an objective, systematized examination of a particular document or [a] set of instructional materials to determine the quantitative and qualitative characteristics present" (p. 16).

The first step in developing the criteria was to identify the tasks to be performed after establishing some seven categories of computer applications in business. The identification of the tasks involved a review of literature to establish the seven categories (see, for example, Lowman & Mathie, 1993; Lucal, 1994; Pyrczak, 1990). The next step in the process was to consult text books and other reference materials to establish the objectives and content to be covered under each objective. Drafts of model course outlines were produced and circulated among a panel of reviewers. The panel provided its input and the final drafts of the models which were used as the criteria were determined.

The business studies programs offered at each of the colleges were examined and analyzed in an attempt to answer the research questions. Data were collected based on the following guidelines: unitizing, sampling, recording, analyzing, establishing validity, and determining reliability. One limitation of this study was specified that

considerable subjectivity was required in order to produce a synthesis on which to base the course objectives and content areas.

It was found in Chapter IV that the two-year colleges in Micronesia offered their business programs in a career-ladder fashion. This process dictated the number of computer applications courses a student would take. The type of business program being pursued by the student was also a factor in determining the number and kind of computer applications courses a student would take in the two-year colleges and at UoG as well.

None of the colleges offered courses in all seven identified categories; some offered courses in as few as two with the maximum being five. Some colleges submitted a full range of their course outlines while some course outlines could not be obtained from other colleges. For the course outlines obtained, some were as old as 1989 while others were quite current - 1995. The incidence of the tasks present, as compared with the model course outlines, ranged from 29% to 100% with no college coming out particularly strong.

Discussion

The categories and courses offered differed from college to college, therefore, the situation in each institution would be discussed separately.

College of Marshall Islands (CMI)

The CMI offered courses in four of the seven categories: Database Applications, Introduction to Computers, MIS, and Word Processing. No courses were offered in the other three, namely: AIS, Computerized Accounting, and Spreadsheet Applications. The only program of study at the Department of Business Studies of the CMI requiring the database applications courses for graduation was the AS in Business Studies with a specialization in Computer Science. While a knowledge of database applications may not be critical to the students specializing in accounting, management, and office administration, they could take them as electives. There are several advantages to be derived from a knowledge of database management skills. For example, many business applications software packages are becoming integrated, that is, a word processor, a spreadsheet program, a database application program, and a graphics/presentation program, all in one. Therefore, a knowledge in all these areas may prove to be useful somewhere along the line. Further, the dividing lines between when a project will use only word processing, or a spreadsheet, or a database management system are becoming increasingly fuzzy. To successfully function in most offices today, a background in all application programs is highly recommended.

Two courses fell under the category of Introduction to Computers which were required for all programs of study. The courses in this category were last updated in 1989. Seven years is a long period of time not to review the curriculum of a computer course. Computer technology has proven to be the most dynamic and volatile of all

technology. Course outlines were not available for courses identified in the catalog and determined to fall under the MIS and word processing categories.

The CMI does not offer courses in Spreadsheet Applications and Computerized Accounting. Other than word processing, spreadsheet applications and computerized accounting are probably the most widely used computer applications programs as every business must perform some accounting functions (Quarstein et al., 1994b).

College of Micronesia - FSM (CoM-FSM)

In the computerized accounting category, only 36 out of the 60 (60%) tasks suggested by the model course outline were present in the course outline obtained from CoM-FSM dealing with that category. This is inadequate in terms of the competencies needed to succeed at a job by a graduate from the program. The course in computerized accounting was a required course for only the AS in Accounting. In view of the fact that accounting has been computerized at the lowest level in many businesses, the CA in Accounting should have the course in computerized accounting as one of the required computer applications courses.

The other category offered by CoM-FSM was Introduction to Computers. Every program of study in the Department of Accounting and Business Studies required the students to take the two courses comprising the introduction to computers category. The courses were last updated in 1994, showing that the contents may be fairly current. The courses found under the introduction to computer category contained introductory concepts in word processing, spreadsheet applications and database applications. For

graduates of a two-year college with diplomas in accounting and business studies, the depth of knowledge, skills, and competencies derived from the introductory concepts are inadequate as CoM-FSM did not offer separate substantive courses in these application areas (Quarstein et al., 1994a).

Guam Community College (GCC)

There was one course offered which fell under the computerized accounting category. This course was offered for the first time in the Fall of 1995. With 34 out of the 60 (57%) recommended tasks present, the material covered is not likely to be adequate in providing the necessary skills for the student to succeed at work. There were many important tasks absent, for example, dealing with payroll, plant assets, and inventory.

The one course being offered by GCC under the database application category was last updated in 1989. In computer applications, seven years is a very long time for the contents of a course to remain the same. Newer releases and versions of applications software and operating systems and computer equipment are constantly changing the implementation of applications. Of the 47 tasks suggested by the model course outline, just about half (25 or 53%) were present in the course outline used to teach the course. There is the possibility that graduates from the program would be handicapped in database applications skills in this information age where speed and quality are the cornerstones of obtaining business information.

One course was offered under the spreadsheet application category. This course was last updated in 1989 and, therefore, outdated. The most popular spreadsheet applications software, Lotus 1-2-3, Excel and Quattro, have had several newer releases and versions since 1989 to the extent that they are very different programs from their 1989 versions.

Two courses were offered by GCC under the word processing category. The advent of the laser printer and desktop publishing software has changed the face of word processing. The presence of the laser printer has made it possible to produce documents on personal computers that were once only in the realm of the capabilities of web offset printing presses. Check books, brochures, and flyers are now being designed and produced in-house by many organizations. There certainly was a dire need to revise and update the course contents of the word processing courses at GCC.

Three computer applications courses were required for graduation in the two diplomas granted by GCC in office administration. The job functions of an office manager, or administrative assistant, or whatever the title may be, are very nebulous now. The person occupying the position may be engaged in tasks ranging from filing, typing, greeting clients, scheduling, report preparation, to bookkeeping. As a result, a knowledge of spreadsheet and database applications, in addition to office technology computer courses, may enhance the graduate's marketability and performance at the workplace.

Northern Marianas College (NMC)

As a result of the renewal of its accreditation by the WASC in 1996, NMC revised and updated all its course guides in 1995 to include the latest developments in computer applications in business. NMC offered courses under five of the categories being analyzed for content. In the computerized accounting category, one course was offered. The number of tasks present compared with the model course outline were 56 out of 60 (93%). Essentially, the major components of the course contents as suggested by the model course outline were covered. The implication of this situation was that if a student took this course and obtained a satisfactory grade in it, the student would largely succeed at the workplace.

Two courses were offered under the database application category. To adequately cover the contents of this category, both courses must be taken by the student. The model course outline recommended 47 tasks to be covered in the course content. The two courses offered by NMC combined to present 39 (83%) of those tasks. If a student took courses to acquire competencies in 83% of the tasks, there is the likelihood that the student would perform adequately at the workplace. However, for two courses taken over two semesters, NMC could do better in the coverage of the course contents of its database application courses.

Unlike the CMI, CoM-FSM, and GCC, NMC did not have many of the tasks and competencies covered in its introduction to computers category. Of the 18 major content areas suggested by the model course outline, only 12 (67%) were presented in the only course offered under that category. What this meant was that students in

business studies programs which required only CS 103 - Introduction to Computers - for graduation (see chapter IV) might have to work extra hard at learning on the job to enhance their computer skills.

NMC offered one course under the spreadsheet applications category. The model course outline recommended 43 competencies to be acquired for successful operation in the work world. NMC's course guide presented 39 (91%) of them. It was hoped that a student who took the spreadsheet applications course at NMC and passed with a satisfactory grade would be able to manipulate a spreadsheet software with a reasonable level of dexterity.

The word processing category was covered with two courses. This was an area that needed a major revision because only 49 (64%) out of the 76 competency areas were presented by the two courses combined. The courses in this category were used to satisfy part of the requirements for graduation in four diplomas. With the present number of content areas covered, the word processing competencies of graduates who studied those courses may be below expectation.

Like the case of GCC, NMC offered three diplomas in office technology administration. The computer applications courses required in all three were the ones falling under the introduction to computer and word processing categories. With the nebulous nature of the work of the office manager or the like, a little more competency in spreadsheet and database applications beyond that offered by the introduction to computers category would be advantageous to the students.

Palau Community College (PCC)

The general catalog and individual degree programs of PCC indicated that the School of Business offered courses under five of the categories of the content analysis research. However, course guides were obtained in courses under only two of the categories. There was an indication that two courses were being offered under the computerized accounting category but the researcher was not able to obtain the course guides nor outlines for the courses. It was hoped that this was not one of the situations where instructors assigned to teach the courses taught what they knew and were comfortable with.

There was an indication that some database applications concepts were being covered under called Microcomputer Applications (CS 212). In many colleges, database applications concepts and skills are taught in one- or two-semester courses and even then, not all the concepts were adequately covered. To expect to cover enough content areas for students to acquire a reasonable level of competency in database applications in a course that combined the coverage of spreadsheet applications also in one semester was not realistic. Since a course guide or course outline could not be obtained, the incidence of the coverage of the content areas could not be determined. As was always the case in many instances, usually the absence of a course guide meant the instructor assigned to teach the course would teach what s/he knew.

PCC offered one course under the introduction to computers category. The course was last updated in 1990, that was, six years ago. Only 10 (56%) of the recommended content areas in the model course outline were present in CS 100 -

Computer Literacy. With such under coverage of the necessary skill areas, students taking only this course and graduating would virtually have to be retrained in computer applications.

The spreadsheet category was covered under the same course offered as the database applications category. Spreadsheet applications courses were taught in a minimum of one full semester in many colleges. Combining spreadsheet and database applications in one course and teaching them over only one semester would leave many skill areas not covered or skimmed, at best. No course guide or outline was obtained so the incidence of coverage of the content areas suggested by the model course outline could not be determined.

The word processing category was covered under two courses. The courses were updated very recently, in 1995, but they combined to present only 22 (29%) of the 76 tasks recommended by the model course outline. This inadequate coverage of the suggested skill areas could cause competency problems for graduating students who would have supposedly completed courses in word processing.

University of Guam (UoG)

There were four categories in which UoG offered computer applications in business courses. The categories were Accounting information Systems (AIS), Database Applications, Introduction to Computers and Management Information Systems (MIS). The AIS category was covered under one course which was taught for the first time in fall semester of 1995 by the professor who supplied the course outline.

Apparently, there was no course guide or course outline in existence when he was assigned the course so he had to develop one from scratch. During communication between him and the researcher, he specifically mentioned that the outline he submitted was far from complete but that was what he had at the time. If this state of affairs was typical at UoG, then it needed to be corrected because, while professors' judgement could be trusted in teaching relevant material, there is still need for guidelines as to what has to be covered in what course.

The general catalog, graduate bulletin, and individual degree plans of UoG indicated that there were courses offered that fell under the other three categories but the course outlines were just descriptions of the mode of instruction instead of describing course contents. For example, the course content sub-topic of one of the course syllabi said:

> Course Content
>
> The course is taught with a mixture of lectures, discussions, and labs. Demonstrations of the software using the projection panel and overhead projector will be provided in the lab. Exercises will be demonstrated in this way and then assigned to the students as hands-on exercises during class time. Students will be able to build a competency in [dBASE] in our lab with direct supervision (assistance). I think you will be pleasantly surprised that most of our hands on exercises will be interesting and enjoyable. (Course Syllabus of MG 301 - Applied Database Management, p. 1)

In situations like this, the table of contents of the recommended textbook becomes the course outline in many instances and sometimes portions of textbooks may contain irrelevant material. At other times, the contents of the textbook may be inadequate and may have to be supplemented by information from other sources.

For a four-year college offering a business studies degree in accounting, it was expected that there would be courses in computerized accounting and spreadsheet applications. The only encounter with spreadsheet applications by students was during the introductory computer course. The spreadsheet applications concepts covered in an introductory computer course cannot be adequate to provide the skills needed by an accounting graduate to succeed in the workplace (Quarstein et al., 1994b).

UoG may also need to review and revise the MIS component of its MBA program in view of the increase in the incidence of the use of computers in business. Quarstein et al. (1994a; 1994b) investigated the possibility that the skills and knowledge of graduates being produced by some MBA programs are ill-fitted to compete in today's market. In their conclusion, they indicated that: "Results suggest that one MIS course is insufficient to provide MBAs with skills and knowledge needed to compete in the market ..." (1994b, p. 204). UoG had only one MIS course in its MBA program and could take a cue from the observation of Quarstein et al.

General Observations

Chapter IV outlined the computer applications courses offered by each of the six Micronesian colleges in their business programs. Conspicuously absent in all the colleges were course contents dealing with remote computing in general, and specifically the Internet and the use of the computer as communication tool. So far, UoG is the only institution with an Internet node but since its course outlines were so sketchy, it could not be determined whether concepts on remote computing were components of these courses.

As was presented in Chapters I and II, the island political entities of Micronesia have one form of relationship or another with the US. As a result, there is a tremendous amount of contact and communication between Micronesia and the US. The Internet, with all its proven speed and minimal cost has been the way to go. Guam has Kuentos, IT&E, and Sprint (commercial Internet services providers) in addition to the UoG node. Saipan has three commercial Internet services providers, two of them being local long-distance telephone companies. The other Micronesian island-nations were in the process of developing Internet links at the time of writing.

On the islands of Micronesia where there are Internet services, the use of the system had surged dramatically. In March 1995, for example, there were about 50 subscribers to the only Internet service on Saipan at the time. Exactly one year later, in March 1996, the number had risen to 1,050 subscribers, with a significant percentage being local businesses. This situation puts a demand on the colleges to incorporate

Internet concepts in their programs of study, if their business studies curricular are going to be forward-looking.

Another area of computer applications not found in the business programs of all the colleges was networking concepts. Wide area networks (WANs) and local area networks (LANs) have almost become standard features of organizations with more than one location and several microcomputers. Therefore, anyone hoping to work in an average business today should be able to operate successfully in a computer network environment.

Related to the issue of Microcomputer network is remote accessing of minicomputers and mainframes. The use of such types of computers is not widespread as the sizes of local businesses in Micronesia do not warrant such. Therefore, the schools could be excused for not offering courses involving the use of minicomputers and mainframes. However, with the gradual acquisition of IBM AS 400s by mid-size organizations, a forward-looking school might want to start looking into the possibilities of courses on minicomputer applications.

The third area of computer applications that was not found in the business studies curricula of all the Micronesian colleges was presentation/graphics and desktop publishing involving software such as Harvard Graphics and PageMaker. The power and versatility of modern microcomputers and laser printers has permitted many organizations to produce their brochures in-house. Presentations to Boards of Directors, stockholders, and other gatherings have never been more fanciful with software like Microsoft Power Point and instruments like the overhead projection panel

interfacing with a computer. For a graduate in business studies, skills in presentation/graphics would be useful skills to have. Therefore, it might be useful if Micronesian colleges included graphics applications in their computer applications courses in their business studies programs.

Conclusions

Based on the findings in Chapter IV, the following conclusions are drawn from this content analysis research regarding business studies programs in Micronesian colleges:

1. Business studies graduates from Micronesian colleges are likely to lack the necessary computer applications skills needed to succeed at work.
2. There is a lack of uniformity and/or standardization among the course contents of the colleges offering programs and courses of the same kind in Micronesia.
3. Students from Micronesian colleges may have trouble transferring credits to other colleges.
4. There is the need for major revisions of the computer applications curricula of the business studies programs in Micronesian colleges.
5. The model used by this researcher was used by Holsti (1969), Krippendorff (1980), and North et al. (1963) and could be used as prototype for the analysis of the course contents of other areas of studies in Micronesia.

6. Without course outlines in some of the courses, the perception of the instructor determines what is to be taught.

Based on the researcher's experience as a computer applications in business instructor, teaching regular college and short-term training courses and also as a consultant to local businesses on the implementation of business software packages, and as was developed in Chapter IV, it is estimated that when a course outline shows an incidence of 85% or more of the tasks and competencies recommended by the model course outline, students who take the course and pass should have adequate skills to succeed at work. When the rate of coverage is between 70% and 84%, it is expected that the student who successfully completes the course would be minimally successful. Several course outlines showed rates of coverage below 70%. Therefore, there is a high probability that business studies graduates of these programs in Micronesian could lack the necessary computer applications skills to succeed at work.

As was mentioned in Chapter II of this dissertation, employers are complaining about the inadequacy of needed computer skills of entry-level workers (Ijiri, 1983; Petersen & Grimlund, 1983; Ijiri & Kriebel, 1985; Dillaway & Savage, 1988; Main, 1988; Pillsbury, 1992; Wyer, 1993; Hudelson, 1995; Inside AVA, 1995; Ko et al., 1995). As a result, many firms have had to increase the provision of remedial training for new and veteran employees. Joyce and Voytek (1996) indicated that various surveys showed dramatic increases in the percentages of the number of companies offering remedial training to their employees and the amounts of money spent in such training. At the end, it was the economy which suffered. On the mainland, it was

estimated that poor schooling cost the economy nearly $60 billion per year; $30 billion a year on remedial education and $25 billion to $30 billion in lost productivity. Jaffe (1992) reported that surveys were conducted to put the estimate of loss in GDP at $17.4 billion due to employees futzing with computers as a result of inadequate training.

The situation in Micronesia followed the trend on mainland USA as observed by Denning (1992) and Peevers (1990) in Chapter II. For example, accounting programs were being offered without computerized accounting and spreadsheet applications being part of the component courses. It appears that the conclusion (Ijiri, 1983; Petersen & Grimlund, 1983; Ijiri & Kriebel, 1985; Dillaway & Savage, 1988; Main, 1988; Pillsbury, 1992; Wyer, 1993; Hudelson, 1995; Inside AVA, 1995; Ko et al., 1995) that business education graduates lack the training needed to use the computer effectively applies to Micronesia.

The catalogs and individual degree plans of the five two-year colleges suggested that they were all offering many similar programs and courses. However, from the summary of findings table (Table 7) in Chapter IV, it was evident that there was no standardization or uniformity between the course contents of course which appeared to be similar by their course descriptions in their respective catalogs.

In Micronesia, only one of the colleges, UoG, is a four-year institution. While many of the diplomas offered by the two-year colleges, were deemed to be terminal, there were a few that were designed for transfer to other four-year institutions, for example, the Pre-Business program at NMC. If there is a chance that students might

want to engage in further education upon leaving their institution in Micronesia, the low rate of coverage of the tasks and competencies in the course outline could pose a problem for them in future when transferring credits to other institutions, especially on mainland USA.

There is the need for a major revision of the curriculum of the business programs in Micronesian colleges to bring them in tune with the skill requirements of the workplace of today. Computer applications courses must feature prominently in the resulting program component courses with up-to-date tasks and competencies. This will be necessary for the computer applications courses to be responsive to the skills required in the workplace. For example, Joyce and Voytek (1996) reported that the percentage of workers using computers in their jobs doubled in just nine years, changing from about 25 percent in 1984 to about 50 percent in 1993. They also indicated that workers using computers on the job earned 10 to 15 percent more than their counterparts in the same job and with similar levels of education who did not use computers.

Holsti (1969), Krippendorff (1980), and North et al. (1963) and several other researchers have used content analysis as a research method. The model was successfully applied to the contents of the computer applications courses in Micronesian colleges. Therefore, it could be used as prototype for the analysis of the course contents of other areas of studies.

The findings presented in the tables in Chapter IV revealed that there were situations in which some of the colleges did not have course outlines for some courses.

Without course outlines, the perception of the instructor determines what is to be taught. In situations like this, the table of contents of the recommended textbook becomes the course outline in many instances and sometimes portions of textbooks may contain irrelevant material. At other times, the contents of the textbook may be inadequate and may have to be supplemented by information from other sources.

Recommendations

On the basis of the content analysis research, the following recommendations were offered for ways to improve the contents of the curricula of the various computer applications courses in Micronesian colleges.

1. There should be a major revision of the present curriculum of the business studies programs in Micronesian colleges to reflect the present trend of computer technology.
2. Standards and/or some uniformity should be built into the programs and courses offered by the various colleges.
3. The course contents of the computer applications in business courses should be revised and updated regularly to reflect the trends in computer technology, for example, every two years.
4. If revisions to the curriculum and course contents should take place within the next year or two, the tasks and competencies provided in the model course outlines (which served as the criteria for the analysis) may be used for the categories of courses analyzed in this research.

5. Instructors should be encouraged to develop and maintain course outlines in those courses which did not have course outlines. For the courses which did, the contents must be made explicitly clear.

Implications of the Recommendations for Practice

If the recommendations above are implemented, there are some implications for practice to be considered. For example, revisions of the curriculum and/or the course guides may entail the assessment of end-user computer training needs. Educational institutions providing training programs leading to vocational and quasi-professional skills in business which entail the extensive use of computers should make their programs responsive to the needs of employers by using training needs assessment.

Another implication of curriculum revision would be the need to evaluate the effectiveness of the curriculum form time to time to make the computer applications courses in business studies dynamic (Bice & McCharen, 1995; SPC, 1973). Scriven (1967) introduced the terms "formative" and "summative" in his classic work on the objective and processes of instructional evaluation. Formative evaluation seeks to identify aspects of instruction that can be improved. A typical implementation would be having students provide feedback during the course and at the end of each semester on the nature of the learning experience. The observations and comments from students (especially those who are using the skills they have acquired at work) are tightly coupled to a specific instructional feature, facilitating the identification of

problems and reasoning about solutions (Bice & McCharen, 1995; Carroll & Rosson, 1995).

Summative evaluation seeks to gauge the effectiveness and the efficiency of the performance of students who completed courses in computer applications at the workplace. A typical implementation would be to obtain feedback from employers and/or supervisors of past students. This is usually called follow-up. Training must always be evaluated with respect to both its immediate and long-term impacts. For Micronesian students, immediate impact may mean how well they have learned the concepts and the skills. The long-term impact may be performance at work while at school or upon graduation or success at four-year colleges for further education.

Developing or revising curriculum to be responsive to the needs of employers would also imply close collaboration with the employers concerned. In the past, business and industry involvement in education meant that educational institutions had needs they wanted the private sector to fill with money. Over the years, many businesses have contributed millions in cash, materials, and time to educational institutions. While those donations were important and beneficial, businesses tended not to get directly involved in course content. The dynamics of the education-business partnership is changing and the private sector will no longer contribute to institutions and programs they view as ineffective. Instead, they want to be equal partners in the planning of the curricula and related activities that will prepare their future workforce. In short, business and industry want to help define outcomes (Bice & McCharen, 1995; Cortina, 1995).

A further implication of the revision of the curriculum of computer applications courses in business studies is that computers may have to be integrated into the other subject area courses in business. This could help business students to learn to use the computer in a variety of settings. In the researcher's experience as an instructor in the business studies department of one of the colleges in Micronesia, it appears that most subject-matter instructors, for example, have not yet learned how spreadsheets relate to business mathematics and finance, or on-line business databases to economics. This disposition is supported by Becker (1993) in several studies he has conducted on mainland USA over a period of ten years involving the use of microcomputers in US schools. In his recommendations, Becker advised that: "For computer education to avoid becoming simply another isolated set of skills and procedures to be mastered, a major effort in curriculum upgrading must occur within the academic disciplines, as they are practiced in typical school settings" (p. 72). This advice cannot be overemphasized for business-related courses in Micronesian colleges.

Suggestions for Further Research

On the basis of the foregoing, the researcher would like to suggest further research towards:

1. Establishing robust course contents that would be responsive to end-user computing needs. This may entail reordering the elements of the contents of the courses in the programs of study. How the reordering may be done needs a careful and a sound process.

2. Replicating the model used for this analysis in order subject areas in business studies, in particular, and other departments in the colleges in general throughout Micronesia.

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APPENDIXES

APPENDIX A

IRB PERMISSION

OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD
HUMAN SUBJECTS REVIEW

Date: 08-06-96 **IRB#: ED-97-005**

Proposal Title: A CONTENT ANALYSIS OF THE COMPUTER APPLICATIONS COURSES IN BUSINESS STUDIES PROGRAMS IN MICRONESIAN COLLEGES

Principal Investigator(s): Connie Anderson, S.O. Agyei-Mensah

Reviewed and Processed as: Exempt

Approval Status Recommended by Reviewer(s): Approved

ALL APPROVALS MAY BE SUBJECT TO REVIEW BY FULL INSTITUTIONAL REVIEW BOARD AT NEXT MEETING, AS WELL AS ARE SUBJECT TO MONITORING AT ANY TIME DURING THE APPROVAL PERIOD.
APPROVAL STATUS PERIOD VALID FOR ONE CALENDAR YEAR AFTER WHICH A CONTINUATION OR RENEWAL REQUEST IS REQUIRED TO BE SUBMITTED FOR BOARD APPROVAL.
ANY MODIFICATIONS TO APPROVED PROJECT MUST ALSO BE SUBMITTED FOR APPROVAL.

Comments, Modifications/Conditions for Approval or Reasons for Deferral or Disapproval are as follows:

Signature: _____ Date: August 9, 1996
Chair of Institutional Review Board

APPENDIX B

PANEL OF REVIEWERS

Mr. William (Bill) Bezzant, Systems Supervisor, US District Court, Saipan, CNMI.

Mr. Bezzant is the Computer Systems Administrator for the U.S. District Court of the Commonwealth of the Northern Mariana Islands (CNMI). He created the first Internet service provider in the CNMI, Saipan DataCom, and still serves as one of its board members and a consultant. Bill completed undergraduate studies in Accounting and Economics, and has lived in the Marshall Islands and Saipan for 15 years. Thirteen years ago, Bill saw an Apple II computer keeping a set of accounting ledgers in "balance" and has been deeply involved in the study, use, and programming of computers ever since, in business, government, and on-line communications.

Ms. Libby Carpenter, Human Resources Administrator, Micronesian Telecommunications Corporation (MTC), Saipan, CNMI.

As the Administrator for Human Resources, Ms. Carpenter is involved in the recruitment of all the personnel of MTC. Since MTC is a telecommunications corporation, there is a heavy incidence on the recruitment of persons with a wide background of computer knowledge; from people with basic skills necessary to use a computer on the job, to positions such as systems engineers and systems administrators, which require more complex computer skills.

Mr. Vince Castro, Data Systems Analyst, Commonwealth Utilities Corporation, Saipan, CNMI.

Vince Castro has been involved in various projects using IBM personal computers and AS/400s mid-frames for over six years between the Commonwealth Utilities Corporation and the Division of Public Lands. He is an avid user of AutoCadd and Distribution Primary Analysis/Graphics (DPAG), and is well versed in most popular word processing and spreadsheet software. Vince designed and implemented customized applications for power line inventory and certain payroll functions using dBASE and FoxPro. Vince is currently with the Division of Public Lands where he is implementing a client/server network for use with an off-the-shelf accounting package.

Mr. Ferdie Cenon, EDP Manager, Tan Holdings Corporation, Saipan, CNMI.

Mr. Cenon received his training in computer science in the Republic of Philippines. He worked in a variety of computer-related fields in the Philippines before joining Tan Holdings Corporation on Saipan as Electronic Data Processing Manager. While on Saipan, Mr. Cenon actively organized computer professionals in the CNMI. His efforts resulted in the formation of the Northern Marianas Computer Society (NMCS) of which he became the first President. During his tenure as

President of the NMCS, Saipan witnessed its first computer fair. As a service to the community, Mr. Cenon helped establish and run a free local Bulletin Board System for short period of time.

Professor Dorothy F. Cruz, Chair, Department of Computer Science, Guam Community College, Guam.

> Prof. Cruz started programming on IBM mainframes in FORTRAN, COBOL, PL/1, BASIC, SNOBOL, ALGOL, LISP, and Assembler language twenty-five years ago. She has also programmed on IBM microcomputers in Pascal and C. Prof. Cruz was employed at the University of Guam (UoG) as an Instructor/Computer Center Coordinator and Assistant Professor. Assistant Professor, Associate Professor, and Professor are the positions she has held at the Guam Community College (GCC). She has also served as Computer Science Department Chairperson for one year at UoG and for nine years at GCC. Other functions she has performed include serving as Member/Secretary of the Computer Science Advisory Committee, Member/Secretary of the Academic Affairs Committee, and Member of the Curriculum Review Committee all at GCC. Prof. Cruz has written scope and sequences and course guides in the Competency Based Education format for the Computer Science Department and has successfully written Vocational Education Act grant proposals to upgrade the Department's computer system. She has edited over 100 course guides in all areas of specialty at GCC. A course guide which she created using the IPSI software has been recently approved. She has presented workshops on the Electronic Gradebook, Curriculum Production, College Governance and Academic Planning, and Integration of Academic and Vocational Education. Prof. Cruz is currently teaching high school and postsecondary computer science courses at GCC. Her degrees include a B.A. in Mathematics/Secondary Education from the University of Guam and an M.S. in Information and Computer Sciences from the University of Hawaii. Five years ago, while on Sabbatical Leave, she earned 50 credits from the Central Texas College in Microcomputer Technology (Programmer/Analyst and Information Management options). She has also earned 15 credits from GCC and three credits from UoG. In 1996, she was nominated for Who's Who Among America's Teachers.

Dr. Fred Hill, Instructor/Computer Lab Supervisor, Northern Marianas College, Saipan, CNMI.

> Dr. Hill started programming on IBM mainframes in FORTRAN and SNOBOL more than 20 years ago. Since then, he has been involved with minicomputers and microcomputers at a number of companies and government agencies, including C3, Inc., Tariff Resources, Inc., and BDM International, the U.S. Coast Guard, and the Federal Aviation Administration. Dr. Hill has designed and built special purpose internal peripherals for various computer systems, participated in modifying the kernels of various microcomputer and minicomputer operating systems including

Stratus Computer's VOS and Convergent Technologies' CTOS. He has written high-speed, real-time device drivers for the Stratus Cloud series of computers including interrupt handlers and interrupt service routines. Dr. Hill has also ported subroutines from the EISPACK software package to Pascal to run on IBM PC platforms and written software to simulate the MUSIC multiple signal direction finding algorithm. Dr. Hill is fluent in 680x0 and 80x86 assembler languages, and in C/C++, Pascal, Fortran, PL/1, and PLM-86 high level languages. Dr. Hill is currently teaching courses in computer applications including programming languages at the Northern Marianas College. Dr. Hill's degrees include an A.O.S in Electronic Technology from RCA Institutes in New York, NY, and the BSEE, MSEE and D.Sc. in Communications Theory, all from George Washington University in Washington, DC.

Ms. Bernie Sablan, Instructor, Northern Marianas College, Saipan, CNMI.

Ms. Sablan received her degree in Office Technology Administration from Chico State University, Chico, California. She is currently teaching word processing courses in both the IBM and Macintosh computers at Northern Marianas College. She has taught Microsoft word and WordPerfect programs since 1992. In addition to teaching word processing courses, she is also teaching college keyboarding, alphabetic superwrite, machine transcription, beginning and advanced office technology administration courses. She has also done computer, telephone techniques, and customer service training for some of the private businesses on Saipan. Ms. Sablan also attended workshops in computer applications sponsored by the National Business Education Association.

APPENDIX C

ANALYSIS TABLES

Accounting Information Systems

	CMI	CoM	GCC	NMC	PCC	UoG
Number of credits						3
Number of semesters course taught						1
Diploma course used to satisfy a) Prerequisite for other courses b) Certificate of Completion c) Certificate of Achievement d) Associate's degree e) Bachelor's degree f) Master's degree						 X
Year of last update*						N
Introduction of AIS a) An overview of AIS as a concept; b) AIS and business organizations; c) The production of accounting information; d) The accountant and systems work.						
Elements of double-entry accounting a) Accounting and data processing; b) Elements of double-entry systems; c) Fundamental double-entry processing alternatives; d) Designing double-entry systems.						
Data processing considerations in accounting systems a) An overview of computer/automated data processing procedures; b) Coding systems and data for computer data processing; c) Organization and operation of hardware units; d) Form design and records retention considerations.						
Organizing data for computer processing a) Elements of file organization; b) File organization techniques; c) Data management concepts.						 X X X
Accounting procedures and controls in a computer environment a) Computer batch processing of accounting applications; b) Control of computer processing.						 X X
Software systems a) A hierarchy of software systems; b) Programming concepts in higher-level languages; c) Spreadsheet applications; d) Database languages.						 X X X X

Systems concepts and techniques a) Systems concepts; b) Systems theory: a design criteria for AIS; c) Systems techniques.						X X X
Internal control considerations in AIS a) The significance of internal control; b) Elements of internal control systems; c) Analysis of internal control systems; d) Human factors in internal control systems.						X X X
Revenue and expenditure cycle applications a) Internal control considerations; b) Revenue cycle applications; c) Expenditure cycle applications; d) A batch processing sales order application; e) An on-line expenditure cycle application.						
Production and finance cycle applications a) Production cycle applications; b) Production control applications; c) Finance cycle applications; d) An on-line cash receipts application; e) A Point-of-Sale AIS						
Minicomputers and distributive processing considerations a) Centralization of computing resources; b) Minicomputers: definitions and characteristics; c) Distributive data processing; d) Small-business computer technology.						
The development of computer-based AIS a) Computer processing alternatives; b) An overview of the computer acquisition process; c) Audit and control considerations in the system development process; d) Computers, organizations, and people.						
Value of information and project scheduling considerations a) The value and relevance of information in decision making; b) Scheduling techniques.						

Electronic commerce a) Internet; b) Electronic data interchange (EDI); c) Electronic funds transfer; d) Network security, firewalls, and encryption.						
Class projects a) Case studies: Analyzing and critiquing an organizations' AISs; b) Field trips to nearby organizations to study their AISs; c) Designing an AIS for an imaginary organization.						X X
Number of tasks present						18 of 55
Percentage of tasks present						33

* 8 = 1988; 9 = 1989; 0 = 1990; 1 = 1991; 2 = 1992; 3 = 1993; 4 = 1994; 5 = 1995; 6 = 1996; N = Not given.

Computerized Accounting

	CMI	CoM	GCC	NMC	PCC	UoG
Number of credits		3	3	3	6	
Number of semesters course taught		1	1	1	2	
Diploma course used to satisfy						
a) Prerequisite for other courses						
b) Certificate of Completion						
c) Certificate of Achievement					X	
d) Associate's degree		X	X	X	X	
e) Bachelor's degree						
f) Master's degree						
Year of last update*		N	5	5	N	
Type software used						
a) Peachtree		X				
b) AccPak						
c) Accountant Inc.						
d) Quicken		X				
e) Other**			C	G		
Getting started with the software program						
a) Performing startup procedures;		X	X	X		
b) Properly exiting the program;		X	X	X		
c) Understanding default settings;						
d) Learning the on-line help facility.				X		
Introduction to computerized accounting						
a) Differentiating between manual and computerized accounting systems;				X		
b) Describing the features of the accounting program;		X	X	X		
c) Learning data entry basics.		X	X			
Exploring the accounting system						
a) Navigating the menu systems;		X	X	X		
b) Using input forms;		X	X	X		
c) Setting up chart of accounts;		X	X	X		
d) Setting up customer accounts;		X	X	X		
e) Setting up vendor accounts.		X	X	X		
Recording transactions in the general journal						
a) Making journal entries;						
b) Posting journal entries to the general ledger;		X	X	X		
c) Extracting the trial balance;		X	X	X		
d) Preparing financial statements.		X	X	X		
		X	X	x		

Recording transactions in the sales and cash receipt journals						
a) Making entries in sales journal;		X	X	X		
b) Making entries in the cash receipt journal;		X	X	X		
c) Posting the journal entries to the ledger;		X	X	X		
d) Preparing accounts receivable reports.		X	X	X		
Recording transactions in the purchases and cash payments journals						
a) Making entries in the purchases journal;		X	X	X		
b) Making entries in the cash payments journal;		X	X	X		
c) Posting journal entries to the ledger;						
d) Preparing accounts payable reports.		X	X	X		
		X	X	X		
Completing the accounting cycle						
a) Performing adjusting entries;		X	X	X		
b) Recording adjusting entries in the general journal;		X	X	X		
c) Generating financial statements;		X	X	X		
d) Effecting the closing process.		X	X	X		
Transactions and financial statements of partnerships						
a) Entries in the capital accounts;			X	X		
b) Sharing profits/losses among partners.			X	X		
Transactions and financial statements of corporations						
a) Recording capital stock transactions;						
b) Performing adjusting entries;			X	X		
c) Preparing financial statements.			X	X		
			X	X		
Recording payroll						
a) Recording payroll information;				X		
b) Creating/editing tax tables/formulas;						
c) Displaying payroll checks;				X		
d) Posting the payroll;				X		
e) Paying the payroll tax liabilities;				X		
f) Using graph;				X		
g) Generating the payroll register.				X		
				X		
Financial statement analyses						
a) Performing statement analyses;		X	X	X		
b) Conducting what-if analyses.		X	X	X		

Using the inventory system a) Preparing the input forms; b) Making entries in the inventory system; c) Preparing inventory reports; d) Effecting merchandise inventory adjustment.		X X X X		X X X X		
Using the plant assets system a) Maintaining a plant assets register; b) Using the plant asset register; c) Generating plant asset reports; d) Comparing depreciation methods. e) Performing depreciation adjustment;		X X X X X		X X X X X		
Job costing a) Tracing material costs to specific jobs; b) Tracing labor costs to specific jobs; c) Allocating overheads to jobs.				 X X X		
Special considerations a) Preparing bank reconciliation statements; b) Exporting to and importing from other application programs c) Performing budget analyses; d) Preparing income tax on the computer.			 X X	 X X X		
Class projects a) Field trips to nearby organizations to study their computerized accounting systems; b) Setting up a computerized accounting system for an imaginary organization.			 X			
Number of tasks present		36 of 60	34 of 60	56 of 60	? of 60	
Percentage of tasks present		60	57	93	?	

* 8 = 1988; 9 = 1989; 0 = 1990; 1 = 1991; 2 = 1992; 3 = 1993; 4 = 1994; 5 = 1995; 6 = 1996; N = Not given. ** G = Glencoe Computerized Accounting; C = Custom made.

Database Applications

	CMI	CoM	GCC	NMC	PCC	UoG
Number of credits	6		3	6	3	3
Number of semesters course taught	2		1	2	1	1
Diploma course used to satisfy						
a) Prerequisite for other courses						
b) Certificate of Completion						
c) Certificate of Achievement			X		X	
d) Associate's degree	X		X	X	X	
e) Bachelor's degree						X
f) Master's degree						
Year of last update*	4		9	5	N	N
Type of software used						
a) dBASE	X		X	X	X	
b) Paradox						
c) FoxBase/FoxPro						
d) Other						
Getting started with the software program						
a) Performing startup procedures;						
b) Properly exiting the program;	X		X	X		
c) Understanding default settings;	X		X	X		
d) Recognizing the status line;	X					
e) Learning the on-line help facility.						
Theoretical underpinnings of database management;						
a) Outlining the background of database management;	X		X	X		
b) Listing the advantages and disadvantages of database processing;	X					
c) Using data models;	X		X	X		
d) Developing a database design;	X			X		
e) Describing the functions of a database management system;	X			X		
f) Providing a framework for database administration.	X			X		
Planning a database file						
a) Identifying the categories of information for the database file;	X		X	X		
b) The role and importance of data dictionary;	X			X		
c) Consistency;	X			X		
d) Integrity of the database file.	X			X		
Designing a database file						
a) Defining the database structure;	X		X	X		
b) Creating the database file;	X		X	X		
c) Naming the database file;	X		X	X		
d) Saving the database file.	X		X	X		

Entering records in a database file						
a) Recalling the database file;	X		X	X		
b) Entering records in the file;	X		X	X		
c) Viewing the records in the file;	X		X	X		
d) Printing the file.	X		X	X		
Making changes in the database file						
a) Updating/editing records;	X		X	X		
b) Deleting records;	X		X	X		
c) Adding records.	X		X	X		
d) Modifying the database structure;	X		X	X		
Organizing a database file;						
a) Locating records in the file;	X		X	X		
b) Arranging/sorting the file;	X		X	X		
c) Searching the file for specific records;	X		X	X		
d) Using indexes, views and relations.	X		X	X		
Creating and printing reports						
a) Preparing custom reports;			X	X		
b) Changing report formats;			X	X		
c) Preparing reports while performing calculations with data;	X		X	X		
d) Preparing labels.			X	X		
Creating custom screen input forms						
a) Designing a custom data entry form;						
b) Preparing forms for updating/editing records;				X		
c) Creating a menu.	X			X		
Manipulating the database with routines/programs						
a) Designing a program for the database;	X			X		
b) Describing a structured approach to writing programs;	X			X		
c) Writing interactive programs;	X			X		
d) Using program flow commands;	X			X		
e) Changing the working environment of a program.	X			X		
Applications generator						
a) Creating database files and forms;						
b) Setting application colors;						
c) Using automatic applications generator;						
d) Using advanced applications generator.						
Number of tasks present	36 of 47		25 of 47	39 of 47	? of 47	? of 47
Percentage of tasks present	77		53	83	?	?

* 8 = 1988; 9 = 1989; 0 = 1990; 1 = 1991; 2 = 1992; 3 = 1993; 4 = 1994; 5 = 1995; 6 = 1996; N = Not given.

Introduction to Computers

	CMI	CoM	GCC	NMC	PCC	UoG
Number of credits	6	6	6	3	3	6
Number of semesters course taught	2	2	2	1	1	2
Diploma course used to satisfy						
a) Prerequisite for other courses			X	X		
b) Certificate of Completion				X		
c) Certificate of Achievement	X	X	X	X	X	
d) Associate's degree	X	X	X	X	X	
e) Bachelor's degree						X
f) Master's degree						
Year of last update*	9	4	4	5	0	N
Type of software used						
- Wordprocessing:						
a) WordPerfect			X	X		X
b) MS Word		X		X		
c) Other - MS Works	X					
- Spreadsheet:						
a) Lotus 1-2-3			X	X		X
b) Excel		X		X		
c) Other - MS Works	X					
- Database applications:						
a) dBASE			X	X		X
b) Paradox						
c) FoxBase/FoxPro						
d) MS Access		X				
e) Other - MS Works	X					
- Programming:						
a) BASIC				X		
b) Pascal						
c) Other						
Computer history						
a) Identifies early calculating devices, their features, functions, and approximate dates of introduction;						
b) Identifies generations of computers, their differences, names of specific computers and approximate dates of introduction;	X	X	X			
c) Identifies names of inventors who contributed to the development of modern computers; identifies their contributions, approximate dates and countries of origin.	X	X	X			
			X			

How computers work a) Identifies functions of individual pieces of hardware in a computer system, including their roles in input, processing, and output; b) Identifies functions of major components inside a computer, including the role of the binary number system and software.	X X	X X	X X	X X		
General procedures for using computers and related equipment a) Identifies correct start-up and shut-down procedures; b) Identifies procedures for handling and storage of disks; c) Identifies the meaning of symbols on the keyboard and functions of special purpose keys; d) Identifies simple system commands.	X X X X	X X X X	X X X X	X X X X	X X X X	
Computers applications a) Identifies the purpose and characteristics of major types of software as well as specific applications in business; b) Identifies problems that are appropriate and inappropriate for solution by computer as well as advantages and disadvantages of using computers.	X X	X X	X X	X X	X X	
Knowledge of programming languages a) Identifies the characteristics of popular programming languages and the distinctions between human languages and computer languages.	X	X	X	X	X	
Computers vocabulary for communicating about computers a) Identifies the meaning of technical terms frequently used in communicating about computers in articles in the popular press, computer hardware and software advertisements, as well as oral communications in school and the work place with respect to each of the following: i) computer hardware; ii) software and programming; iii) computer-related acronyms.	X X X	X X X	X X X	X X X	X X X	

Computers and society a) Identifies computer-related careers, including job requirements, typical job duties, and compensation; b) Identifies effects of computers in the work place; c) Identifies ethical and legal issues involving computer use.	X X X	X X X	X X X			
Number of tasks present	17 of 18	17 of 18	18 of 18	12 of 18	10 of 18	? of 18
Percentage of tasks present	94	94	100	67	56	?

* 8 = 1988; 9 = 1989; 0 = 1990; 1 = 1991; 2 = 1992; 3 = 1993; 4 = 1994; 5 = 1995; 6 = 1996; N = Not given.

Management Information Systems

	CMI	CoM	GCC	NMC	PCC	UoG
Number of credits						3
Number of semesters course taught						1
Diploma course used to satisfy a) Prerequisite for other courses b) Certificate of Completion c) Certificate of Achievement d) Associate's degree e) Bachelor's degree f) Master's degree						 X X
Year of last update*						N
Introduction of MIS a) An overview of MIS as a concept; b) The characteristics of MIS; c) Classification of MIS structures.						
Computer application programs a) Programming; b) Wordprocessing; c) Spreadsheet applications; d) Database applications.						
Information systems technology a) How computers work; b) Computer software; c) File organization and data retrieval; d) Database management; e) Data communication and networking; f) The decision-making process; g) Decision support systems (DSS).						
Decision support and end-user computing a) DSS software and tools; b) Office automation and end-user computing; c) Artificial intelligence tools, e.g. expert systems, neural networks, etc.						
Application planning and system development a) Planning a MIS; b) MIS requirements; c) System design; d) Hardware/software acquisition; e) Implementing a MIS.						

Electronic commerce a) Internet b) Electronic data interchange (EDI) c) Electronic funds transfer d) Network security, firewalls, and encryption.						
MIS management a) Managing MIS personnel; b) Determining MIS trends and directions.						
The human side of a MIS a) The need for organizational change; b) Redefining jobs; c) Training and re-training of personnel; d) Social implications of MIS.						
Class projects a) Case studies: Analyzing and critiquing an organizations' MISs; b) Field trips to nearby organizations to study their MISs; c) Designing an MIS for an imaginary organization.						X
Number of tasks present						?
Percentage of tasks present						?

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Spreadsheet Applications

	CMI	CoM	GCC	NMC	PCC	UoG
Number of credits			3	3	3	
Number of semesters course taught			1	1	1	
Diploma course used to satisfy						
a) Prerequisite for other courses						
b) Certificate of Completion						
c) Certificate of Achievement			X	X	X	
d) Associate's degree			X	X	X	
e) Bachelor's degree						
f) Master's degree						
Year of last update*			9	5	N	
Type of software used						
a) Lotus 1-2-3			X	X	X	
b) Excel				X		
c) Other						
Getting started with the software program						
a) Performing startup procedures;						
b) Properly exiting the program;			X	X		
c) Understanding default settings;			X	X		
d) Recognizing the status line;						
e) Learning the on-line help facility.			X	X		
Building a worksheet						
a) Moving the cell pointer;			X	X		
b) Entering data in the work sheet;			X	X		
c) Editing data in the worksheet;			X	X		
d) Saving the worksheet;			X	X		
e) Printing the worksheet.			X	X		
Enhancing a worksheet						
a) Retrieving/loading a file;			X	X		
b) Entering formulas;			X	X		
c) Replicating/copying;			X	X		
d) Formatting for label alignment;			X	X		
e) Formatting numbers;			X	X		
f) Inserting/deleting columns/rows;			X	X		
g) Drawing lines;				X		
h) Freezing column and row titles.			X	X		
Using built-in functions						
a) Using arithmetic/statistical functions;			X	X		
b) Using financial functions;			X	X		
c) Using the IF function;			X	X		
d) Using table look-up functions.				X		

Customizing worksheets with macros						
a) Creating keystroke and interactive macros;			X	X		
b) Building invisible macro commands;			X	X		
c) Developing customized, menu-driven templates using keyword commands;			X	X		
d) Creating tamper-resistant, menu-driven templates.			X	X		
Special considerations						
a) Consolidating worksheets;				X		
b) Linking worksheets;				X		
c) Building formulas with cell addresses in different files;				X		
d) Using print options.				X		
Graphing data						
a) Generating line graphs;			X	X		
b) Generating bar graphs;			X	X		
c) Generating pie charts;			X	X		
d) Generating XY graphs;			X	X		
e) Generating scatter graphs.						
The spreadsheet as a database						
a) Creating a database;			X	X		
b) Modifying a database;			X	X		
c) Sorting a data file;			X	X		
d) Searching a data file;			X	X		
e) Extracting data from a data file;						
f) Querying a data file;				X		
g) Using the data distribution command;				X		
h) Analyzing data in a data file;				X		
Number of tasks present			30 of 43	39 of 43	? of 43	
Percentage of tasks present			70	91	?	

* 8 = 1988; 9 = 1989; 0 = 1990; 1 = 1991; 2 = 1992; 3 = 1993; 4 = 1994; 5 = 1995; 6 = 1996; N = Not given.

Wordprocess

	CMI	CoM	GCC	NMC	PCC	UoG
Number of credits			6	6	6	
Number of semesters course taught			2	2	2	
Diploma course used to satisfy						
a) Prerequisite for other courses						
b) Certificate of Completion				X		
c) Certificate of Achievement			X	X	X	
d) Associate's degree			X	X	X	
e) Bachelor's degree						
f) Master's degree						
Year of last update*			3	5	5	
Type of software used						
a) WordPerfect			X	X	X	
b) MS Word				X		
c) Other						
Getting started with the software program						
a) Performing startup procedures;						
b) Properly exiting the program;			X	X		
c) Understanding default settings;			X	X		
d) Recognizing the status line;						
e) Learning the on-line help facility.						
Creating a new document						
a) Using the date feature;						
b) Moving the cursor;			X	X	X	
c) Using word wrap when keying in documents;			X	X	X	
d) Correcting mistakes;				X		
e) Spell-checking the document;				X		
f) Saving the document;				X		
g) Printing the document.						
Editing an existing document						
a) Retrieving a document;			X	X	X	
b) Understanding proof-reader's marks;						
c) Copying/moving text from one place to another;					X	
d) Inserting text;				X		
e) Deleting text;				X		
f) Using dictionary/thesaurus;				X		
g) Using undelete/undo to restore text;				X	X	
h) Searching/replacing text;						
i) Saving to replace an existing file.					X	
				X		

Character formatting						
a) Centering text;				X		
b) Underlining, bolding, and italicizing text;				X		
c) Using subscripts and superscripts;						
d) Font sizing;						
e) Changing cases;						
f) Deleting format.						
Line formatting						
a) Setting left/right margins;				X		
b) Setting tabs and indenting paragraphs;				X		
c) Spacing, numbering and determining height of line;				X		
d) Using justification/flush right;				X		
e) Aligning columns;				X		
f) Using hyphenation.				X	X	
Page formatting						
a) Performing vertical page alignment;						
b) Using page breaks;				X		
c) Centering page top to bottom;				X		
d) Page numbering;				X		
e) Paragraph numbering/outline;				X		
f) Setting top and bottom margins;				X		
g) Creating headers and footers;				X		
h) Indicating footnotes and end notes;			X	X		
i) Suppressing formats on some pages.			X	X		
				X		
Macros						
a) Creating a macro;			X	X	X	
b) Editing a macro;			X	X	X	
c) Invoking a macro;			X	X	X	
d) Deleting a macro.			X	X	X	
Merging documents						
a) Creating the database;			X	X		
b) Creating the primary file;			X	X		
c) Merging the database with the primary file.			X	X		
Text columns						
a) Creating newspaper-style columns;						
b) Creating parallel columns;			X			
c) Editing columnar text;			X			
d) Column considerations.			X			
			X			
Forms						
a) Creating and formatting forms;						
b) Editing and deleting forms.						
Tables						
a) Creating and formatting tables;			X		X	
b) Editing and deleting tables.			X		X	

Table of contents/authority						
a) Creating a table of contents;				X		
b) Creating a list;						
c) Creating an index;				X	X	
d) Regenerating a table, list, or index;						
e) Table of authorities.						
Graphics						
a) Creating graphic images with the program;			X	X	X	
b) Importing graphic images from other programs;			X	X		
c) Inserting graphic images in a text document;			X	X		
d) Customizing line draw;			X	X	X	
e) Writing equations with mathematic symbols.				X	X	
Special features						
a) Comparing documents;					X	
b) Using the coded space feature;						
c) Splitting and merging paragraphs;					X	
d) Using styles/outline styles;				X	X	
e) Sorting;			X	X		
f) Selecting;				X		
g) Working on more than one document at a time;						
h) Columnar math features;				X	X	
i) Creating spreadsheets.				X	X	
Number of tasks present			25 of 76	49 of 76	22 of 76	
Percentage of tasks present			33	64	29	

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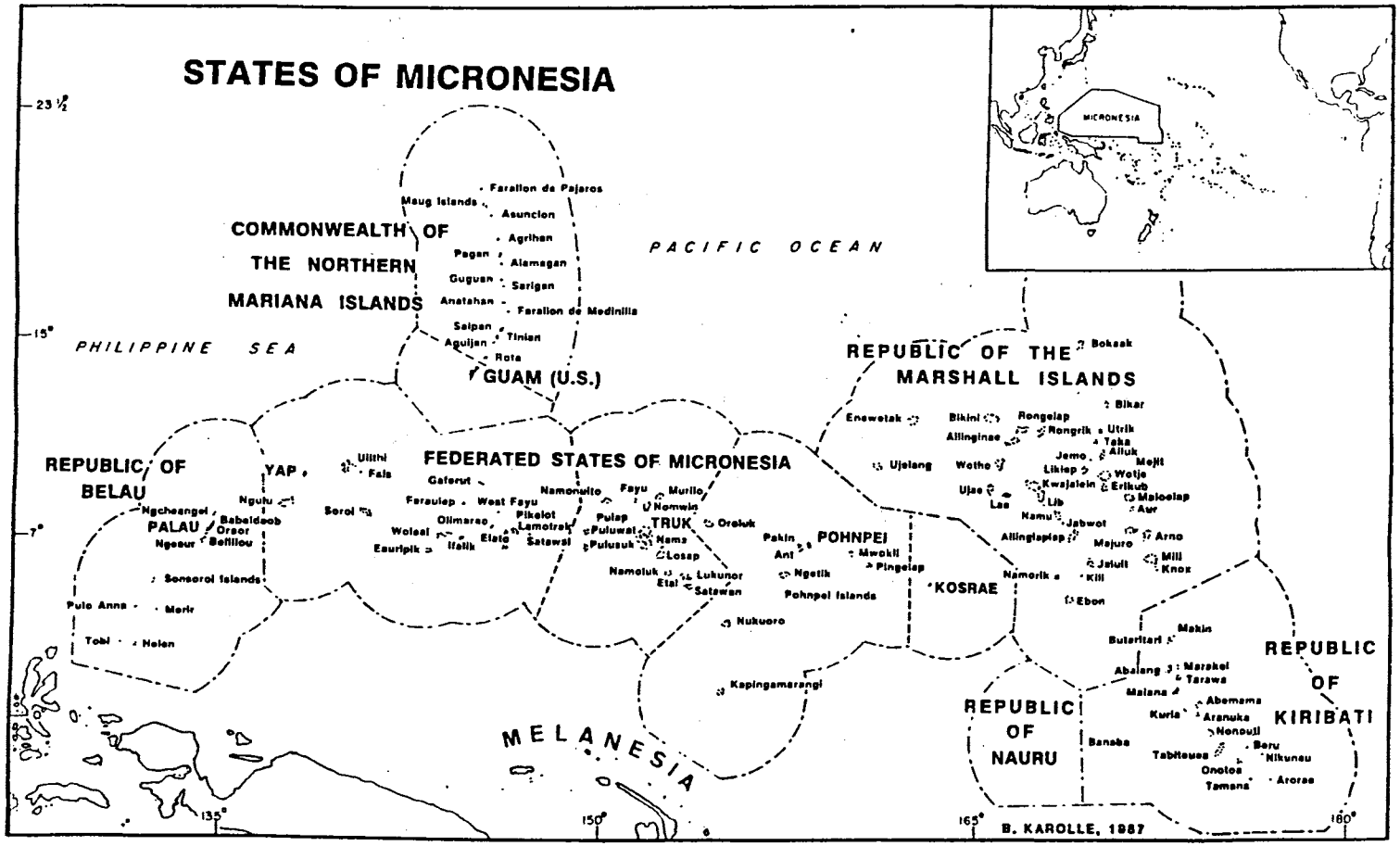
APPENDIX D

MAP OF INDONESIA



COURTESY OF DR. BRUCE G. KAROLLE, MICRONESIAN AREA RESEARCH CENTER, UNIVERSITY OF GUAM

Msg#:38906 *INTERNET*
Written on 06-04-96 at 11:33:29.
From: Ballendo@uog9.uog.edu
To: Stephen Agyei-Mensah (Rcvd)
Subj: PERMISSION
From ballendo@uog9.uog.edu Tue Jun 04 11:21:14 1996
Received: from holonet.net by saipan.com
with SMTP (IPAD 1.1) id 2336400 ; Tue, 04 Jun 96 11:21:12 UTC
Received: from uog9.uog.edu (UOG9.UOG.EDU [192.149.202.9]) by holonet.net with SMTP
id OAA22867; Mon, 3 Jun 1996 14:24:37 -0700
Received: by uog9.uog.edu (5.65/DEC-Ultrix/4.3)
id AA24478; Tue, 4 Jun 1996 07:21:26 GMT
Date: Tue, 4 Jun 1996 07:21:25 +0000 (WET)
From: Dirk Anthony Ballendorf <ballendo@uog9.uog.edu>
To: Stephen.Agyei-Mensah@saipan.com
Subject: permission
Message-Id: <Pine.ULT.3.91.960604071842.24401B-100000@uog9.uog.edu>
Mime-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII
Greetings: Dr. Karolle is retired from the university and presently is
in Palau. I will grant you permission to copy the map you've asked about
by proxy, and will inform Dr. Karolle when I next see him. Be sure to
give proper credit to Dr. Karolle. Sincerely, DAB

****

Dirk Anthony Ballendorf
Professor of History and Micronesian Studies
MARC, University of Guam
Mangilao, Guam 96923
tel.671:735-2154; fax.671:734-7403; e-mail: ballendo@uog.edu

APPENDIX E

LETTER OF REQUEST TO THE COLLEGE OF THE MARSHALL ISLANDS

NORTHERN MARIANAS COLLEGE

Return fax #: (670) 235-4966 1 page faxed Reid 3/29/96 for cy-Larry

March 29, 1996

Dr. Dorothy R. Nadeau
President
College of Marshall Islands
P. O. Box 1258
Majuro, Marshall Islands
MH 96960

Dear Dr. Nadeau:

I am personally conducting research on the curriculum of computer applications in business courses. Further, we are revising and streamlining the course offerings of computer applications courses at the School of Business and Hospitality Management. We believe that it might be in the interest of all Micronesians to align the curriculum of the colleges in the region. *Could you please send us copies of the* course guides and/or syllabi of the following courses that we identified in the 1995-96 General Catalog of the College of Marshall Islands:

COURSE OUTLINE NOT AVAILABLE

BU 120 - Word Processing;
CS 101 - Computer Application I;
CS 102 - Computer Application II;
CS 125 - Business Programming I;
CS 230 - Database Management; and
CS 233 - Business Programming II;

COURSE OUTLINES ENCLOSED

Thank you in anticipation of your cooperation in this matter.

Sincerely,

(Stephen Agyei-Mensah)
Data Processing/Computer Science Instructor

APPENDIX F

THANK YOU LETTER TO THE COLLEGE

OF THE MARSHALL ISLANDS

NORTHERN MARIANAS COLLEGE
BOX 1250, SAIPAN, MP 96950 Fax: (670) 234-0759
Phone: (670) 234-5498/5499/7642

April 17, 1996

Dr. Dorothy R. Nadeau
President
College of Marshall Islands
P. O. Box 1258
Majuro, Marshall Islands
MH 96960

Dear Dr. Nadeau:

This is to thank you for the course guides you sent to me recently from the office of your Dean of Instruction.

As soon as I finish, I will share the results of my research and recommendations with you folks at CMI in an attempt to help in the quest for ways to provide quality instruction to our students.

Once again, thank you for your indulgence.

Sincerely,

(Stephen Agyei-Mensah)
Data Processing/Computer Science Instructor.

pc: The Dean of Instruction
College of Marshall Islands
P. O. Box 1258
Majuro, Marshall Islands
MH 96960

APPENDIX G

LETTER OF RESPONSE TO THE COLLEGE

OF THE MICRONESIA-FSM

NORTHERN MARIANAS COLLEGE
BOX 1250, SAIPAN, MP 96950 Fax: (670) 234-0759
Phone: (670) 234-5498/5499/7642

July 14, 1995

Joel Schreiber, Chair
Dept. of Accounting & Business Studies
College of Micronesia-FSM
P. O. Box 1316
Kolonia, Pohnpei
FM 96941

Fax: 691-320-2479

Dear Mr. Schreiber:

I am personally conducting research on the curriculum of computer applications in business courses. Further, we are revising and streamlining the course offerings of computer application courses at the School of Business and Hospitality Management. We believe that it might be in the interest of all Micronesians to align the curriculum of the colleges in the region. Could you please send us copies of course guides and/or syllabi of the following courses that we identified in the 1994-1996 General Catalog of the College of Micronesia-FSM:

AC 271 - Accounting Information System
CA 101 - Computer Applications I
CA 102 - Computer Applications II

Thank you in anticipation of your cooperation in this matter.

Stephen Agyei-Mensah
Data Processing/Computer Science Instructor

APPENDIX H

RESPONSE COVER LETTER FROM THE

COLLEGE OF MICRONESIA-FSM

COLLEGE OF MICRONESIA - FSM

P.O Box 159, Kolonia, Pohnpei
Federated States of Micronesia 9[illegible]
Phone: (691)320 2480 / 481 / 482 FAX (691) 320-2479

DEPARTMENT OF ACCOUNTING AND BUSINESS STUDIES

July 26, 1995

Stephen Agyei-Mensah
Computer Science Instructor
Northern Marianas College
P.O. Box 1250
Saipan, CM 96950

Dear Stephan:

Thank you for your FAX dated 7/14/95. Enclosed is a copy of our course outlines as requested. We are in the process of modifying our courses from Works to MS Office (CA courses) and we plan to use Quicken/Peachtree for the AIS course.

If you have any additional questions, please let me know.

Sincerely,

Joel Schreiber
Chair, Department of Accounting and Business Studies
College of Micronesia
P.O. Box 1316
Kolonia, Pohnpei FSM 96941

FAX 011 (691) 320-2479

APPENDIX I

THANK YOU LETTER TO THE COLLEGE OF MICRONESIA-FSM

NORTHERN MARIANAS COLLEGE
BOX 1250, SAIPAN, MP 96950 Fax: (670) 234-0759
Phone: (670) 234-5498/5499/7642

July 31, 1995

Joel Schreiber, Chair
Department of Accounting and Business Studies
College of Micronesia
P. O. Box 1316
Kolonia, Pohnpei
FSM 96941

Dear Joel Schreiber:

This is to thank you for the course guides you sent to me recently.

As soon as I finish, I will share the results of my research and recommendations with you folks at CoM-FSM in an attempt to help in the quest for ways to provide quality instruction to our students.

Once again, thank you for your indulgence.

Sincerely,

(Stephen Agyei-Mensah)
Data Processing/Computer Science Instructor.

APPENDIX J

LETTER OF REQUEST TO THE GUAM COMMUNITY COLLEGE

NORTHERN MARIANAS COLLEGE
BOX 1250, SAIPAN, MP 96950 Fax: (670) 234-0759
Phone: (670) 234-5498/5499/7642

October 12, 1995

Brett A. Reinert
Instructor, Faculty Librarian
Guam Community College Library
P. O. Box 23069
GMF, GU 96921

Dear Mr. Reinert:

HISTORY OF THE GUAM COMMUNITY COLLEGE

I am conducting research on the colleges and university in Micronesia. As part of my write-up, I am including a historic overview of the establishment of each of the institutions in Micronesia. I collected most of the information I need from the catalogs of the colleges concerned. However, the account of the history of the Guam Community College (GCC) in the General Catalog of 1994-1995 is rather scanty.

Could you please indicate where I can get a little more comprehensive account of how GCC came to be. On the other hand, if you can lay hands on any document that may contain any useful information, you could fax it to me at **(670) 235-4966**. If the document is too bulky to be faxed, you could mail it to me at the address above.

I am planning a visit to GCC Library on a week-end and so could you confirm the opening hours of the Library to me. My understanding was that the Library opens on Saturdays from 7:30a.m. to 11:45a.m. but the latest newsletter I received indicates that it opens on Mondays through Friday.

Sincerely,

(Stephen Agyei-Mensah)
Computer Science/Data Processing Instructor.

APPENDIX K

RESPONSE COVER LETTER FROM THE

GUAM COMMUNITY COLLEGE

GUAM COMMUNITY COLLEGE
Kulehon Kumunidat Guahan
Accredited by the
Western Association of
Schools and Colleges

Stephen Agyei-Mensah
Computer Science/Data Processing Instructor
Northern Marianas College
School of Business and Hospitality Management
P.O. Box 1250
Saipan, MP 96950

Dear Mr. Agyei-Mensah,

In reference to our telephone conversation of Oct. 23, 1995. Please find enclosed three articles from various publications of the Guam Community College. I have noted the source of these materials on each.

I understand that the type of information that you are looking for is limited, and the information I have provided is the best information available in the GCC library collection.

However, if this proves to be insufficient, I would suggest that you contact our public information officer. Cathleen Moore-Linn, in the Communications and Promotions Office, would be happy to answer any other questions you may have about the College. She may also have access to other official documents of the College that may be of use to you.

If there is anything further that I may do to assist you, please do not hesitate to ask.

Sincerely,
Brett Reinert
Faculty Librarian
Guam Community College

COMMONWEALTH NOW!
P. O. Box 23069, Barrigada, Guam 96921 • Phone: (671)734-4311 • Fax: 734-5238

APPENDIX L

THANK YOU LETTER TO THE GUAM COMMUNITY COLLEGE

NORTHERN MARIANAS COLLEGE
BOX 1250, SAIPAN, MP 96950 Fax: (670) 234-0759
Phone: (670) 234-5498/5499/7642

November 2, 1995

Brett Reinert
Faculty Librarian
Guam Community College
P. O. Box 23069
Barrigada, GU 96921

Dear Brett:

This is to thank you for the materials you sent me on the history of GCC. I have just scanned through them and they appear to be in the direction of what I want. Since tomorrow is a public holiday in the CNMI, I will spend the day reviewing the materials.

I will also like to thank you for the resources for further information should the need be. I will definitely follow those leads as the need for more information arises.

As soon as I finish, I will share the results of my research and recommendations with you folks at GCC in an attempt to help in the quest for ways to provide quality instruction to our students.

Once again, thank you for your indulgence.

Sincerely,

(Stephen Agyei-Mensah)
Data Processing/Computer Science Instructor.

APPENDIX M

LETTER OF REQUEST TO THE PALAU COMMUNITY COLLEGE

NORTHERN MARIANAS COLLEGE
P.O. Box 250 Saipan, MP 96950 Fax: (670) 234-0759
Phone: (670) 234-5498/5499/7642

Return fax #: (670) 235-4966

July 27, 1995

The Director
School of Business
Palau Community College
P. O. Box 9
Koror, Palau 96940

Fax: (680) 488-2447

Dear Sir/Madam:

We are revising and streamlining the course offerings of computer applications at the School of Business and Hospitality Management. We believe that it might be in the interest of all Micronesians to align the curriculum of the colleges in the region. Could you please send us copies of the course guides and/or syllabi of the following courses that we identified in your 1994-96 catalog:

BA 222 - Computerized Accounting;
CS 100 - Computer Literacy;
CS 121 - Wordprocessing Application;
CS 211 - Advanced Wordprocessing; and
CS 212 - Microcomputer Applications;

Thank you in anticipation of your cooperation in this matter.

Sincerely,

(Stephen Agyei-Mensah)
Data Processing/Computer Science Instructor

APPENDIX N

RESPONSE COVER LETTER FROM THE

PALAU COMMUNITY COLLEGE

PALAU
COMMUNITY
COLLEGE

P.O. Box 9, Koror
Republic of Palau
PW 96940
Tel: (680) 488-2470
Fax: (680) 488-2447

July 27, 1995

Mr. Stephen Agyei-Mensah
Northern Marianas College
Box 1250 Saipan MP 96950

Dear Mr. Agyei-Mensah:

Thank you for showing interest at Palau Community College.

Enclosed herewith please find the following applications and materials for your information and use:

1. Application packet for Admissions & Financial Aid (5 each)

2. Copy of 1994-96 Catalog (2 each)

Accredited by
WESTERN ASSOCIATION OF
SCHOOLS AND COLLEGES

The enclosed packets contains necessary information needed to apply to Palau Community College for 1995-96 school year. Prospective applicants can mail the completed admissions and financial aid applications to us. Please refer to the Admissions and Financial aid information and instructions provided in these materials.

If you still have any questions do not hesitate to contact us.

Sincerely,

for Elenita Brel

Dahlia M. Katosang, Director
Admissions & Financial Aid

Enclosure(s)

* also enclosed is a copy of our poster

APPENDIX O

THANK YOU LETTER T0 THE PALAU COMMUNITY COLLEGE

NORTHERN MARIANAS COLLEGE
BOX 1250, SAIPAN, MP 96950 Fax: (670) 234-0759
Phone: (670) 234-5498/5499/7642

August 7, 1995

Attention: Elenita Bree
Admissions and Financial Aid
Palau Community College
P. O. Box 9
Koror, Republic of Palau
PW 96940

Dear Elenita Bree:

This is to thank you for the package containing admission materials you sent to me recently.

As soon as I finish, I will share the results of my research and recommendations with you folks at Palau Community College in an attempt to help in the quest for ways to provide quality instruction to our students.

Once again, thank you for your indulgence.

Sincerely,

(Stephen Agyei-Mensah)
Data Processing/Computer Science Instructor.

APPENDIX P

LETTER OF REQUEST TO THE

UNIVERSITY OF GUAM

NORTHERN MARIANAS COLLEGE
BOX 1250, SAIPAN, MP 96950 Fax: (670) 234-0759
Phone: (670) 234-5498/5499/7642

October 6, 1995

Dr. G. Ha
College of Business & Public Admin.
University of Guam
UoG Station
Mangilao, Guam

Dear Dr. Ha:

I have been trying to reach you by e-mail but the messages I sent to you were all returned to me undelivered. My last attempt was through Dr. Kwangsoo Ko.

We are revising and streamlining the course offerings of computer applications at the School of Business and Hospitality Management. We believe that it might be in the interest of all Micronesians to align the curriculum of the colleges in the region. Could you please send us a copy of the course guide and/or syllabus of **AC 425 - Accounting Systems.** We already have copies of the guides for the other computer application courses.

Thank you in anticipation of your cooperation in this matter.

Sincerely,

(Stephen Agyei-Mensah)
Data Processing/Computer Science Instructor

APPENDIX Q

RESPONSE COVER LETTER FROM THE

UNIVERSITY OF GUAM

UNIVERSITY OF GUAM
UNIBETSEDÅT GUAHAN
COLLEGE OF BUSINESS AND PUBLIC ADMINISTRATION
UOG Station, Mangilao, Guam 96923
Telephone: (671) 734-9540/9225 Fax: (671) 734-5362

October 20, 1995

Mr. Stephen Agyei-Mensah
Data Processing/Computer Science Department
Northern Marianas College
Box 1250
Saipan, MP 96950

Dear Mr. Agyei-Mensah:

On receiving your letter dated October 6, 1995, I am sending a copy of syllabus for AC 425 (Accounting Information Systems).

Because it is my first teaching in this course, the syllabus is far from completion. In class, I am emphasizing the technical part (basic theory of file system, data base system, and programming languages) and adding those beyond the text book. In this respect, my lecture may be a little bit different from usual lecture emphasizing systems approach for this course.

It will be my great pleasure if my syllabus will be of help to your work.

If you have any question about my syllabus or course management, please call me at (617)735-2504 or fax at (617)734-5362.

Sincerely,

Gooklak Ha

Gooklak Ha, Ph.D.

APPENDIX R

THANK YOU LETTER TO THE

UNIVERSITY OF GUAM

NORTHERN MARIANAS COLLEGE
BOX 1250, SAIPAN, MP 96950 Fax: (670) 234-0759
Phone: (670) 234-5498/5499/7642

October 31, 1995

Dr. Gooklak Ha
College of Bus. & Public Admin.
University of Guam
UoG Station
Mangilao, GU 96923

Dear Dr. Ha:

This is to thank you for the copy of AC 425 (Accounting Information Systems) syllabus that you sent me recently.

As soon as I finish, I will share the results of my research and recommendations with you folks at CBPA-UoG in an attempt to help in the quest for ways to provide quality instruction to our students.

Once again, thank you for your indulgence.

Sincerely,

(Stephen Agyei-Mensah)
Data Processing/Computer Science Instructor.

APPENDIX S

LETTER OF INVITATION TO

PANEL OF REVIEWERS

NORTHERN MARIANAS COLLEGE

January 8, 1996

Name~
Title~
Institution~
Address~
City~, State~ Zip~

Dear Salutation~:

Participation on a Panel of Reviewers

I wish to solicit your help to be one of the members of a panel to review a list of objectives included in model course contents of a number of computer applications courses.

I am conducting a content analysis of the course outlines of a number of courses and hope that you will kindly provide comments and suggestions on any one or more of the expected course outlines you are familiar with which will be used as the criteria for the analysis. I have enclosed copies of the model course outlines.

I intend that the items should be broad enough in order for a wide range of related concepts to fit into one of the topics or the other.

I wish to thank you in advance for your kind cooperation in this exercise in our quest to produce relevant courses of study to our communities. Thank you.

Sincerely,

Stephen Agyei-Mensah
Instructor, Computer Science/Data Processing

APPENDIX T

FOLLOW-UP LETTER TO PANEL

OF REVIEWERS

NORTHERN MARIANAS COLLEGE

March 1, 1996

Name~
Title~
Institution~
Address~
City~, State~ Zip~

Dear Salutation~:

Following up on Review of Course Contents

I am writing to follow up on the progress of your review of the draft course outlines I sent to you in January. I have made significant progress on the literature review at this end and preparing for the analysis part of the study.

I would appreciate it if you could find a little time out of your busy schedule to review the draft course outlines and return them to me along with your comments by March 25, 1996. Thank you for your assistance.

Sincerely,

Stephen Agyei-Mensah
Instructor, Computer Science/Data Processing

APPENDIX U

THANK YOU LETTER TO PANEL OF REVIEWERS

NORTHERN MARIANAS COLLEGE

October 6, 1996

Name~
Title~
Institution~
Address~
City~, State~ Zip~

Dear Salutation~:

A Thank You Note

I am writing to thank you for your assistance in reviewing the draft course outlines I sent to you in January. Your comments were very insightful and have been incorporated in the final draft of the course outlines.

Hopefully, the analysis of our existing course outlines against the model ones you helped to fashion out will help provide quality and relevant instruction to our students.

Thank you so much for your efforts.

Sincerely,

Stephen Agyei-Mensah
Instructor, Computer Science/Data Processing

VITA

Stephen Ofosu Agyei-Mensah

Candidate for the Degree of

Doctor of Education

Thesis: A CONTENT ANALYSIS OF THE COMPUTER APPLICATIONS COURSES IN BUSINESS STUDIES PROGRAMS IN MICRONESIAN COLLEGES

Major Field: Occupational and Adult Education

Biography:

Personal Data: Born in Accra, Ghana, on February 6, 1954, to Nana Kofi Agyei-Mensah and Ms. Gladys Nkrumah.

Education: Graduated from West Africa Secondary School, Accra, Ghana, in June 1974 with GCE Ordinary Level; GCE Advanced Level, Winneba Secondary School, Winneba, Ghana, June 1976; Bachelor of Science in Administration (Accounting major), University of Ghana, Legon, Ghana, September 1979; Master of Business Administration (Operations Management and Management Accounting options), University of Ife, Ife-Ife, Nigeria, July 1983; Master of Science in Applied Computer Science, University of Maryland Eastern Shore, Princess Anne, Maryland, USA, May 1993; completed requirements for the Doctor of Education degree at Oklahoma State University, Stillwater, Oklahoma, USA, in December 1996.

Professional Experience: Lecturer (on National Service) in Accounting, Institute of Professional Studies, Legon, Ghana, 1979-1980; Accounting and Business Teacher, CAC Commercial Grammar School, Ipetumodu-Ife, Nigeria, 1980-1983; Accounting and Business Teacher, Cameroon College of Commerce, Kumba, Cameroon, 1983-1984; Accounting Instructor and Vice Principal, St. Paul's Technical College, Bonjongo, Cameroon, 1984-88; Graduate Teaching Assistant, Department of Mathematics, Computer

Science and Engineering, University of Maryland Eastern Shore, Princess Anne, Maryland, USA, 1989-1992; Graduate Research Associate, School of Occupational and Adult Education, Oklahoma State University, Stillwater, Oklahoma, USA, 1992-1994; Graduate Assistant/Intern, Oklahoma Department of Vocational and Technical Education, Stillwater, Oklahoma, USA, 1993-1994; Computer Applications Instructor, Northern Marianas College, Saipan, Commonwealth of the Northern Mariana Islands, USA, 1994 to present.