CHAPTER 1

INTRODUCTION

The primary purpose of educators is to prepare individuals for successful employment in the workplace. In a changing workplace, where the only constant is change, rapid technological advancements are changing the way work is done and in the way individuals live and do business (Australian National Training Authority, 1998; Brancheau & Nansi, 2001; DeVito, 1996; Greenspan, 2000; Hagler & Burge, 2000; Juhana Salim, Salwani Abdullah, Nor Azan Mat Zin, Hazilah Mohd. Amin & Hairuliza Mohamad Judi, 2000; Orr, Allen & Poindexter, 2001; Verespej, 1998; Wiedmaier, 1997).

Over the last century a subset of technology evolved into what is called information technology (IT). Information technology allows for the creation, management and communication of information through telephones, computers, audio and video equipment. The Internet, as a form of IT, provides users access to information located globally and has become the fastest form of communication in the workplace (United States Department of Commerce, 2000). According to a report by the United States Department of Commerce, the number of individuals and businesses connected through the Internet in the year 2000 was extraordinarily high. Three hundred million people use the Internet compared to 3 million in 1994. The situation in Malaysia was not much different. As stated by Dato Leo Moggie, the Honorable Energy, Communications and Multimedia Minister, in the Jaring Internet Magazine (Khoo, 1999a, Editor's note section), "it took

about 36 years (after the Second World War) to reach 500,000 telephone subscribers, but only about three years for the Internet to attract the same number of dial-up subscribers" Khoo (1999b) who said that Malaysians are taking to the Internet shares the Honorable Minister's view. In Khoo's editorial note in the August 1999 issue of Jaring Internet Magazine, he stated that the number of Internet users is more than 1.5 million today Websites, which used to be foreign, now include more than 6,000 registered local domains A survey by IDC estimated that Malaysia's Internet user base reached 2.5 million in 2000 and predicted that the compound annual growth rate of local Internet users would grow by 20 percent by 2005 and make up 19 percent of Internet users in ASEAN (Hor, 2001).

The latest development in IT is the concept of a shared environment or a networked environment and the emergence of GroupWare. According to Daly (1997) a GroupWare environment allows information to be created by several people, stored electronically in a central and accessible location and enables groups to work together more efficiently thus making them more productive. This phenomenon is changing work processes and, consequently, affecting worker competencies for it requires increased employee efficiency (Orr et al., 2001; Verespej, 1998). Workers must be skilled in technology to get jobs and be competent to do them effectively and competitively. Due to this dynamic nature of business technology, business educators are concerned about what to teach to ensure that students are able to transfer their knowledge from the learning setting to the business setting and continue to learn when new IT tools replace old ones.

According to a report by the Administrative Development Institute (1994) IT has been the catalyst for change among administrative support staff, particularly secretaries, who are able to transform themselves to become more visible, increase workload and assume duties previously performed by managers. Office occupations, in particular secretarial and clerical are a reflection of this rapid change (Epstein, 2001; Lloyd, 1999,

Wiggs, Anderson & Morgan, 1998). The change from a highly routine job function to a complex one requires new job skills and competencies that educators as well as employers must accommodate in their curriculum and training programs.

While Wiggs et al. (1998) shows a positive outcome of technology on the role of administrative support staff, others show a different picture. Some employees are forced to learn new skills in order to deal with new technology or transfer to new positions as old jobs are phased out (Anonymous, 1999a; Wallis, 2000; Wiggs et al., 1998). This scenario is depicted in the Malaysian civil service. The implementation of information technology has caused the Malaysian civil service, with a workforce of 860,000 to restructure in order to ensure a leaner and more efficient organization. Full implementation of information technology implies that administrative support staff will be made redundant. According to the then Chief Secretary to the Government, Tan Sri Halim Ali, ". . . the affected people, who included those in the lower category such as clerks and stenographers, would be retrained and placed in other areas" ("Support Staff First", 1998, p. 3, para. 2).

Even though information technology has raised concerns of job displacements and skill obsolescence among administrative support staff, the prospect is not altogether bleak. Goldstein and Fraser (1985) reported that the restructured organization—a result of IT—gives workers broader skills to concentrate on interesting or creative aspects of work. Therefore, it becomes imperative for educators to design programs that will not only prepare students with competencies and skills for entry-level occupations but also competencies for survival in the 21st Century (Gilbert & Green, 1995).

The restructured organization does provide increased opportunities for retraining and, ultimately, career advancement. Training and staffing needs in restructured and networked organizations are found to be significantly higher. The growth of networks has created a surge in the demand for end-user training with office functions (secretarial and

clerical) leading the need in computer training requirements ("Managing Today's Automated", 1996). Secretarial occupations that experience high rates of technological change are reported to receive more training than other non-production workers (Bartel & Sicherman, 1998).

The national concern towards acquiring status of a developed nation by the year 2020 with an emphasis on a knowledgeable workforce requires the participation of school, industry and government to help people get the level of education, training and knowledge that jobs require (Yau, 1991). Skilled labor is the key to an innovation-driven economy and Malaysia must overcome the shortage of skilled labor for high-tech jobs and jobs requiring basic computer competency to ensure her place among the high-tech elite (McGray, 1999).

The Faculty of Office Management and Technology (FOMT), MARA Institute of Technology, now known as MARA University of Technology, has been the leading institution of higher learning in the provision of administrative and office-support education. FOMT has since the 1970s planned, developed and conducted courses in clerical, secretarial, executive secretarial, and office administration for entry-level positions as well as retraining and upgrading courses for employees in the workplace. Implementation of new technology into the office caused a consequential effect on programs designed for workforce training. The networked environment causes a change in work content and processes requiring FOMT to formulate and design programs that produce graduates capable of entering and succeeding in the workplace. FOMT has an important role to play in planning and training for the future. It is in this context of technological change that this study was carried out to identify IT competencies needed for students who wish to enter the office profession as well as help administrative support staff develop IT competencies for their changing positions and roles in the organization.

Statement of the Problem

Due to a rapidly changing office scenario, administrators and educators must respond to the changes in the workplace and continue to operate with just-in-time, integrated and skill-focused methods of learning (Caudron, 1996; Davis & Gonzenbach, 1996; National Adult Literacy Database, 1997; Odgers, 1997). The very nature of technological change supports the need for research about technology in the world of work and revision of curriculum to be continuous as well.

More and more organizations expect a flexible workforce capable of performing a variety of tasks and making decisions on what their tasks will be. In addition to the basic reading, writing and computation skills, employers now require increased competency in the areas of computer literacy, problem solving, personal management and teamwork skills (Carnevale, Gainer & Meltzer, 1990; Giddens & Stasz, 1999; Steen, 1998). The increased responsibilities, skills, knowledge and competencies require education and training which should prepare students to cope within changing and demanding workplace environments

Technology is changing demand for labor, content of jobs and even location of jobs thus raising concerns of skill obsolescence and feeling job loss. When technologically advanced equipment is adopted, it changes the way work is accomplished and workers may have difficulty adapting successfully to the newly created environment. Consequently, more time must be given to prepare employees to utilize the new technology. According to Kling (1996) considerable time and expense had been made on advancing technology needed in the office, but very little time in preparing employees to utilize technology effectively. Thus, Clement (1994) found that women office workers faced unnecessary hardships because they had not been consulted about the introduction of new computer

systems. Therefore, employers must prepare their workforce with higher levels of skills and the ability to quickly adapt to the demand for new skills in the Information Age ("Overview of Ontario's", 1997; Stephenson, 1996; Tyson, 1997). In reviewing the available literature, emphasis is placed not only on personal skills but technological skills as well. This is reflected in a workforce training survey where employers identified a great need for technological competency in computer applications (Clagett, 1997).

In the business education literature, identification of technology to be taught has been approached through identification of computing tasks using job task analysis or skills-analysis approach. Job task-analysis describes competencies of computer users in terms of frequently used hardware and software (Zhao, 1996). Lambrecht and Sheng (1998) said that such survey findings are too broad because insufficient information and direction is provided to curriculum designers on what to include in technology-related courses among the many software features that might be taught. The skills-analysis approach, on the other hand, identifies isolated software features that may seem insignificant when it reconfirms the importance of obvious software features (Lambrecht & Sheng, 1998; Perry, 1998). An alternative task-analysis approach would be able to find a middle ground between the narrow findings of a skills analysis approach and the broad findings of a job task analysis approach. This study used the middle approach where IT competencies required of administrative support staff working in networked organizations were identified by analyzing the tasks performed in relation to the use of information and communication technologies.

It is hoped that the findings from this study would form the basis for a national information technology policy requiring the entire workforce to stay current in IT competencies. The policy should seek to ensure that workforce, in particular clerical and secretarial, are current in IT skills through ongoing education and training. Employers must

realize that technology will not replace the human element but requires the presence of support staff to operate and maintain the technology systems of all kinds in an electronic office. The implementation of IT into the organization actually complements the administrative and clerical occupation and does not substitute such employment.

The findings of this study would create the impetus for a policy of implementing information technology competency certification or competency standards among administrative support staff. Certification of this nature is necessary for providing benchmarks in determining employee selection, training, pay raises and promotions. A database of employee competencies—personal and technical—must be set up and maintained for the purpose of identifying competencies possessed by each employee. The development of such databases will provide input for staff training needs, career development, performance improvement, and promotion.

Lastly, the information from this study will assist curriculum designers and evaluators, trainers and teachers look into the nature of the future workplace, identify competencies required, identify content to be taught and formulate a program that deals with current and future trends.

Rationale of Study

The changing office environment requires workers to possess new skills, knowledge and competencies. As advancements in IT occur in the workplace, technological gaps occur and workers are forced to develop new competencies. Several studies in the United States report that advancements in office technologies suggest that administrative support staff are likely to assume greater responsibility in higher-level tasks ("Administrative Trends", n.d.; Anonymous, 1999b; McDougall, 1999; "The Office of the

Future", 1999). Such findings require administrative support staff to identify gaps in their IT skills and pursue continuous professional development. Administrative support staff in Malaysia are no exception and need to become IT proficient in order to embrace the knowledge economy. Therefore, the focus of this study is on office workers, in particular administrative support personnel, to develop IT competencies that will ensure their continued employment in the changing office.

Another strong justification is that studies pertaining to IT competencies of administrative support staff are few in Malaysia (Norlida M. N., 1998; Raja Munirah R. Mustapha, 1995). On the other hand, studies on IT in Malaysia are mostly concerned with the usage of IT applications and factors that influence success of computer-based information in businesses (Soon, 1999; Yow, 2000).

Administrative support staff were chosen as the target group of this study because available literature is concerned with the IT needs of workforce who graduate with a degree, while there is still a need for workforce with sub-baccalaureate qualifications to serve as support staff in networked environments. Another reason for choosing administrative support staff for this study is the fact that when organizations need to become competitive and reduce costs, administrative support functions will be reduced or removed altogether (Amaha, 1998).

Even though increased usage of electronic communications in the office makes retraining and updating the current workforce critical, opportunities for training and updating are unevenly distributed among occupations. Some workers have continual access to training while others have less accessibility or undergo training on an ad-hoc basis (National Adult Literacy Database, 1997; Scott, 1998; Stone 1995). Given the fact that administrative support staff need to be present in the workplace, innovative methods of instructional delivery need to be considered.

The Job Task Analysis (JTA) approach was selected for this study because task analysis is a form of needs assessment that provides valuable input for curriculum and instructional design. The competencies needed to perform and advance in an office should be linked to the tasks carried out by office support staff. McEwen (1996, p. 154) said, "The competencies emphasized in programs designed to train office support personnel should be closely tied to the tasks performed in office support jobs. Tasks should be the basis for competencies". JTA identifies all of the crucial tasks performed by workers in a particular job. This is important because the task analysis determines the content to be taught. The data can be used to design new training programs or review existing training programs. According to Nelson and Sologuk's case study (1996, Phase 1: Analysis Process section, para. 1), "The data obtained is used to design new occupational training programs".

Purpose of the Study

In order for educators and trainers to keep current with technological changes in the office, related studies on technological competencies need to be conducted on a regular basis as well. This study was carried out to analyze IT competencies necessary for administrative support staff employed in networked environments in Malaysia. The frequency of performing a task using IT and the perceived task importance were compared. Such an analysis provided a description of needed IT competencies so that content decisions could be made for developing office management curricula that must include IT competencies required by business and industry. Therefore, all graduates would be equipped with a set of core IT competencies for employment and advancement in the workplace.

A second purpose was to determine areas where additional capability in IT is needed based on weighted discrepancy scores of importance placed on the tasks and self-reported IT competency. Such an analysis would determine appropriate content for upgrading and retraining courses for employed administrative support staff.

Need for Study

Information technology has caused changes in office work processes requiring administrative support staff to have competencies in areas that were once the domain of supervisors and managers. The nation's quest to develop knowledge-based workers for the knowledge economy means that human capital must be equipped with knowledge and skills to meet new challenges. There is a need for administrative support staff to constantly upgrade their skills and this implies the ability to adapt and transfer learning from one IT tool to another. As businesses continue to implement information and communication technologies in work processes, it becomes important for educators to continually upgrade and update courses to include competencies that business and industry require of administrative support staff. It is hoped that the results of this study would be used for justifying the allocation of funds for training the present and future administrative support staff.

Business educators would benefit from a job task analysis because programs could integrate business applications software with realistic tasks into courses where the purposes for using software are made clear. The outcome of this study would assist the Faculty of Office Management and Technology identify an effective approach to design of curricula that meet the needs of industries.

Research Objectives

Information technology will continue to be an influence for change in the office management curriculum. Educators must accept this challenge and understand the need for constant curriculum updating because of the constant changes brought about by information and communication technologies in the workplace.

Businesses are spending billions of dollars training and retraining employees because of technological changes. Educators, therefore, have an important role in decreasing the gap between demands of industry and worker skills. Training systems relevant to the needs of workers and employers must be established and graduates must be prepared with a range of personal qualities and technical skills relevant for the world of work (Cooper, 1997; Norlida M. N., 1998).

The general objectives of this study were to:

1. develop a profile of the personal characteristics, use of computers and in-service IT training of administrative support staff in networked organizations.
2. develop a list of information technology competencies required by administrative support staff.
3. determine needed IT competencies based on the weighted discrepancy score.
4. determine if differences exist in the mean score for performance of tasks across the categories of highest education level, job title, age group, years in current position, related work experience, years of computer use, IT training attended, preference for IT training, method of learning IT and method of acquiring IT skill.
5. determine if differences exist in the mean score for perception of task importance across the categories of highest education level, job title, age group, years in current position, related work experience, years of computer use, IT training attended, preference for IT training, method of learning IT and method of acquiring IT skill.
6. determine if differences exist in the mean score for perceived level of competency across the categories of highest education level, job title, age group, years in current position, related work experience, years of computer

use, IT training attended, preference for IT training, method of learning IT and method of acquiring IT skill.

7. determine the relationship between the mean score for perceived level of task importance and the mean score for performance of task so that curriculum decisions can be made on software functions to be taught and the type of tasks to be incorporated into training.

8. identify tasks and IT competencies to be incorporated into a curriculum for:

   8.1. administrative support staff who are already employed and seek upgrading of IT competencies.

   8.2. students planning to enter office careers.

Research Questions

The research problem was to investigate the use of IT and its consequences on IT competencies required of administrative support staff employed in networked environments. In order to determine the required IT competencies, it becomes the purpose of the study to determine the frequency of task performance and the perception of importance placed on task performance using IT. Perceptions of task importance was used to define the work of administrative support staff and determine curriculum content that should be included in any program preparing students for employment as administrative support staff in a networked environment. These perceptions were matched with perceptions of IT competence to identify discrepancies where administrative support staff may need additional capability. Discrepancies between the importance placed on a task and the level of IT competency determined training needs of administrative support staff employed in networked organizations.

In order to investigate the use of IT and its consequences on IT competencies required of administrative support staff employed in networked environments, a profile of respondents was obtained from the first section of the ITCQ together with answers to the following research questions:

Table 1.1

A Summary of Research Questions, Hypotheses, Type of Scale and Statistical Test

Profile of Respondents	Hypotheses	Type of Scale	Descriptive Statistics
Highest completed level of education	Descriptive	Nominal	Frequency Mode
Type of organization	Descriptive	Nominal	Frequency Mode
Job title	Descriptive	Nominal	Frequency Mode
Age group	Descriptive	Interval	Frequency Mode
Years in current position	Descriptive	Ratio	Frequency Mode
Years of related work experience	Descriptive	Ratio	Frequency Mode
Years of computer use in a workplace setting	Descriptive	Ratio	Frequency Mode
IT training attended last year	Descriptive	Ordinal	Frequency Mode
Prior IT training	Descriptive	Ratio	Frequency Mode
Preference for IT training	Descriptive	Nominal	Frequency Mode
Preferred method of learning IT	Descriptive	Nominal	Frequency Mode
Method of acquiring IT competency	Descriptive	Nominal	Frequency Mode

(table continues)

	Research Questions (RQ)	Hypotheses	Type of Scale	Descriptive Statistics
1.	What is the frequency of performing tasks using IT?	Descriptive	Interval Erickson (1996)	Frequency Mean Standard Deviation Ranking
2.	What tasks are perceived as important?	Descriptive	Interval Erickson (1996)	Frequency Mean Standard Deviation Ranking
3.	What is the perceived level of IT competency among administrative support staff in networked environments?	Descriptive	Interval Erickson (1996)	Frequency Mean Standard Deviation Ranking
4.	What IT competencies are needed by administrative support staff employed in networked environments?	Descriptive	Interval Erickson (1996)	Weighted Discrepancy Score Ranking
5.	Is there a significant difference in the mean score task performance according to the variables of highest education level, job title, age group, years in current position, related work experience, years of computer use, IT training attended, preference for IT training, method of learning IT and method of acquiring IT competency?	Descriptive	Ratio	Mean Standard Deviation ANOVA

(table continues)

	Research Questions (RQ)	Hypotheses	Type of Scale	Descriptive Statistics
6.	Is there a significant difference in the mean score task importance according to the variables of highest education level, job title, age group, years in current position, related work experience, years of computer use, IT training attended, preference for IT training, method of learning IT and method of acquiring IT competency?	Descriptive	Ratio	Mean Standard Deviation ANOVA
7.	Is there a significant difference in the mean score task ability according to the variables of highest education level, job title, age group, years in current position, related work experience, years of computer use, IT training attended, preference for IT training, method of learning IT and method of acquiring IT competency?	Descriptive	Ratio	Mean Standard Deviation ANOVA
8.	What is the relationship between the mean score task importance and mean score task performance for the 10 competency categories?	Descriptive	Ratio	Chi-square Spearman Rank Order Correlation Coefficient Pearson Product Moment Correlation

Conceptual Framework

A review of literature reveals that before a program or course content is developed, empirical assessment is conducted to identify the specific tasks to be included in a training program (Bryant, 1997; McEwen, 1996; Norton, 1992). In Business Education where programs are concerned with workforce readiness, workforce preparation and occupational training, there is a great need to ensure that competencies needed for successful workplace performance are taught. Failing to teach what should be taught means that students are cheated of a program that promises current contents meeting industry needs.

The design of a curriculum or training program involves determining content, instruction and evaluation. Therefore it is important to understand the structure of curriculum design to see why this study is developed. The first step in curriculum design involves a comprehensive needs analysis which is a process of gathering and analyzing information with the intention of identifying needs of those to be trained and outlining the nature of the required training. The needs analysis shows the discrepancy between what is and what ought to be and is essential to identify met and unmet needs of candidates for identification of additional learning using customized program or course.

The second stage analyzes the specific tasks and competencies to be included in a program. A list of tasks and competencies is developed and verified to determine the tasks selected for training. The outcome of this stage produces a list of tasks and competencies that form the basis of a curriculum.

The third stage is the actual design of the curriculum. The tasks and competencies derived from stage two will be used to develop and sequence the training objectives for the curriculum (Norton, 1992).

Since this study forms the foundation for the development of a competency-based module for the development of IT competencies among administrative support staff employed in network environments, the conceptual framework will adapt Tyler's model for curriculum development (1949) and the Systematic Curriculum and Instructional Development (SCID) model (Norton, 1992). The study was concerned with the "What" aspect of the training module rather than the "How" aspect of instructional delivery.

This section on conceptual framework discusses Tyler's ends-means model and the SCID in relation to curriculum planning and second, the conceptual model formulated to address research questions for this study.

Systematic Curriculum and Instructional Development (SCID)

The Systematic Curriculum and Instructional Development is a management-based model that provides a structure for developing curriculum for competency-based education. Robert Norton (1993) with the Center of Education and Training for Employment, Ohio State University, developed the SCID model, which is primarily concerned with conducting occupational analysis for designing work-related programs. The SCID model comprises five phases namely: analysis, design, development, implementation and evaluation. The SCID model is modified for this study because it forms the basis for both formative and summative evaluation.

The analysis phase, made up of six components, is designed to carry out thorough analyses of occupations to determine course content that are relevant to the needs of student and industry. The components are Needs analysis, Job and Task analysis, Task Verification and Task Selection methods. The Delphi Technique was used to gain consensus on IT competencies required of administrative support staff employed in networked organizations. A panel of Subject Matter Experts (SMEs) that comprised

exemplary job incumbents, academic experts, vendor specialists, experts from a professional body and supervisors validated the list of tasks and IT competencies developed by the researcher. The consensus obtained from the SMEs formed a needs analysis for a curriculum on training IT competencies for administrative support staff.

Job Task Analysis is a form of needs assessment used for identifying gaps in skills and knowledge where tasks and the related processes for task completion are analyzed. The list of tasks and IT competencies for this study was obtained from the results of the Delphi Technique. Task Verification was achieved by distributing the questionnaires to job incumbents selected for this study. The findings of the questionnaire verified and identified the tasks and IT competencies that require additional training. Such findings would assist educators in decisions on tasks and IT competencies for content in the office management curriculum. Figure 1.1 shows the major components of the analysis and design phases from the SCID model:

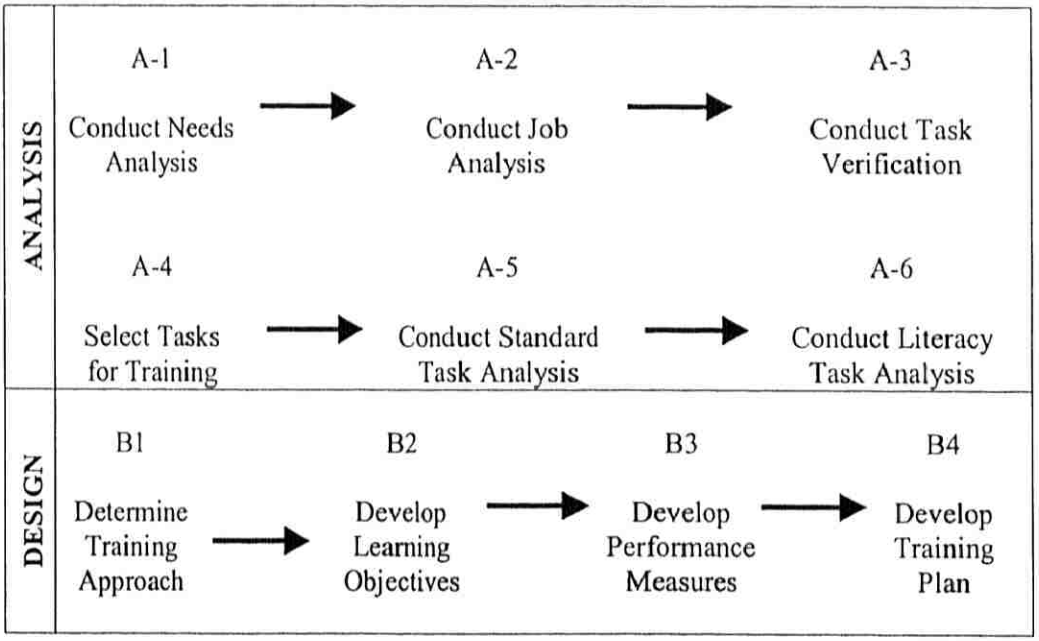

Figure 1.1 Systematic Curriculum and Instruction Development (SCID) Model Major Components

Note: From "Improving Training Quality by Avoiding the "What Errors" of Curriculum Development" by R. E. Norton, 1993, p. 3. Reprinted with permission of the author.

Figure 1.2 illustrates the research framework based on the SCID model.

Phase	Data Collected	Method	Product
Analysis	List of tasks and IT related competencies	Tasks and IT-related Competencies • Literature review • Skill standards • Research studies • Researcher's own experience	• Specific functions or tasks important to occupation. • IT competencies required to carry out tasks.
	Validated list of tasks and IT related competencies	Delphi Technique: Content Validation • Supervisors • Job incumbents • Academic experts • Vendor specialists	• Obtain and refine list of tasks and IT related competencies • Additional tasks and IT related competencies • Rank importance of tasks and IT related competencies required for workplace performance
	• Competency needs • Training needs	Survey Instrument • Survey instrument developed from the Delphi Technique.	Demographic data • Level of education • Nature of business • Job title • Years in current position • Related work experience • Years of computer use • Previous IT training • Preference for IT training • Preferred method of learning IT • Method of acquiring IT competency Analyses of tasks and IT competencies • Frequency of task performance • Perceived task importance • Self-rated IT competency

Figure 1.2: Research Framework based on the SCID Model

(figure continues)

Phase	Data Collected	Method	Product
	Validity and reliability	Pilot test • Job Incumbents • Graduates of Executive Secretaryship	• Clarity of instruction • Clarity of questions and responses. • Length of time to complete questionnaire • Cronbach Alpha test • Validated questionnaire
Analysis	High priority tasks and IT related competencies. Low priority tasks and IT related competencies. Priority Training for development of IT competencies.	Administer survey • Administrative Assistants • Executive Assistants • Secretaries • Executive Secretaries • Stenographers • Personal Assistants	• Survey findings
Design	Microcurriculum	Input from survey • Write goals and objectives	Microcurriculum • Goals and objectives • Content • Mode of delivery

Figure 1.2 Research Framework based on the SCID Model

Competencies as curriculum content

Decisions about instructional content structured around competencies have been influenced by the work of Ralph D. Tyler (1949). Tyler put forward a fundamental idea in instructional design; i.e. content to be taught must be determined before designing instruction. According to Tyler, "Objectives become the criteria by which materials are selected, content is outlined, instructional procedures are developed and tests and

examinations are prepared" (1949, p. 3). Tyler's idea for this "ends-means" model of instructional design directly relates instruction with outcomes. The ends of instructions (objectives) are made prior to decisions on the means (instructional activities and materials). Tyler's work has been extended and improved since 1949 by Taba (1962) who put forward a seven-step process for designing instructional content.

Although Tyler's model is more than 50 years old, his idea forms the basis for many studies on curriculum design. In the Business Education literature, numerous studies have been conducted over the past ten years to determine technical and non-technical competencies required for entry-level employment of clerical and secretarial employees. These technical and non-technical competencies were subsequently used as a basis for curriculum development (Ewing, 1991; Haff, 1993; Lambrecht & Sheng, 1998; Maddox, 1995; McCoy, 1997; McEwen, 1996; Moore, 1993; Raja Munirah R. Mustapha, 2002; Wiedmaier, 1997).

Analyses of job tasks for curriculum content

Due to the rapidly evolving nature of the workplace, especially in the technological area, employers find it difficult to employ graduates that meet the industry standards for entry employment. Job analysis procedures are used in organizations to obtain information necessary for the development of procedures for selection of personnel, training, performance appraisal, job evaluation, and job design (Richman & Quiñones, 1996).

In business education, the use of job task analyses provides the basis for determining curriculum content. Results from a job analysis may provide feedback on the scope of training necessary for competent workplace performance. Fidler (1997) stated that

content validity of credentialing examinations such as licensure examinations or certification tests has been achieved through job analyses.

In identifying instructional content the use of job task analyses is preferred because of its close relationship to development of performance or competency standards. Competency-based reforms introduced in higher education in the United States created the impetus for development of competence based curricula that centered on the learner (Fletcher, 1997; Herschbach, 1992; Wolf, 1995). The need for industry standards led to the collaborative effort of both industry and educators to develop skill standards for students entering the workplace. An inventory of competencies obtained from job task analyses will define the role and the standards required of employees in the workplace. Skill standards or standards of competence allow learners to know exactly what is required of them in their chosen vocation (Fidler, 1997; Fletcher, 1997; Wolf, 1995).

In Malaysia, the move towards a national skills standard is underway. Pioneered by the National Vocational Training Council, a division of the Ministry of Human Resources, National Occupation Skill Standards (NOSS) have been developed for 34 occupational areas through the process of Needs Analysis, Occupational Analysis, Job Analysis, Validation, Task Analysis, and the Approval process (National Vocational Training Council Malaysia, 2000).

In the United States, the Department of Labor initiated efforts toward the development of skill standards. The Secretary's Commission on Achieving Necessary Skills (SCANS) national survey on importance of workplace competencies resulted in the identification of five competency domains needed by employees to succeed in the workplace (United States Department of Labor, 1991). The five competency domains of resources, information, interpersonal skills, systems and technology each encompass 20 workplace basic competencies for workers in a globally driven market. The importance of

general and personal competencies for successful employment cannot be ignored when designing curriculum or training programs. However, in order to perform a comprehensive and accurate study on all competencies, greater resources are required because each competency requires its own in-depth research. Therefore, this study focused on the development of specific information technology competencies rather than generic workplace competencies required of workers.

Many studies show that several job analysis approaches are available to describe employment requirements for the purpose of developing workforce education curricula (Gerity, 1999; Moore, 1993; Mosley, 1999). These approaches are the task-analysis approach, professional model approach and the general components model. Business education has depended largely on the task-analytic approach to develop job competencies needed for employment (Lambrecht & Sheng, 1998). In order to determine competencies, educators need to know the context in which work is carried out and the actual tasks done. In determining course content, this study will adapt the job task analysis (JTA) approach. JTA identifies job functions, breaks down the job into tasks, subtasks and lists procedures to carry out the tasks. The Job task analysis approach is commonly used to precisely design training that provides specific skills and knowledge required for the job. The United States military service was the first organization to utilize job task analyses to examine how army personnel perform their duties. The process helped establish realistic training objectives and standards and refine training content ("Survey Tackles Common Tasks", 1998; Markowitz, 1987). Data collected through job analysis is used for making human resource decisions while the task inventory approach divides work functions into smaller classifications for purposes of developing training programs (Clifford, 1996).

A more important aspect of job task analyses is its ability in identifying tasks and needs of end users before deciding on content and mode of delivery. Several researches

have shown that job task analyses identify tasks performed and rate the frequency and level of importance placed on task performance (Bartholomew, Sawyer & Coats, 1995; Bryant, 1997; Fanno & Cole, 1997; Kawasaki, 1994; Moore, 1993). Bryant found that the importance of emergency management duties and tasks are correlated positively with the frequency of task performance. Another research found time spent and importance ratings to be moderately correlated (Sanchez & Fraser, 1992). Patel, Usala and O'Leary (1998) suggested that since relative time spent and frequency ratings are redundant, task inventories only need to use importance ratings as a proxy for relative time spent ratings. However, their findings point to the fact that even though there is redundancy between relative time spent and importance it is not sufficient to make one scale useless. Researchers often use task frequency ratings even though Friedman (1990) found that relative time spent and importance ratings are redundant. His finding could perhaps be due to the fact that workers accord more time to tasks they consider important or tasks are considered important if they take up a lot of time. Therefore, for the purpose of this study, IT competencies were identified through a job task analysis that determines frequency and importance of performing tasks using IT, and the self-reported level of IT competency.

The study tried to determine if there was a relationship between frequency of task performance using IT and the perceived task importance. The model in Figure 1.3 shows the independent variables, demographic/situational variables and dependent variable used in the study:

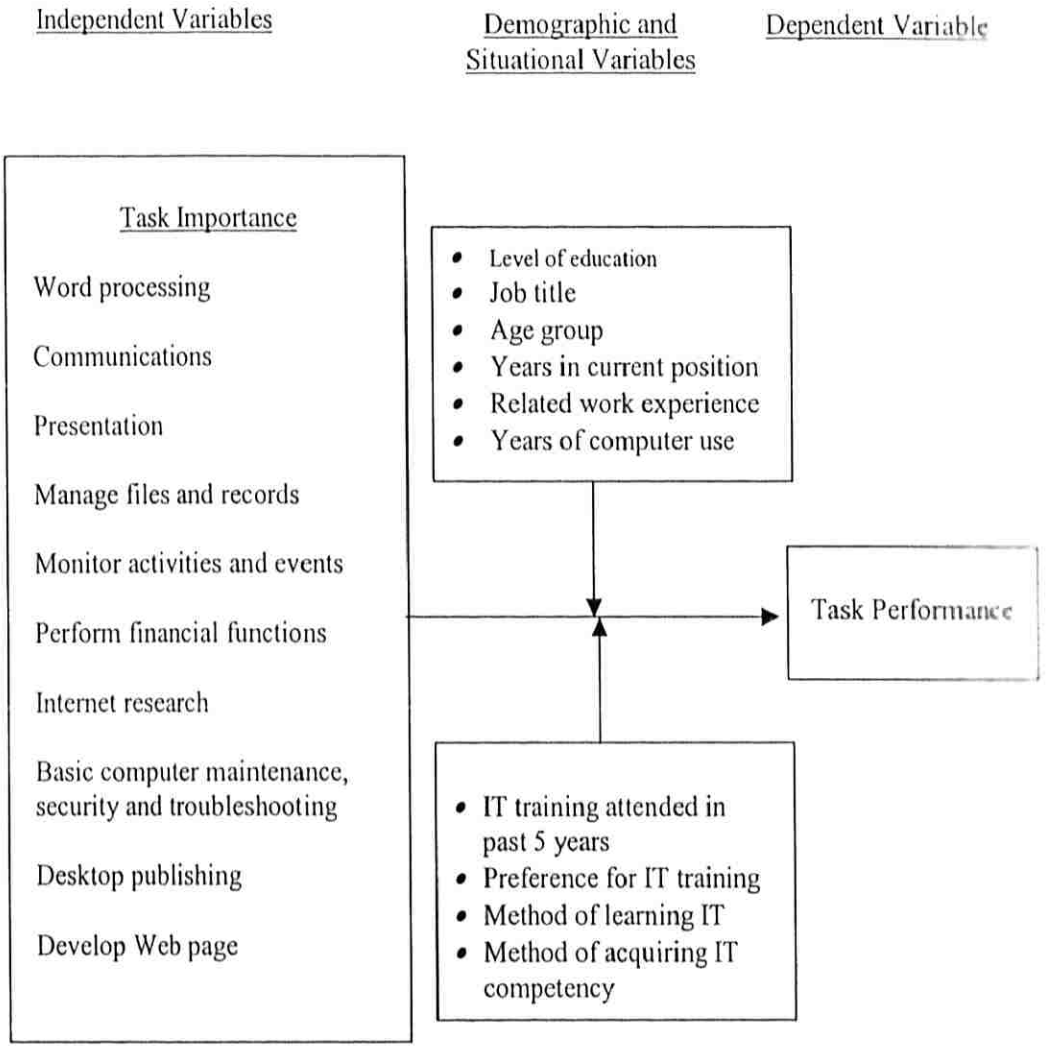

Figure 1.3 Relationship between Task Importance and Task Performance

In addition to the investigation of job functions, tasks and its related competencies, the proposed learners (target population) must also be studied. According to Lightfoot (1999) surveys to determine skills needed in the future must be carried out on professionals or people familiar with the jobs because the workplace changes rapidly and the academic community needs to respond immediately with an updated curriculum. The target population data is essential and most useful when making decisions about the content of a proposed learning program. Davis and Gonzenbach (1996) recommended that educators emphasize on content areas that employees identify as important because these are the individuals involved with the technologies and methods currently used in the workplace. The issue of people is the biggest variable in a training program and one of the hardest parts of a training program to account for. In addition, job incumbents possess two types of knowledge that contributes to competence and should be used for the benefit of others. These two types of knowledge are explicit IT knowledge that concerns formal knowledge communicated through language and tacit IT knowledge that concerns "know-how" or competence developed through actual practice and experience (Bassellier, Blaize & Izak, 2001). Therefore, administrative support staff as job incumbents was selected as respondents. The demographic profile of respondents such as highest education level, age, years with current employer, experience with IT, prior training acquired, and preferred mode of training delivery were elicited (Administrative Development Institute, 1994). Figure 1.4 illustrates the approach of the study.

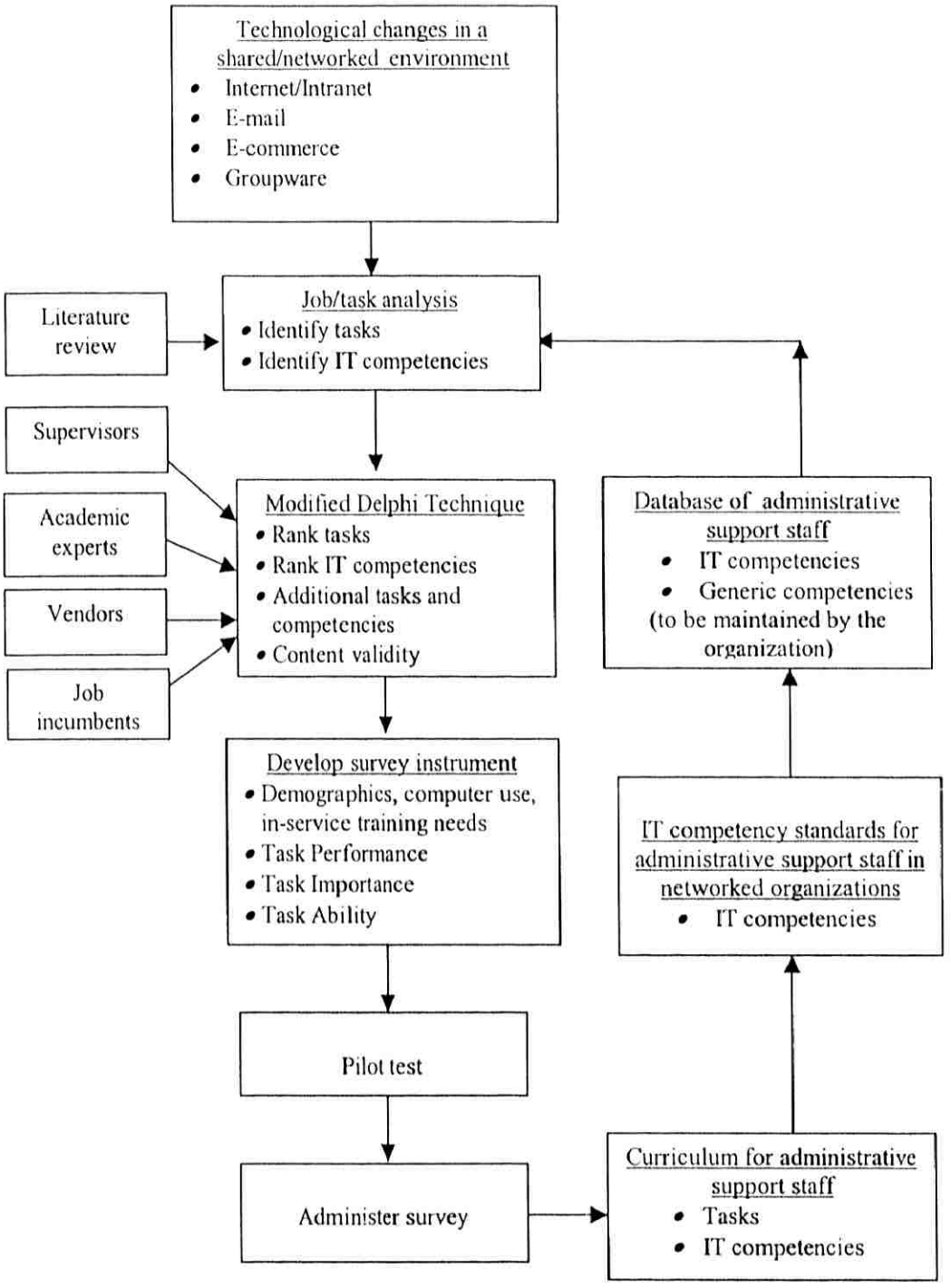

Figure 1.4 The Development of IT Competencies Among Administrative Support Staff in Networked Organizations: A Flowchart

Limitations of the Study

A knowledgeable and technology-literate workforce demands relevant educational training and retraining to ensure success in the workplace. Therefore, the purpose of this study was to analyze tasks and IT-related competencies required by administrative support staff in networked environments so that curriculum decisions can be made on appropriate program content. This section outlines the limitations of the study.

This study was limited to the following:

1. Only information technology competencies were surveyed. Workplace competencies according to the Secretary's Commission on Achieving Necessary Skills (Whetzel, 1992) comprise five competency domains of resources, information, interpersonal skills, systems and technology. Each competency domain encompasses 20 workplace basic competencies for workers in a globally driven market workplace (United States Department of Labor, 1991). The importance of personal competencies for successful employment, such as adaptability and lifelong learning, cannot be ignored when designing curriculum or training programs. However, in order to perform a comprehensive and accurate study on all competencies, greater resources are required because each competency requires its own in-depth research. Therefore, a delimitation of this study was focused on information technology technical competencies rather than generic workplace competencies.
2. Only administrative support staff designated as stenographers, secretaries, executive secretaries, executive assistants, administrative assistants and other titles related to administrative support were selected for this study. The

designated group was selected for this study because available literature on IT needs of workforce are mostly concerned with graduates, while there is still a need for workforce with sub-baccalaureate qualifications to serve in organizations and the fact that administrative support staff are identified as end users of information processing technologies (Alexander, 1996b; Zhao, 1996).

3. Only medium to large service organizations were surveyed. The organization size was not a variable to be studied, but was defined because employment of administrative support staff is mostly concentrated in such organizations (Marino, 1993). Batcha and Kunar (1998) concluded the size of an organization did make a difference in Web site ownership and that the more employees a company has, the more apt it is to have a Web Site.
4. Only service organizations that integrate networking technologies into work processes dealing with information were surveyed. The more employees a company has, the more apt it is to have Web sites to facilitate tasks completed on the Internet/Intranet (Batcha & Kunar, 1998). Downey (1999) found that large organizations become dependent on Web-based technologies for survival. In a survey of IT usage among service industries in Malaysia, Yow (2000) found that 86% of companies have deployed networking technologies for intra and inter company electronic transactions.
5. Only medium to large service organizations that have deployed networking and Web-based technologies within Klang Valley, Malaysia were surveyed. The region of Klang Valley in West Malaysia was selected for this study for a portion of this area has been designated as part of the Multimedia Super Corridor (MSC). IT-based companies that have been awarded MSC-status

run their operations from the Klang Valley (Feridah binti Mohd. Nadzar & Khainizam binti Mohamed, 1999).

6. Access of administrative support staff to a networked environment with Internet/Intranet technologies. Even though the Chief Secretary to the Government of Malaysia at that time ("Future Public Servants", 1997) stated that computer literacy and related multimedia skills are required of public servants at all levels, the rate of deploying such technologies are dependent on availability of funds. Therefore, for the purpose of this study, it was assumed that the designated administrative support staff have access to networked computers.
7. The level of technologies used in the organization. It was assumed that large service organizations have deployed networking and Web-based technologies in their work processes. However, the actual usage of the technological aspect of work processes dealing with information was dependent on the level of technology implemented in the organization.
8. The level of understanding that respondents have with reference to computer hardware and software. It was assumed that respondents have a basic understanding of technology primarily computer hardware and software and understood the questions in the questionnaire.
9. The bias in results due to responses. The researcher is aware of another limitation to the study with regard to the design and administration of the questionnaire. The questionnaire is long and it was anticipated that discouragement would occur on the part of respondents in giving complete and reliable responses.

Definition of Terms

Several key terms were used throughout this study. They are defined here to allow the reader to differentiate between them and to understand their usage in this study.

Administrative Support Staff - Job titles include stenographers, secretaries, executive secretaries, executive assistants, administrative assistants and other titles related to administrative support.

Competency - the knowledge, skills and/or attitudes required of workers to perform work-related tasks (Erickson, 1996).

Delphi Technique - A process used for eliciting and refining group judgments. A series of questionnaires is involved to obtain consensus on an issue. A final questionnaire is formulated from the responses to the questionnaires. The process stops when consensus is achieved or when sufficient information is obtained (Delbecq, Van de Ven & Gustafson, 1975).

Dependent Variable - The dependent variable used in this study was the respondent's rating of task performance.

Discrepancy Score - The difference between the level of importance and the level of knowledge given to a competency (Borich, 1980). For the purpose of this study, self-rated ability is substituted for level of knowledge.

Download - The process of receiving a file from another computer.

Electronic Mail - Electronic Mail allows messages or files to be transmitted electronically through a network.

GroupWare - A combination of local area networks and wide area networks that support teams and groups who work together in organizations (Daly, 1997).

Homepage - This refers to the main page of a Web site. Generally, the home page serves as an index or table of contents to the other documents stored at the site (Brancheau & Nansi, 2001, p. 260).

HTML - Abbreviation of Hypertext Markup Language: The language in which World Wide Web documents are formatted (Greengard, 1997).

Independent Variables - The independent variables for this study comprised information technology competencies identified through literature review. The IT competencies are basic computer maintenance and troubleshooting, produce desktop publishing documents, word processing, develop Web pages, calendaring and scheduling, Internet research, presentation, communications, perform financial functions and manage files and records.

Information Technology Competency - The ability to operate technology-based tools, use technology to locate, select and manage information, and use technology to express ideas and exchange information (Fairbanks North Star Borough School District, 2001).

Internet - World's largest computer network enabling users to send e-mail, transfer files, participate in newsgroups and access the World Wide Web.

Intranet - Intranet is a network that connects computers within an organization. Intranets allow employees to use existing Internet technologies within the corporate environment (Craiger & Weiss, 1996).

Job Analysis - Analysis conducted by a panel of experts who are considered to be top performers in a targeted job. The panel describes the job in terms that those performing the job would understand (Hoskisson, Stammen & Nelson, 1996).

Moderating Variables - The moderating variables for this study were the demographic factors comprising level of education, job title, age, years in current position,

years of related work experience, years of computer use, IT training attended, preference for IT training, method of learning IT and method of acquiring IT competency.

Network - Computers are linked to each other through telephone wiring or cabling. Networks make it possible for transmission of voice, computer data and video signals. Users may send and receive electronic mail as well as access central databases.

Networked environment - A networked environment allows information to be created by several people, stored electronically in a central and accessible location and enables groups to work together more efficiently thus making them more productive (Daly, 1997, p. 2)

Office Automation - Interaction of people in offices using systems and technologies to meet their organization's goals

Presentation and Graphics - Using functions for formatting and layout of slide presentations incorporating graphics, charts organization charts, etc.

Task Analysis - Systematically breaking down each task into steps, then determine industry performance standards, knowledge and attitudes required, determine tools, equipment, supplies and materials needed to perform tasks (Norton, 1993).

Telecommuting - A work pattern that allows employees to work from home through the use of electronic communications and computers.

Web Browser - Application software for accessing data on the World Wide Web (Brancheau & Nansi, 2001, p. 257).

Weighted Discrepancy Score - Multiplication of the average importance score by each discrepancy score for each competency. Also known as WDS, competency ordering, competency ranking, or priority score (Edwards & Briers 1999).

World Wide Web - The Internet's worldwide, HTML-based, hypertext-linked information system (Greengard, 1997).