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DISSERTATION

STUDENTS' PREFERENCES FOR STRATEGIES TO FACILITATE SELF-DIRECTED LEARNING IN DISTANCE EDUCATION IN TAIWAN

Submitted by

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In partial fulfillment of the requirements

for the Degree of Doctor of Philosophy

Colorado State University

Fort Collins, Colorado

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WE HEREBY RECOMMEND THAT THE DISSERTATION PREPARED UNDER OUR SUPERVISION BY MEI-HUEI TSAY ENTITLED STUDENTS' PREFERENCES FOR STRATEGIES TO FACILITATE SELF-DIRECTED LEARNING IN DISTANCE EDUCATION IN TAIWAN BE ACCEPTED AS FULFILLING IN PART REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY IN EDUCATION AND HUMAN RESOURCE STUDIES.

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ABSTRACT OF DISSERTATION

STUDENTS' PREFERENCES FOR STRATEGIES TO FACILITATE SELF-DIRECTED LEARNING IN DISTANCE EDUCATION IN TAIWAN

The purpose of this study is to determine perceptions of the National Open University [NOU, Taiwan, Republic of China] students' preferences for strategies to facilitate self-directed learning and to see if there are relationships to their background characteristics. An instrument was developed from current literature to quantify background characteristic variables and facilitating strategy preferences. The 1500 potential subjects, both current and inactive students, were obtained from through a random sampling procedure. A 42 percent return rate was obtained.

Results for the study showed that there were significant differences between current and inactive NOU students' characteristics on age, duration of studying at NOU, declaration of a major, duration of full-time work experience, internal motivation, insight about self, self-directed learning readiness. Although current and inactive students did not differ on any of the five self-directed learning facilitating preference scales, they did differ on five items; i.e., instructors' attitudes about the goal of education, assignment marking style, student's self-directed learning potential, learning-contract based evaluation criteria, and personal-responsibility focused evaluation asset.

The study also found students with higher internal motivation, external-payoff motivation, insight about self, and self-directed learning readiness scores tended to prefer more assistance/styles from the five students' self-directed learning preference scales, except no relationship was founded between students' insight about self and institution-

provided orientation programs. Female students preferred more services/styles listed within the five students' self-directed learning preference scales except no difference was found for course design adaptations. Furthermore, students who had been studying at NOU longer required less assistance from the institution.

In predicting students' preferences for institution support services, duration of studying and full-time work experiences, internal and external-payoff motivations, and self-directed learning readiness, combined to be predictors. Of these predictors, students' who had been studying at NOU longer and who had more full-time work experiences required less assistance from NOU. Students' preferences for institution-provided orientation programs was predicted by the combination of female gender, and internal and external-payoff motivations while the preferences for instructional styles were predicted by the combination of female gender, and internal and external-payoff motivations, and self-directed learning readiness. The combination of shorter period for studying at NOU and internal and external-payoff motivations predict students' preferences for interpersonal interactions. And finally, students' preferences for course design adaptation was predicted by internal and external-payoff motivations and students' self-directed learning readiness.

The study provides a framework, which can be used as a diagnostic and facilitating tool for distance adult learning organizations and professionals to enhance the effectiveness of self-directed learning facilitation and reduce the dropout/stopout rate.

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DEDICATION

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CHAPTER I

INTRODUCTION

Distance education as an alternative instructional delivery system has interested the American public education since the 1980s (Barker, Frisbie, & Patrick, 1989; Miller & Husmann, 1994). By using various telecommunications and information technologies, distance learning becomes a real force that increases access and delivers programs to serve geographically diverse audiences (Lauzon & G. A. B. Moore, 1989; Miller & Husmann, 1994; Olcott, 1997; Olcott & Wright, 1995). Hayes (1990), M. G. Moore (1989b), Niemi and Gooler (1987), and Robinson (1992) suggested that distance education is recognized as an important approach in the field of adult education.

Distance education has the potential to meet the adult learner's needs based on several perspectives. As noted by Verduin and Clark (1991), the choice of time and location in distance learning appeals to adults since adults have many outside of school obligations such as work and family tasks that they need to be concerned with prior to learning. Successful study at a distance requires certain traits that are more typically possessed by adults. The abilities to be self-directed, self-paced, and internally motivated are often characteristics of adult learners that can enhance their satisfaction and the likelihood of completing a program in distance learning.

The development of communication and information technologies in distance learning have harnessed a vast array of available resources and stimulated the development of adult and continuing education (Hayes, 1990; Yoakam, 1997). Dillon (1989) suggested that the development of communication technology can help provide distance education students more instant and individualized access to education. G. A. B. Moore (1991) also noted that appropriate technology application can assist distance learners in tralscending the isolation, allowing them the potential to interact with instructors and peers.

Although increasing attention has been given to the development of technology, Yoakam (1997) suggested that effective distance education programs must focus on the learners even though technology is an integral part of distance education. Learning must be a lifelong process in order to accelerate better change in the world through education. Hence, education at all levels should emphasize the process of facilitating self-directed learning (Knowles, 1980). M. G. Moore (1994) pointed out that reinforcement of the autonomy of learners should be a goal of distance education. Thus, adult educators in either traditional education settings or distance programs have the responsibility to promote and support the movement of self-directed learning.

The Research Problem

Background to the Problem

The emergence of increasingly student-centered learning activities in the 1970s, facilitated by new instructional technology introduced in the 1980s, is contributing to a dramatic evolution in the teaching-learning process in distance education (Beaudoin, 1990). Because the distance factor minimizes dialogue between teacher and learner and

imposes a relatively high level of structure in order that learning objectives be met, Bernet and Bugbee (1993) reported that distance education is prescriptive and fosters dependency. On the other hand, M. G. Moore (1994) and Wedemeyer (1973) emphasized that distance education system are based on the beliefs that learners are autonomous and independent.

As noted by Beaudoin (1990), distance education should revolve around a learner-centered system with teaching activity focused on facilitating learning rather than teaching. M. G. Moore (1994) suggested that distance education needs to be re-conceptualized as a more open partnership between teachers and self-directed learners in which individual learners initiate, conduct, and control much of the learning process. As active participants in the learning process, learners must have a sense of ownership of the learning goals and be willing to receive and explore the instructional message (Sherry, 1996).

Literature in the field of distance education is replete with qualitative and quantitative investigations aimed at demonstrating the effectiveness of various delivery approaches/technologies in terms of student performance (Biner, Bink, Huffman, & Dean, 1995; Phelps, Wells, Ashworth, & Hahh, 1991; Ritchie & Newby, 1989). Many studies (Biner et al., 1995; Cheng, Lehman, & Armstrong, 1991) have been conducted to compare the achievement of learners in distance and in the traditional face-to-face instruction. Some researchers (Dillon, Hengst, & Zoller, 1991; Wilkinson & Sherman, 1990) discussed issues regarding the role of instructors and the function of interaction (Fulford & Zhang, 1993; Hillman, Willis, Gunawardena, 1994; M. G. Moore, 1989a;

Wagner, 1994) while others (Biner et al., 1995; Wilson, 1994) focused on student personality and self-concept as predictors of achievement in distance education.

Research on self-directed learning has been devoted to developing instruments designed to measure levels of self-directedness in relation to students' background factors (Guglielmino, 1978; Durr, Guglielmino, & Guglielmino, 1996), and conducting qualitative studies to establish theory and provide rich descriptions of the self-directed phenomena. Caffarella (1993) categorized the literature in this area as philosophical assumptions, form and process of learning, learner characteristics and preferences in formal settings. Furthermore, research on student self-directed or autonomous learning in distance education has been conducted in relation to student personality, perceptions, and developmental stages (Boud, 1988; Cranton & Knoop, 1990; Pratt, 1988; Robinson, 1992). Some reports (Candy, 1991; Lewis, 1988) explore the factors that are involved in self-directed learning. By comparison, little research has been devoted to discuss perceptions about facilitating self-directed learning in relation to background characteristics of distance learners in formal settings. The primary goal of this research is to identify the specific students' background characteristics in relation to instructional strategies and institutional support assistance, which stimulate and strengthen distance learners' capacity to engage in self-directed learning.

Statement of the Problems

Is there a relationship between the background characteristics of non-traditional distance learners in Taiwan and their preferences for how an instructor and institution provide facilitation strategies to increase their self-directed learning ability?

Research Questions

Due to the exploratory nature of this project, the research will be directed by the following research questions:

1. What are the background characteristics (i.e., duration of studying at NOU, age, gender, declaration of a major, full-time work experience, internal motivation, external-payoff motivation, insight about self, and self-directed learning readiness) and preferences for the 33 self-directed learning facilitation items of the National Open University [NOU] students, current and inactive combined?

2. Are there differences between current NOU students' and inactive students' background characteristics on duration of studying at NOU, age, gender, declaration of a major, full-time work experience, internal motivation, external-payoff motivation, insight about self, and self-directed learning readiness as well as on students' preferences for the five scales of Institution Support Services, Institution-Provided Orientation Programs, Instructional Styles, Interpersonal Interactions, and Course Design Adaptations?

3. Are there relationships between student background characteristics (academic status--current vs. inactive, duration of studying at NOU, age, gender, declaration of a major, full-time work experience, internal motivation, external-payoff motivation, insight about self, and self-directed learning readiness) of NOU students and their preferences for how the *institution provides support services* that are conducive to self-directed learning? Also is there a combination of these independent variables that predicts NOU students preferences for how the institution provides support services better than any one variable alone?

4. Are there relationships between student background characteristics (academic status--current vs. inactive, duration of studying at NOU, age, gender, declaration of a major, full-time work experience, internal motivation, external-payoff motivation, insight about self, and self-directed learning readiness) of NOU students and their preferences for how the *institution provides orientation programs* that are conducive to self-directed learning? Also is there a combination of these independent variables that predicts NOU students preferences for how the institution provides orientation programs better than any one variable alone?

5. Are there relationships between student background characteristics (academic status--current vs. inactive, duration of studying at NOU, age, gender, declaration of a major, full-time work experience, internal motivation, external-payoff motivation, insight about self, and self-directed learning readiness) of NOU students and their preferences for *instructor instructional styles* that are conducive to self-directed learning? Also is there a combination of these independent variables that predicts NOU students preferences for instructor's instructional styles better than any one variable alone?

6. Are there relationships between student background characteristics (academic status--current vs. inactive, duration of studying at NOU, age, gender, declaration of a major, full-time work experience, internal motivation, external-payoff motivation, insight about self, and self-directed learning readiness) of NOU students and their preferences for *interpersonal interaction* within learning situations that are conducive to self-directed learning? Also is there a combination of these independent variables that predict NOU students preferences for interpersonal interaction within learning situations better than any one variable alone?

7. Are there relationships between student background characteristics (academic status--current vs. inactive, duration of studying at NOU, age, gender, declaration of a major, full-time work experience, internal motivation, external-payoff motivation, insight about self, and self-directed learning readiness) of NOU students and their preferences for how an *instructor designs courses* to meet their concerns that are conducive to self-directed learning? Also is there a combination of these independent variables that predicts NOU students' preferences for how an instructor designs courses better than any one variable alone?

8. Are there differences among each of the five sets of dependent variables (Institution Support Services, Institution-Provided Orientation Programs, Instructional Styles, Interpersonal Interactions, and Course Design Adaptations) of students' preferences for self-directed learning facilitation (i.e., do the scales differ in importance)?

9. Which student preference items combine to predict whether or not a student will drop out/stop out of NOU?

Definition of Terms

The terms used consistently in this study needed further definition are listed as follows:

Self-directed learning in this research refers to the perspectives of personal autonomy and to the degree of choice that learners have within an instructional situation. Self-directed learning means neither that the learner has complete control over the choices of learning content, purpose, and assessment criteria and methods nor that the learner has to learn solitarily or completely independent, but rather that in the learning procedure, adults seek assistance in the form of human and material resources as well as

work collaboratively with teachers and other students (Garrison, 1992). In order to achieve higher achievement, self-directed learners may even attend workshops or other educational programs as part of their self-directed learning efforts. The terms self-direct learning and self-direction are used interchangeably in the study.

Academic status in this study distinguishes students who are currently enrolled at the National Open University [NOU] in Taiwan and students who are discontinued to register at NOU in the fall semester of 1998.

Students' academic status labeled inactive is used very loosely in this research. It may indicate students' temporarily stop-out from one academic semester to another but they may register again later. Or, it may also refer as a possibility of permanent dropout from NOU. Since the students' residency status at NOU is kept forever, students can come back whenever they are ready. The terms of "stop out" and "drop out" were applied exchangeable with "inactive" in this study.

Insight about self is measured by the research questionnaire under the section of insight about self, which was developed based on students' self-concept as an effective learner including the themes of the awareness of self-confidence, self-disciplined, perception of learning responsibility, and desire for an active role in the learning process.

Self-directed learning readiness is measured by the research questionnaire under the section of self-directed learning readiness, which was developed based on the self-perception as an inquisitive learner, awareness of needs and resources, and ability in initiating learning project.

Assumptions and Limitations

The participants of the study included the distance learners who were enrolled in the 1998-1999 academic year at the National Open University in Taiwan [NOU]. It is assumed that they have developed varying degrees of personal preferences for self-directed learning enhancement strategies based on their background characteristics. Since the participants of this study were limited to the students at the National Open University [NOU] in Taiwan, the samples may decrease the generalizability of the findings to other distance learners in either Taiwan or elsewhere in the world.

Because the delivery approaches that NOU applies involve radio broadcasts, television, and correspondence material assisted by short-term face-to-face instruction, the generalizability of the findings resulting from the research will be reduced in regard to other delivery approaches. In addition, because the research measures students' preferences for strategies of facilitating self-directed learning in an instructional learning environment at a distance, the results of the study may not be generalized to self-planned and non-instructional situations.

Significance of the Research

According to Straka and Hinz (1996), self-directedness is a central theme in theory and practice in adult education in the United States. Based on Knowles' (1978) theory of andragogy, learning in adulthood means growth in self-direction. Adults have a deep psychological need to be generally self-directing. Regarding the nature of adult learner characteristics, as adults mature they would move from dependency toward increasing self-directness at different rates for different people or they may be dependent in some particular temporary situations (Knowles, 1990).

However, Brookfield (1986) disagreed with this aspect of the andragogical model and indicated that adults may be self-directed at work and in their personal lives, but in learning situations it is a rarity. Caffarella (1993) and Robinson (1992) emphasized that adult educators, when practicing the theory in adult education, should not idealize self-directed learning as the true mark of a mature adult learner. As indicated by Bernet and Bugbee (1993) and Pratt (1988), including the self-directed learning mode, the difference of learning characteristics between adults learners and younger learners are often exaggerated when adult learners enroll in nontraditional educational programs. Summarizing the works from Feasley (1983), Howard (1985), and Schwittman (1982), Bernet and Bugbee further pointed out that non-traditional distance learners often have been out of school for some time. They may, thus, need more pedagogical contact, but, by the nature of the program, they receive less. According to them, the adult distance learners are confronted with more reading material than students taking formal classes, but as active adults, they have less time to study it. Faced with the stress and given the assumptions of independent character of distance study, the dropout rates for learners in distance learning program is high (Schwittman, 1982). Thus, distance educators are beginning to realize that distance education must be responsive to information access issues as well as support issues (Shale & Garrison, 1990).

Despite its complexities, confusions, and the lack of empirical evidence to support its claims, self-directed learning still remains the goal in education for all levels (Candy, 1991; Grow, 1991; M. G. Moore, 1994). Especially, people who take the initiative for learning and enter into learning more purposefully and with greater motivation.

Generally, they learn more things and learn much better than do passive people (Knowles, 1975).

Because adults prefer learning with flexible time and location choices, distance learning is an important vehicle for adult and lifelong learning. One of the central tenets of adult education is that adults in distance education should become autonomous learners. That is, self-directed learning is one of the common ways in which adults pursue learning throughout their life span (Candy, 1991). However, the basic philosophical theory is often negated in practice in adult distance learning, where course materials and activities are often prescriptive (Elton, 1987). Because students who take the initiative in learning receive better achievements and sustain longer learning interests, empowering self-directed learning ability becomes a critical element for enhancing successful self-actualization.

As part of the general trend of using various technologies and delivery approaches to provide learners with greater equality and wider access to higher education, the National Open University [NOU] in Taiwan was founded in 1986. The National Open University is committed to maintain an open admission system for all who wish to enroll (NOU, 1987). It was the first non-traditional university to conduct distance education in Taiwan. The goal of the National Open University is to implement adult continuing education in order to promote educational-cultural standards and the quality of manpower mainly through the use of audio-visual media (Hsiao, 1990). According to Hsiao, in the Fall of the 1989 academic year, NOU served more than 40,000 students. NOU has burgeoned to become the largest university in Taiwan.

Moreover, distance learning has the characteristic that instructors and learners are separated from each other. This is incompatible with traditional Chinese educational philosophy. The traditional ideal education reveals that the presence of a teacher is an essential element of moral guidance in the educational process (Hsiao, 1990). For teachers, teaching ethical and moral values through deeds is more important than teaching information; for students, learning from a teacher's deeds is more important than learning from his words. This inherent weakness of distance education has caused suspicion of student performance regarding the process and effects of its instruction without the presence of the instructor even though studies have proven that student academic achievement in distance education is not inferior to students in conventional settings. However, with the regard of cultural differences, many distance learning theories may be inadequate or not applicable when related to this specific group.

Academic achievement is an important concern of adult learners enrolling in formal distance educational programs. Based on teaching experiences, M. G. Moore (1994) noted that successful distance learners in his program exhibited a high degree of interdependence and autonomy in the learning process. Hence, he suggested that learner autonomy should be a goal of distance education. Caffarella (1993) noted that one of the major goals for adult educators is to teach adults how to take more responsibility and control in the learning process. However, because not all the distance learners have the ability or potential to be self-directing, the educational program and instructor should attempt to identify ways or strategies to encourage and support their learning toward self-direction.

CHAPTER II

REVIEW OF THE LITERATURE

Library Research Strategies

The information obtained in the study came from many sources. The descriptors of self-directed learning, student autonomy and motivation, strategies of facilitating self-directed learning in the fields of distance and conventional learning, and distance learning in Taiwan were used to search relevant information from the databases of SAGE, Educational Resources Information Center [ERIC], Dissertation Abstracts International, Psychological Abstracts [Psyclit], and the databases of Netscape, Excite, Infoseek, and Looksmart in the Web site.

Andragogy as a Foundation of Adult Education

The comprehensive evolving process of andragogy is described by Knowles (1980) and the Nottingham Andragogy Group (1983). According to the Nottingham Andragogy Group, the term andragogy was originally formulated by Alexander Kapp, a German teacher in the 18th century, who used the word to describe the educational theory of Plato. During the 60s, a great deal of knowledge about adult learning was drawn from various disciplines such as clinical psychology, developmental psychology, gerontology, sociology, and anthropology in Europe and North America. A comprehensive and coherent concept of adult learning has been evolving from these integrated theoretical frameworks.

During the evolving process, European adult educators labeled this theoretical model as andragogy, in contrast to the theory of youth learning, pedagogy (Knowles, 1980, 1990). Andragogy was first used in referring to the discipline which studies the adult education process or the science of adult education (the Nottingham Andragogy Group, 1983). Knowles (1980) further defined andragogy as the art and science of helping adults learn, to differentiate it from pedagogy as the art and science of teaching children. According to Knowles, the four assumptions of andragogy are as follows:

1. Self-concept: It is assumed as adults mature, they will move from dependency toward increasing self-directness, even though at different rates and different dimensions for different people. Although adults may be dependent in particular temporary situations, they have a deep psychological need to be self-directed in learning.
2. Experience: It is assumed as people grow that they accumulate rich experiences that become a rich resource for learning. Adults attach more meaning to learning they have gained from experiences.
3. Readiness to learn: It is assumed that people become ready to learn something when they experience a need to learn it in order to cope with their real-life tasks or problems.
4. Orientation to learning: It is assumed that adult learners see education as a process of developing increased competence to achieve their full potential in life. They want to be able to apply the knowledge and skills gained today to live more effectively tomorrow.

Knowles' discussion of andragogy provides deeper clarity but also caused considerable controversy (Day & Baskett, 1982; the Nottingham Andragogy Group, 1983). For instance, Elias (1979) and Pratt (1988) saw the distinction between andragogy and pedagogy as a misguided attempt to enhance the status of the field of adult education.

For Elias, all teaching involves explaining, concluding, inferring, giving reasons, demonstrating, defining, and comparing, as well as motivating, counseling, evaluating, planning, encouraging, disciplining, and questioning. Thus, the dichotomy of pedagogy and andragogy should be integrated into the unity of "education", as Elias suggested. Besides, Gorham (1985) found that most teachers, who believe they are adopting andragogy theory when teaching adults, actually make few changes in the pedagogical style used in teaching children. Pratt (1988) claimed that the distinction between andragogy and pedagogy exaggerates the differences between adult and youth education, and it minimizes the differences between adults as learners. He further suggested andragogy and pedagogy can better be understood "if we consider the variation in learner dependency with respect to specific situations and attempt to analyze the type of teacher-learner relationships best suited to those variations" (p. 164).

Besides, regarding the concept of self-direction in adulthood, Day and Baskett (1982) argued that in asserting the self-concept changes from a need for dependency in childhood to a need for self-direction in adulthood may not itself be true. They noted that, although, in an ideal world, all learners will be motivated by an intrinsic desire to learn; both adults and children often attend courses because they have to, or at least perceive that they have to. The perceptions of self-direction may be formed by factors, such as role expectations, socialization, or psychological needs. Thus, adult personality development is not necessarily a chronological and linear developmental process.

Furthermore, Piaget (1973), Day and Baskett (1982), Deci and Ryan (1981), and Skager (1984) claimed that child learning is often self-directed. Deci and Ryan (1981) and Skager (1984) believed that self-directed learning is a fact for young children. They

are curious and they go to things that interest them. But, as they proceed to formal schooling, their intrinsic motivation is replaced by extrinsic motivation and learning becomes a dependent mode.

However, Grow (1991) and Tuman (1988) argued that "learning on your own" requires a complex collection of self-skills and learning skills, which not all learners spontaneously acquire. If children learn on their own, self-direction must be explicitly encouraged, or their families' backgrounds must have already prepared them for self-direction.

Indeed, in earlier writings, Knowles (1970) viewed andragogy as the polar opposite of pedagogy. Later, Knowles (1980) revisited these assumptions and suggested that andragogy is better not seen as dichotomous but rather as a continuum with two ends of a spectrum. As further stressed by Knowles, regardless of the age of the learner, whenever a pedagogical assumption is the realistic one, the pedagogical strategies are appropriate for practicing. Over the years, Knowles has made clarifications, modifications, and expansions of his perspectives about andragogy. He, then, described six assumptions underlying the concept:

1. Adults need to know why they need to learn something before undertaking to learn it.
2. Adults have a self-concept of being responsible for their own lives, they develop a deep psychological need to be seen and treated by others as being capable of self-direction.
3. Adults come into an educational activity with both a greater volume and a different quality of experience from youths."

4. Adults become ready to learn those things they need to know or to cope with their real-life situations effectively.

5. In contrast to children's and youth's subject-centered orientation to learning (at least in school), adults are life-centered (or task-centered or problem-centered) in their orientation to learning.

6. While adults are responsive to some extrinsic motivators (better jobs, promotions, salary increases, and the like), the more potent motivators are intrinsic motivators (the desire for increased self-esteem, quality of life, responsibility, job satisfaction, and the like (Knowles, 1989, p.83-84).

In summary, for some people, andragogy has become a way of forcing an identity in the field of adult education, and which helps us to understand adults as learners. However, Pratt (1993) proposes that andragogy has not been tested and found to be either the basis for the theory of adult learning or an unifying concept for adult education. As suggested by Merriam and Brokett (1997), this criticism does not deny the value of the contribution of andragogy to adult education but rather helps to sharpen the focus on what andragogy has and has not contributed to our understanding of adult learning.

Concept of Self-Directed Learning

Some of the most important developments of andragogy in adult education over the past decades have been in the area of self-directed learning (Gerstner, 1990; Merriam & Brockett, 1997; Mezirow, 1985). From the literature on self-directed learning, it becomes evident that researchers use the same term in referring to a variety of activities and concepts. Primarily, self-directed learning focuses on learning that is related to the

individual and self-development, with learners expected to adopt primary initiative and responsibility for their own learning (Brundage, 1988; Caffarella, 1993), and it also implies learner control over the learning process (Brundage, 1988). Self-directed learning has also been characterized as a high-level skill (Martin, 1985), a personality feature (Guglielmino, 1977; Oddi, 1986), a useful technique (Knowles, 1980), and a learning goal (Brookfield, 1985; Mezirow, 1985), as well as a situational attribute based on the learner's competence, commitment, and confidence at a given moment (Pratt, 1988). In a broader consideration, Candy (1987, 1990) distinguished four perspectives of the term: autonomy as a personal quality (self-directed learning as a valued philosophical ideal); autodidaxy as learning outside formal instruction (self-direction as the independent pursuit of learning opportunities without institutional support); ability and willingness to direct one's own learning; and learner-control as an essential consideration of a formal institution. More specifically, according to the summaries of Bonham (1989) and Caffarella (1993), self-directed learning has been conceived as:

1. A characteristic of learners with personal autonomy as its hallmark (Brockett & Hiemstra, 1991; Brookfield, 1985a, 1985b; Candy, 1991; Knowles, 1975, 1980),
2. A goal toward which adult learners should be moved (Brookfield, 1985; Candy, 1991; Grow, 1991, 1996; Mezirow, 1985),
3. An instructional method or as a way of organizing instruction in formal settings that allows for greater learner control (Brookfield, 1985a; Candy, 1991; Grow, 1991, 1996; Knowles, 1975, 1980),

4. The use of instructional design principles for planning one's own learning and a process in which the learner moves from one learning episode to the next in an order governed by availability of resources (Brockett & Hiemstra, 1991; Candy, 1991; Knowles, 1975, 1980), and/or

5. A self-initiated process of learning that stresses the ability to plan or manage their own learning (Brockett & Hiemstra, 1991; Caffarella & O'Donnell, 1987; Candy, 1991).

Moreover, Hersey and Blanchard (1988), and Grow (1991, 1996) proposed a Stage Self-Directed Learning Model, in which, learners advance through stages of increasing self-direction and that teachers can help or hinder that development.

Self-Directed Learning as a Goal, Method, and Process

Self-direction as an outcome of learning needs to be distinguished from self-direction as a process of learning, and self-direction as a process needs to distinguish learning in formal instructional settings from learning in non-instructional settings. The development of self-directed learners as people who exhibit the qualities of moral, emotional, and intellectual autonomy is the long-term goal for most educational endeavors (Candy, 1991). That is, self-direction is a goal of education, and its objectives are to reinforce the individual's ability for constant adaptive change and responsibly of exercising and fulfilling the democratic rights and obligations of citizen under a rapid change of society.

In addition, self-directed learning is presented as an alternative to other models, such as teacher-directed or content-directed learning, of conducting education (Candy, 1991). It is viewed as a method of organizing instruction and emphasizing learner control and learner responsibility over the learning process.

Brookfield (1986), Knowles (1975), and Long (1987) provided three definitions that describe self-directed learning as different processes of conceptualization. According to Knowles (1975), self-directed learning in its broader meaning describes a process in which an individual takes the initiative control and responsibility, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying resources for learning, choosing and applying appropriate learning strategies, and assessing learning outcomes. Tough (1979) referred to the procedure as a pedagogical model because the activities are the same as teaching a child but initiated by the learners. For Brookfield (1985, 1988), self-directed learning is an internal change in the consciousness of an individual after he or she has engaged in a critical analysis of alternative possibilities (i.e., external control activities). The statement presents self-directed learning as an outcome and as a process with the emphasis of "internal change" and "critical analysis". Furthermore, Long (1987) defined self-directed learning as "a personally directed purposive mental process usually accompanied and supported by behavioral activities involved in the identification and searching out of information" (p. 3). He further emphasized that the personally-directed, purposive mental process is not dependent upon the pedagogical, physical, or social independence or isolation of the learner, but rather is motivated by the learner's own aims to learn and is largely rewarded in terms of its intrinsic values.

When seeing the process as a pedagogical model as Tough (1979) implied, Long (1989) suggested that self-directed learning emerges from the interaction of psychological control of students and pedagogical control of instructors. When each of the forms of control are equal or when psychological control exceeds pedagogical

control, we can considerate the situation as a self-directed learning condition. However, the degree of psychological control for different learners can vary within a classroom. In a highly self-motivated class, some learners passively wait guidance while in some highly prescriptive or pedagogical class, some students still can maintain their psychological control in terms of choosing and exploring imposed contents and objectives that are of most interest to them (Long, 1989). Garrison (1989a, 1989b, 1992) suggested that control is the result of the interaction of internal responsibility, learner independence, learner proficiency, and external support. The real purpose of increased control is to achieve a further understanding of content and the opportunity to confirm knowledge objectively (Garrison, 1992). Whenever the self-directed learning approach is applied, the instructor must be concerned with students' abilities and available resources.

Self-Directed Learning as a Personal Attribute

While self-direction is indicated as a goal, process, and/or a method, some other authors refer it as a personal quality or characteristic of learners (Candy, 1991; Guglielmino, 1977; Oddi, 1986). Since the appearance of Guglielmino's Self-Directed Learning Readiness Scale (1977), there has been a succession of studies (Guglielmino & Klatt, 1994; Guglielmino & Guglielmino, 1994; Jones, 1992) based on the notion that self-direction is a measurable attribute.

Using a modified Delphi technique, 14 authorities participated in a 3-round survey, in which they were asked to label and rate attitudes, abilities, values, and personality characteristics that they considered important for self-directed learning. Guglielmino (1977) reported that self-direction can happen in a wide variety of situations from a teacher-centered classroom to a self-conducted learning project. The personal

characteristics, such as learners' attitudes, values, and abilities are the keys determining whether self-directed learning will take place in a given learning situation. Based on her survey results, a highly self-directed learner is one who exhibits initiative, independence, and persistence in learning; one who takes responsibility for his /her own learning; one who views a problem as a challenge; one who is disciplined and has a high degree of curiosity and self-confidence; one who has a strong desire to learn and is able to use basic study skills, organizes time, and sets an appropriate pace for learning, and develops a plan for completing work; and one who enjoys learning and has a tendency to be goal-oriented. Guglielmino categorized these elements into eight factors: openness to learning opportunities, self-confidence as an effective learner, initiative and independence in learning, informed acceptance of responsibility for one's own learning, love of learning, creativity, future orientation, and ability to use basic study and problem-solving skills.

Likewise, Oddi's (1986) Continuing Learning Inventory also focuses on the discussion of personality characteristics for learning behavior. The author categorized personality traits of the self-directed learners into three overlapping dimensions from literature research. The three dimensions are Proactive Drive versus Reactive Drive, Openness versus Defensiveness, and Commitment to Learning versus Apathy or Aversions to Learning. Each set of characteristics presents a continuum with two ends of a spectrum.

The characteristics of Proactive Drive versus Reactive Drive consist of self-regulating behavior, possession of high self-esteem and confidence, and engagement in self-initiated and self-sustained activities directed toward higher level goals. At the opposite end of this dimension are the reliance of the individual on extrinsic forces to

stimulate learning, attendance to discontinue activity when confronting obstacles, and low self-confidence. The characteristics of Openness versus Defensiveness include openness to new ideas, ability to adapt to change, and tolerance of ambiguity. The opposite end of the spectrum includes features, such as rigidity, fear of failure, and avoidance of new ideas and activities.

The characteristics of Commitment to Learning versus Apathy or Aversions to Learning include the expression of positive attitudes toward engaging in various learning activities and a preference for more thought-provoking leisure pursuits. The opposite pole includes expressions of hostile attitudes toward engaging in learning activities and less engagement in activities regarded as promoting learning.

In application, both questionnaires are useful in determining the characteristics of a person. Instructors, thus, can adapt their strategies to different levels of self-directedness that learners exhibit in different situations. Besides, they might be able to help learners to increase or improve their ability to be self-directing.

Self-Directed Learning as a Learning Style

Bonham (1989) proposed self-directed learning as a learning style based on three evidences: learning styles include components relevant to the definition of self-directed learning; self-directed learning is treated as a style by authors; and experimental evidence that shows self-directed learning acts like a style. According to Bonham, a number of learning style instruments, such as the Grasha-Riechmann Student Learning Styles Scales, the Hill Cognitive Styles Inventory, and the Myers-Briggs Type Indicator, etc., have factors related to independence in the learning situation when independence is considered an aspect of self-directed learning (Brookfield, 1985a; Long, 1985).

Even though many authors have not considered self-directed learning as a learning style, they have sometimes described it in similar terms. For example, Hiemstra (1985) identified self-directed learning and cognitive/learning styles as elements deserving further research. In a review of research on the learning projects of older adults, Long (1986) acknowledged the question of whether self-directed learning is a cognitive orientation or a style. Caffarella and O'Donnell (1987) suggested it would be helpful to view self-directed learning as a personality construct instead of just as a mode of instruction, and that learning styles should be examined in determining how individuals conduct self-directed learning. Furthermore, Hiemstra (1988) believed that some persons have self-directed tendencies or readiness while others do not. Merriam (1986) claimed that self-directed learning could be classified with other cognitive styles. In terms of experimental evidence that presents self-directed learning as a style, Guglielmino (1977) and Oddi (1984, 1986) both assumeed that self-directed learning is a characteristics on which people vary and which impacts the ways people learn or how to learn.

Research on learning styles in relation to self-directed learning found that field independence is a learning style associated with open, democratic societies, which encourages freedom, self-control, and autonomy (Brookfield, 1985). Field independents have a preference for solitary situations and self-defined goals and strategies (Verduin & Clark, 1991). In contrast, field dependence is associated with rigidly controlled societies, which stress clear role identification and respect for authority. Pratt (1984) noted that field dependent learners are less self-directed in their learning. They want more structure and guidance from instructors. To this extent, learners with a field-independent learning

style seem to benefit more from self-directness (Brookfield, 1985; Brockett & Hiemstra, 1985; Even, 1982; Verduin & Clark, 1991). On the other hand, comparing the differences between self-directed and field-dependent learners, Brookfield (1985a) summarized that both of them place their learning within a social setting in which peers and instructors provide information and advice as the most important learning resources for successful learning.

Self-Directed Learning and Social Settings

It is easy to conceive of the self-directed learner as one who pursues learning with a minimum of assistance from external sources. Brookfield (1985a) suggested that the concept of self-directed learning has implied meanings of autonomy, independence, and isolation. Indeed, individual control, physical separation, and self-motivation over the learning process are often suggested to be distinctive characteristics of self-directed learning. That is, the self-directed learner is an autonomous learner for whom the parameters and learning activities are personally established. However, Brookfield (1985a) further emphasized that no act of learning can be self-directed if self-direction means the absence of external sources of assistance. Education is a transactional dialogue, "where the comments and contributions of the participants build organically on each others' views and in which alternative viewpoints, differing interpretation, and criticism are elements essential to the encounter" (Brookfield, 1986, p. 23). As further highlighted by Tough (1979), adults have strong reliance on external resources, both human and material, in the learning process. Long (1989, 1991b) also noted that self-direction may occur within group learning or institutionalized programs, in which numerous opportunities are provided for learners to take control and manage their

learning in association with various assistance, resource persons, and peers. Thus, physical separation or isolation may not be necessary for self-directed learning.

Self-Directed Learning and Independence

Another critical feature in the definition of self-directed learning is its emphasis on the learner taking initiative control and responsibility over the learning process (Brookfield, 1985a; Chené, 1983; Knowles, 1975; Long, 1989; Peters, 1989; Tough, 1979). The activities of self-directed learning include the procedures in which learners take the lead in diagnosing their learning needs, formulating their goals, identifying human and material resources of learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes (Knowles, 1975).

Brookfield (1985a) claimed it would be dangerous to say that adult independence must be defined as a strongly regulated control over the purpose and intent of their activities if self-directed learning is to occur. As suggested by Garrison (1989b), the control model is an attempt to reflect the fundamental elements and their interrelationships in an educational transaction. "The important issue is the dynamic balance among the elements of control as well as the nature and extent of interaction at the macro level between facilitator and learner" (Garrison, 1989b, p. 58). For example, independence may be very high if the earner's proficiency and support factors are efficiently present; otherwise, the learners need to seek out resource persons for assistance.

Furthermore, Houle (1996) believed that education is a cooperative rather than an operative art. Brookfield (1986) suggested that an ideal educational process is "a transactional encounter in which learners and teachers are engaged in a continual process

of negotiating of priorities, methods, and evaluation criteria" (p.20). Negotiation occurs through collaboration and communication between teachers and learners. The author further claimed that it is possible to apply techniques of self-directed learning in various contexts for different purposes, but it is hard to imagine that a learner decides to shift paradigms, transform perspectives, or replace one meaning system with another purely as a result of his/her own will (Brookfield, 1985a). Therefore, Long (1989) proposed psychological self-directness or psychological control is the necessary and sufficient cause for self-directed learning. Psychological control can vary in different degrees even within a pedagogical situation. For instance, in a fairly structured class, in which the instruction is well organized, systematic, and teacher-centered, students can still maintain psychological control on their learning. They may choose from among the course objectives and give relative attention and emphasis to those that are of interest to them and further supplement their inquiry by additional learning activities. Brookfield (1985a) further suggested that, within a formal/organized educational activity, the objectives, contents, and evaluation criteria might be predetermined; the task of adult educator is to "encourage learners to view knowledge and truth as contextual, to see value frameworks as cultural constructs, and to appreciate that they can act on their world individually or collectively and that they can transform it" (p. 10).

Self-Directed Learning and Independent Study

M. G. Moore (1973) identified four distinct meanings encountered for the term independent study: correspondence courses; individualized, programmed instruction in a school setting; supervised reading programs in schools; and out-of-school, part-time degree programs for adults. In addition, the term independent study has been used since

the 1920s in higher education in the United States to refer to "teaching and learning which focuses on the individual instead of the group, which emphasizes the person-to-person relationship between teacher and student" and " the pursuit of special topics by individual students under the guidance of faculty advisers apart from organized courses" (Bonthius, Davis, & Drushal, 1957, p.3-8). Furthermore, Dressel and Thompson (1973) defined the term as "the student's self-directed pursuit of academic competence in as autonomous manner as he is able to exercise at any particular time" (p. 1). In addition to the emphasis of learner autonomy and independence, the definition also introduces another notion that independent study might be a situational variable construct, depending on the individual student's ability to act independently in a particular situation (Candy, 1991). Regarding the variable of learner independence, a latent issue of learner control also occurs.

More specific, Bonthius et al., (1957) and Pan (1991) suggested independent study is carried on by individual learners and supported by individualized-tutorial teaching. Students in independent study control the learning process, including goal, content, place, time, pace, method, and evaluation (MacDonald, 1967; Pan, 1991). Learners involved in independent study are intrinsically self-motivated (Pan, 1991) and must be responsible and self-sufficient to be independent (Baskin, 1960; Beggs & Buffie, 1965). While many authors (Baskin, 1960; MacDonald, 1967; Pan, 1991) suggested independent study is carried on apart from teaching from a physical sense, Candy (1991) argued that no such significance is attached to the concept in the present context. The author further summarized the work from Forster (1972) and identified independent study as a process, a method, and a philosophy of education: (a) in which a learner obtains

knowledge by his/her own efforts and develops the ability for inquiry and critical evaluation; (b) which includes freedom of choice in determining those objectives, within the limits of a given project or program and with the assistance of a faculty member; (c) which places increased responsibility on the student in the learning process. Based on these perspectives, independent learning is synonymous with self-directed learning that takes place outside formal institutional settings referred to as autodidaxy, in which the learner has total control and initiative in the learning process (Candy, 1991; M. G. Moore, 1983).

However, there is increasing recognition that self-directed learning is not to be equated with independent learning even though the two terms may over lap in many cases (Long, 1991b). As stated by Long (1989), contrary to some group learning activities which provide numerous opportunities for learners to take control and manage their learning, some independent learning is based on the use of highly structured materials that limit the learners' range of responses and initiative. Besides, when considering self-directed learning as a process focused on the degree of control on the activities a learner carried out, neither the sociological isolation of the learner nor the complete autonomy of the learner are required based on the perspective (Long, 1989). As a result, self-directed learning may occur within group learning and institutionalized programs, in which learning takes place in association with various assistance, resource persons, and peers.

Self-Directed Learning and Autonomous Learning

The autonomous learner is the one who is free not only from direction by others external to himself, but also from his or her own inner compulsions and rigidities. According to Chené (1983), the autonomous learner is the learner who is independent,

has the ability to make choices, and has the capacity to articulate the norms and limits of a learning society. In addition, as summarized the work from Chickering (1969), Boud (1988) concluded that mature autonomy requires both emotional and instrumental independence. Emotional independence refers to the freedom from continual needs for reassurance and approval. Instrumental independence is the competence to carry on activities and cope with problems without seeking help from others and the ability to be mobile in reflecting to one's needs. Candy (1991) further stated that autonomous people are those who have a strong sense of personal values and beliefs. These values and beliefs build the basis for them to conceive goals and plans, make rational choices and reflection, and have the will to follow through, and exercise self-discipline. Boud (1988) suggested autonomy encompasses three educational perspectives. Firstly, autonomy is a goal of education, an ideal behavior to which learner or instructor may wish to aspire. Secondly, autonomy is an instructional approach or design, which emphasizes student independence and responsibility. And thirdly, it is also an integral part of learning of any kind. Based on these concepts, autonomous is synonymous with self-directed learning. However, M. G. Moore (1983) suggested self-directed learners are the same as autonomous learners only when they takes self-directed learning as autodidactic learning in which learning is non-instructional and totally independent, because self-directed learning has the notion of learners seeking assistance from either human or non-human resources. Besides, Oddi (1986) suggested that attributes of self-directed learners in the literature were described in terms commonly associated with autonomous, self-actualizing individual, who seek opportunity to grow and fulfill potential. Thus, self-directed learning might embrace broader perspectives than autonomous learning.

Boud (1988) had proposed a comprehensive process model to promote autonomous learning as follows:

- identifying learning needs,
- setting goals,
- planning learning activities,
- finding resources needed for learning,
- working collaboratively with others,
- selecting learning projects,
- creating 'problems' to tackle,
- choosing where and when they will learn,
- using teachers as guides and counselors rather than instructors,
- opting to undertake additional non teacher-directed work, such as learning through independent (structured) learning materials,
- determining criteria to apply to their work,
- engaging in self-assessment,
- learning outside the confines of the educational institution, for example in a working setting,
- deciding when learning is complete,
- reflecting on their learning processes,
- making significant decisions about any of these matters, that is, decisions with which they will have to live (p. 23).

The author further identified three main approaches to facilitate the development:

1. The individual-centered approach. The approach focuses on individual learners and

their needs. Teachers in this approach are co-learners and enlisted as resource persons to facilitate the attainment of goals. Groups of learners may provide support but they do not generally have a specific role or commitment to the project than the individual himself. A typical instructional method is using learning contracts discussed by Knowles (1975). Through the introduction of the idea of a learning contract, student can draw their resources, specify learning goals and activities, and formulate criteria for performance and assessment.

2. The group-centered approach. The approach is characterized by a focus on the needs of a particular group of learners and a strong commitment to group learning and group processes (Boud, 1988). By using learning contracts also, individuals pursue their learning needs within the context of the group, referring to others for support and feedback and for validation. Much learning occurs from interactions between group members. The instructor is still seen as a resource person and a facilitator.

3. The project-centered approach. The project-centered approach and its outcome are often as important or more important than the individuals or the group which is working on it. The goals of the particular learning situation are central and often override the special interests of individuals or groups, although they are still considered. Learning through projects may adopt the method of problem-based learning. Students exercise considerable initiative and engage in individual learning in association with the problem, but it is the problem itself which ultimately defines the area of learning and purpose of teaching (Boud, 1988).

Importance of Facilitating Self-Directed Learning

While consensus on a definition of self-directed is hard to find, agreement on the importance of facilitating self-directed learning exists. According to Kidd (1975), the purpose of adult education or any kind of education is to make of the subject a continuing, inner-directed, and self-operating learner. Rogers (1969) stated that no man can possibly be called educated until he has learned how to learn, how to adapt and change. An educated man is "the man who has realized that no knowledge is secure, that only the process of seeking knowledge gives a basis for security" (p. 104). As for Rogers, teaching is "a relatively unimportant and overrated activity" (p. 94), which is only appropriate to an unchanging environment. Citizens can live constructively in this world, which is rapidly changing, only if they are willing to become self-initiating learners.

In addition, the reasons for facilitating self-directed learning, as Knowles (1975) claimed, include both immediate and long-run reasons. One immediate reason is that self-directed learning is coping with our natural process of psychological development. That is, as people mature, they develop the ability to take increasing responsibility for their own lives. A second reason is that people, who take initiative in learning, enter into learning more purposefully and with greater motivation. They, thus, learn more things and learn better than do passive learners. The self-directed learner also tends to retain learning interests longer. The third immediate reason is that many of the new developments in education, such as independent study, adult education, and distance learning, put a heavy responsibility on the learners to take a great deal of initiative in

their own learning. Students who take these programs without the skills of self-directed learning will experience anxiety and frustration, and so will their teachers.

For the long-run reason, we have entered a new world in which rapid change is the only stable characteristic. In this rapidly changing world, school is not the only place that learning takes place. Hence, it implies that it is no longer realistic to define the purpose of education as transmitting what is known. In addition, learning is no longer appropriate to equate education with youth. Thus, self-directed learning is about survival -- our own survival as an individual and the survival of the human race (Knowles, 1975). In order to live adequately in the rapid changing world, learning must be taken as a lifelong process. Lifelong learning equips people with skills and competencies to continue their own self-education beyond the end of formal schooling. Thus, the ability to be self-directed in learning can help us to obtain a basic human competence to be able to live in this new era (Brookfield, 1985; Candy, 1990; Knowles, 1975, 1980).

Distance Education

History of Distance Education

According to Connick (1997), today the educational landscape is strikingly different because of a service and information economy, which began to replace the industrial economy in the 1970s. The author states there are only 52 percent of college students are eighteen to twenty-one, and fewer than 15 percent fit the profile of the residential student—young, full-time, and living on campus in the United States nowadays. Reflecting back to their industrial-era roots, our education institutions "are organized around centralized structure (similar to the factory model) by aggregating the workers (faculty and students) at a particular place (the campus) at a particular time (the

academic calendar) (Connick, 1997). As a result of changing economic and social conditions in the world, the economy has moved away from the industrial model to one that is information based, technology intensive, niche oriented, and decentralized, so education will here to change. Access to education will be available to the population through a number of providers by way of information technology and telecommunications. Consumers will have the choice of enrolling in courses from multiple institutions anytime and anywhere without ever leaving their home and quitting their jobs. The wedding of information technology, telecommunications, and distance education has provided powerful forces to shift the educational structure (Connick, 1997).

A comprehensive historical overview of the development of distance education during the past three centuries is provided by Seevers (1993). Seevers's review contained a list of significant dates and events that may have had substantial impact on the field of distance education. The history of distance education can be traced back to the early 1700s in the form of correspondence education, but technology-based distance education may be best linked to the introduction of audiovisual devices into the schools in the early 1900s (Jeffries, 1997). According to M. G. Moore (1987), Rumble (1986), and Verduin and Clark (1991), the term "distance education" first appeared in the 1892 catalogue of the University of Wisconsin and was reportedly used by the director of the University of Wisconsin-Extension in 1906.

The first catalogue of instructional film appeared in 1910-1913 (Jeffries, 1997; Reiser, 1987), and instructional media were introduced into many extension programs by 1920 in the form of slides and motion pictures just as they were in the classroom

(Jeffries, 1997). A dramatic change occurred when instructional television was introduced into the field of distance education in the late1930s. The introduction of television as an instructional medium appears as an important entry point for the theorists and practitioners outside of the correspondence education tradition and marks parallel paths for correspondence study and instructional media. During World War II, military training efforts demonstrated the potential for using audio-visual media in teaching (Wright, 1991). In 1948, there were five United States educational institutions involved in television with Iowa State being the first on the air. By the 1960s, 53 stations were affiliated with the National Educational Television Network (NET) with the primary goal of sharing films and coordinating schedules, and by 1972, 233 educational stations existed (Jeffries, 1997; Carnegie Commission, 1979).

By the middle 1960s, much of the interest in funding instructional television had decreased. Much of the blame was placed on the unexceptional quality of the instructional programming, which was often little more than a teacher delivers a lecture (Reiser, 1987). In addition, reasons for instructional television not being adopted include teacher resistance to television in the classroom, the expanse of television systems, and the inability of television alone to meet the various conditions for student learning (Reiser, 1987).

In the late 1960s and early 1970s, microwave technology developed, costs went down, and universities began to set up microwave networks to take advantage of the Instructional Television Fixed Service (ITFS). Systems utilizing ITFS technology were able to reach regional campuses and other universities, but it remained a closed circuit concept (Wood & Wylie, 1977), reaching only the sites linked to the system and not the

general public. Nevertheless, for the first time, distance learners were considered part of the extended classroom, and television existed to access those not able to come to campus (Jeffries, 1997).

The instructional technology movement was defining its purpose during the late 1960s and moving further away from equating instructional technology with audio-visual devices (Reiser, 1987). Likewise, distance education programs exist today and have a wide range of approaches, especially when computers are utilized in this field. In addition to cable networks, video courses, print materials, the distance programs are also delivered through computer networking and rely heavily on computer-based student contact and feedback.

Defining Elements of Distance Education

While some see distance education as being identical to private study of prescribed texts with or without special study guides, others may see it as a teaching-learning system involving specially prepared study materials and regular mediated contacts between students and tutors individually or in groups. Others may emphasize learner control and/or non-contiguous communication between student and instructor, mediated by print or some forms of technology (Garrison & Shale, 1987; Holmberg, 1995). Indeed, the hallmarks for distance education are the separation of teacher and learner in space and/or time (Beadouin, 1986; Keegan, 1986; Perraton, 1988; Sherry, 1996).

Childs and Wedemeyer (1961) noted that conventional education maintains space and time barriers to learning. In order to avoid the barriers, Wedemeyer (1968, 1981)

proposed systematic characteristics that a proper distance education system should possess. Summarized by Scott (1994), the system focuses on:

1. Flexible access: Wedemeyer suggested applying technology to overcome barriers of physical distance.

2. Student self-responsibility: Wedemeyer suggested that students should take primary responsibility for generating motivations to pursue knowledge but also notes some students may be ill-prepared to assume such responsibility.

3. Faculty-student interaction: Wedemeyer suggested the instructor should play the role as facilitator and interact frequently with students.

4. Student choice: Reflecting to the concept of self-responsibility, Wedemeyer suggested that students should have the privilege of planning their programs including achievement evaluation.

5. Use of technology: Wedemeyer believed technology is a means to achieve universal access to education.

6. Flexible enrollment periods: Wedemeyer supported access on demand, or the ability to participate in educational experiences according to the students' needs and schedules.

Moreover, from the perspective of adult education, distance education can be described as "a broad set of instructional methods based largely on technologically medicated communication capable of extending the influence of the educator beyond the formal institutional setting for the purpose of benefiting the distance learner through appropriate guidance and support" (Garrison, 1987, p. 315).

Rumble (1989) and Verduin and Clark (1991) summarized Keegan's (1980) criteria of the definition of distance education as:

- separation of teacher and learner, distinguishable from face-to-face learning
- influence from an educational organization, distinguishable from private study
- utilization of print media to unite teacher and learner and carry the content of the course
- the possibility of occasional meetings for both didactic and socialization purposes
- participation in an industrialized form of education, which contains the classification of radical separation of distance education from other forms.

In 1986, Keegan further refined this descriptive definition and proposed seven criteria for distance education:

1. The quasi-permanent separation of teacher and learner throughout the length of the learning process distinguishes it from conventional face-to-face instruction.
2. The influence of educational organization both in planing and preparation of learning materials and in the provision of student support services, which distinguishes it from private study and self-teaching programs.
3. The use of technical media, such as print, audio, video, or computer to unite teacher and learner and carry the content of the course.
4. The provision of two-way communication so that students may benefit from or initiate dialogue, which distinguishes it from the other uses of technology in education.

Of these criteria, the feature of the quasi-permanent absence of the learning group throughout the length of the learning process emphasizes that, in the distance educational approach, people are usually taught as individuals and not in groups, with the possibility of occasional meetings for both didactic and socialization purposes. The last element showed that the distance learning system emphasizes not so much the independence of

the learner as the fact that it takes the student from the learning group and places him/her in a more private situation (Keegan, 1986). However, as Garrison and Shale (1987) argued, the point of quasi-permanent absence of the learning group may not be necessary to the definition of distance education because of the development of technology and the practice of face-to-face residential instruction offered by many distance programs. For example, the development of telecommunication, such as teleconferencing, is a group approach to learning that provides live, real-time interaction among all participants in a manner similar to traditional classroom instruction (Barker, Frisbie, & Patrick, 1989; M. G. Moore, 1987). Garrison and Shale further indicated that the difficulty with Keegan's definition is that he viewed distance education largely as a private, printed-based form of study and, therefore, over presented correspondence study and did not adequately consider new generations of technological delivery.

In brief, there are several key features that define distance education based on the description:

1. The separation of teacher and learner during at least a majority of the instructional process, since increasing recognition of the fact that face-to-face teaching is a part of many distance programs (Porter & Lane, 1998; Verduin & Clark, 1991),
2. The influence of an educational organization, including the provision of student evaluation (Verduin & Clark, 1991),
3. The use of education media to unite teacher and learner and carry out course content (Verduin & Clark, 1991),
4. The provision of two-way communication between teacher, tutor, or educational agency, and learner (Porter & Lane, 1998; Verduin & Clark, 1991),

5. Volitional control of learning by student rather than distance instructor (Porter & Lane, 1998).

Again, there are multiple definitions of distance education. A short definition provided by Verduin and Clark (1991) embraces its flexible perspective. According to them, distance education might be "any formal approach to learning in which a majority of the instruction occurs while educator and learner are at a distance from one another" (p. 8). Moreover, the California Distance Learning project's [CDLP] (1998) definition is:

> Distance learning [DL] is an instructional delivery system that connects learners with educational resources. DL provides educational access to learners not enrolled in educational institutions and can augment the learning opportunities of current students. The implementation of DL is a process that uses available resources and will evolve to incorporate emerging technologies" (p. 4).

In addition to the term of distance education, many items have been applied to describe learning not based on classroom study. Wedemeyer (1981) identified the terms, such as non-traditional learning, independent study, out-of-school learning, and external studies as the types of programs that are non-classroom based. However, as time goes by, none of them, except "distance education", implies all of the elements necessary to describe learning at a distance without adding or deleting methods of study. That is, non-traditional learning may include classroom study. Independent study appears to exclude group-based distance education; out-of-school learning may include any teacher-learner meetings for learning purposes outside of the regularly class schedule; and external study

may refer to education without a residence requirement or to a combination of off-campus and distance study.

Information Technology and Media

The communication element is considered a cornerstone of distance education (Holmberg, 1986; Keegan, 1986). As in other kinds of education, human beings, although learning individually, usually develop their thinking in an advantageous way by talking their concepts and ideas over with partners. In a like manner, conversation mediated by the form of correspondence, telephone, or e-mail aiming at learning can still be expected as valuable to facilitate learning (Holmberg, 1986). In distance learning, appropriate application of communication technology can assist distance learners in transcending the isolation associated with distance learning and allowing them the potential to interact with their instructors and peers in meaningful dialogue in addition to the acquisition of knowledge (Lauzon, 1992; M. G. Moore, 1991).

M. G. Moore (1992) had notions about the separation of facilitator and learner that makes using media necessary are important aspects of distance education theory. Pratt (1987) suggested that instructional effectiveness in using technology depends on several interacting factors including the content, technology, time availability, costs, learning experience quality, and ability of instructors to respond to differences among learners.

There are three major distance educational technologies: correspondence, teleconferencing, and computer-based technology, plus a wide range of subsidiary media that can be used to complete the communication (Garrison, 1985, 1989b). In combination, the technology and media can be designed to meet a range of

communication needs. Traditional distance learning has tended to be correspondence-based and to be individually oriented. The level of interactivity practiced with this type of delivery has generally been slow and low-level dependent upon the student's assignment and written questions and the instructor's written response. Even though, the provision of radio and television broadcasts into a correspondence study approach has improved the coverage of content and likely increased educational accessibility, the interaction or communication between teacher and learners has not been significantly affected overall (Barker et al., 1989). Telecommunications-based distance education approaches are an extension beyond the limits of correspondence study. The teaching/learning experience for both instructor and student happens simultaneously. In other words, it allows real-time communication and permits immediate response to student inquiries and comments.

Distance Education Delivery Systems

There are two distance education delivery systems – synchronous and asynchronous (Porter & Lane, 1998). Synchronous instruction requires the simultaneous participation of all students and instructors. The advantage of synchronous instruction is that interaction occurs in real-time. Examples of synchronous instruction include interactive TV, teleconferencing, computer conferencing, and Internet relay chats.

Asynchronous instruction does not require the simultaneous participation of students and instructors. The advantage of asynchronous delivery is students are not required to gather together in the same location at the same time. Rather, they can choose their own time and space according to their schedules. Asynchronous is more flexible than synchronous and can be either high or low tech. Forms of asynchronous delivery

include e-mail, listserves, audiocassette courses, videotaped courses, correspondence courses, and Internet World Wide Web-based courses.

Program Classification

Distance education programs have been classified in a number of ways. Keegan (1986) classified distance study schemes as schools or open universities exclusively teaching through correspondence or mixed media and distance teaching at a conventional educational institution through independent divisions, home study, or integrated internal and external teaching. Furthermore, Willen (1981) classified institutional teaching at a distance according to whether they are large-scale centralized operations or more small-scale decentralized models. Holmberg (1981) called the large-scale operation as an industrial category and characterizes the small-scale mode as "parallelism" because it parallels residential study on campus. Synthesizing the reports from Kaunda (1970) and Rumble and Harry (1982), Verduin and Clark (1991) concluded the typologies of distance study in conventional universities as follows:

- a university offers external exams for credits or credentials
- a department offers distance study in its discipline
- an extension department or continuing education unit offers external credits
- distance-teaching unit or department duplicates the work of teaching departments
- a distance-teaching department facilitates rather than duplicates the work of teaching departments, which may be required to accept external students.

Moreover, methods of distance study can also be classified. Edstrom (1970) identified three types of study practiced in distance education: individual study, group

study in which learners meet as a group at a distance from the teacher, and supervised study in which someone other than a teacher enforces a learning period.

The National Open University in Taiwan

Introduction

Unlike other distance education programs that are delivered under general universities and colleges, the national Open University [NOU] is the first non-traditional university established in Taiwan to conduct distance education for non-traditional students. After a three-year trial period, NOU was officially founded in 1986 (Pan, 1991; Hsiao, 1990).

NOU in Taiwan incorporates four different types of delivery systems including TV (via UHF and VHF channels), radio (via Educational Broadcasting stations), printed materials (textbooks, journals), and face-to-face instruction held monthly at each learning center across the island. The courses are released from 6:30 a.m. to 7:30a.m., and 6:30 p.m. to 10:30 p.m. daily, 7 days a week. Courses are released either by radio or educational television based on the characteristics of each course.

The NOU was founded to conform to the demands of national development and to make the social educational system more comprehensive. According to its purpose, NOU, as an adult higher educational institution, has the responsibility of providing continuing education to enhance social education and lifelong learning (Pan, 1991; Wu, 1997). Based on these principles, the specific objectives of NOU (NOU, 1988; Wu, 1997) include:

- providing learning opportunities for lifelong learners
- offering equal higher education opportunities for all people who are unable to enroll in traditional colleges and universities
- conveying knowledge to the whole society with new communication technology
- promoting the qualitative improvement of the country's human resources.

Student Profile

The students at NOU include regular (full-time), for-credit, and audit students. In 1986, there were 28,749 students admitted to the University (Pan, 1991). The number had increased to 37,839 in the fall semester of 1994, and decreased to 32,579 in 1995 (Wu, 1997). In regards to the enrollment in 1995, 70 percent of them were female with high school diplomas, between 25-39 years of age, and most of them were working in business and government (Wu, 1997). According to Pan (1991), the target students of NOU consist of the following groups:

1. Those who want to get a college education but are unable to do so in the regular universities,
2. Those who want additional education due to career related reasons,
3. Those who pursue self-fulfillment or lifelong learning.

Unfortunately, consistent with the high dropout rate faced by distance education institutes worldwide, the NOU also confronts this serious problem. For example, the second semester after NOU was founded, the dropout rate was 37 percent. According to Chen, Chen, Pen, and Lu (1988), the dropout reasons for NOU students include the absence of supplement material and tutorials, the heavy load of examination and course work, the fast pace of broadcasting, limited time to study, and too few of face-to-face

sessions. In order to improve the situation, several strategies are suggested by Chen et al. (1988). The strategies are: (a) hiring professional program designers to develop self-contained program, (b) providing tutorial assistance, and (c) enhancing interactions between student and student, student and instructor, (d) networking student learning groups, and (e) enhancing student self-directed learning readiness.

Cultural Perspective Related to Self-Directed Learning

Comparing the conceptions of self and individuality between Western and Chinese culture, Pratt (1989) noted that in the West, the individual is highly valued and takes precedence over society. In other words, the individual maintains control over her destiny and nurtures her development toward autonomy and dignity. According to Pratt, this results in the desirability of nurturing self-reliance and dependence. Such conceptions, which appear in education, are commitment to individualized instruction, needs assessment, prior learning and experience, and the individual as the focus of attention.

On the other hand, conducting the investigation in Mainland China, Pratt found that individual rights were derived from society and were subordinate to social interests in traditional Chinese philosophy. In other words, Chinese people were subordinate to ideas of ethical conduct, public benefit, and social responsibility.

These conceptions have impact in many fields. Within adult education, the perceptions of andragogy, with emphasis on self-direction and self-concept at the center of learning, are egocentric and based on the Western concept (Pratt, 1989). Pratt further noted that none of these attributes are particularly congruent with traditional Chinese perception about learning.

Furthermore, Heppner and Hesacker (1982) investigated the expectations about counseling of American, African, Chinese, and Iranian students. The data showed that American students play a more active part in the counseling procedure. Counseling for American students is only instrumental relief, rather than expecting the counselor to solve their problems. By contrast, the Chinese students has lower expectations to assume responsibility for the counseling process and also have lower expectations to behave in a motivated manner when compared with the other three nationalities. In other words, Chinese students obviously have less openness, motivation, and responsibility in the counseling process. Alexander, Workneh, and Klein (1976) believed that the passive role observed in Chinese students reflects the accepted and appropriate way of relating to authority in Chinese culture. Furthermore, interviewing people in Mainland China, Pratt (1992) concluded that the teacher is conceived as a transmitter of knowledge and as a role model of particular values. In other words, teachers are assumed to be experts in a content area.

Regarding the passive nature and extrinsic motivation in learning for Chinese students and the physical and time separation between teacher and learner, learning at a distance for Chinese students may need more opportunities to develop a self-directed learning attitude.

Distance Learning Program Completion

Even though distance education has the potential to meet the adult learners' needs, some distance education programs suffer from high rates of dropout. It is widely acknowledged significant numbers of students who enroll in distance courses do not

complete them. As a consequence, distance educators are especially concerned with developing programs to minimize students' dropout.

The study of dropout from distance learning is not new. Research on this subject focuses on the variables such as background characteristics, organizational, environmental, outcome or motivation variables in relation to students' persistence-withdrawal decisions of adult students enrolled in a distance education program (Billings, 1988; Kember, 1989; Woodley & Parlett, 1983).

Background Characteristics

The background characteristics related to students' persistence-withdrawal decisions were discussed exploratory. For instance, age, gender, occupation, geographic location, pre-college experiences, and academic achievement were discussed in the literature. According to Woodley and Parlett (1983), men are more likely than women to drop out. The same finding was reported by Donehower (1968) and Kember (1981). In addition, students aged very young and very old are more likely to drop out according to the authors. Those aged 30 to 39 are the most successful group. Regarding the element of geographic location, both Donehower (1968) and Kember (1981) reported that students who lived at a greater distance from the university are more likely to drop out.

As reported by Kember (1989), pre-college experience can have significant correlation with success for full-time students but is often weakly associated with results for mature distance learners. Woodley and Parlett (1983) also reported that the lower a person's previous educational qualifications the more likely he or she is to drop out. However, Billings (1988) suggested that students with academic experiences or college

preparation are likely to persist with instructional program, although their persistence may be educational "self-concept" related.

Organizational Variables

Organizational variables reflect the students' involvement with the organization. Billings (1988) indicated the elements, such as GPA, class level, experience with other correspondence courses, and support from classmates as important factors that keep students from drop out. As for Tinto (1982), the organizational variables may refer to students' academic and social interactions after enrollment. The author suggested that scholarly achievement includes the involvement with the intellectual activities and services offered by the institution are important indicators. That is, student's participation with peers in the extra-curricular life and developing a frequent and quality social integration with faculty determine their respective commitments to the institution attended and to the goal of graduation. The greater the level of commitment, the more likely are students to continue their studies at the institution in which they enrolled initially (Sweet, 1986). Based on his empirical research, Sweet (1986) suggested that direct telephone contacts between faculty and students significantly influence student commitment and persistence.

Environmental Variables

Students' life extends beyond studying and socializing at a college or university. This is especially true for adult learners. Environmental variables suggested by researchers include the variables of employment/occupation, workload, support from the employer, family responsibility, and family support (Billings, 1988). Childs (1971) reported that the reasons for dropout associated with environmental elements are job

interference, boring courses, decreased contact with faculty, and too much work involved with the correspondence courses. As reported by Billings (1988), when study is integrated with work, students report greater satisfaction with the course. The author further stated that employment is not a deterrent to course completion.

Regarding the influence of family responsibilities, although it has been traditionally associated with dropping out of higher education, the current correspondence students are more apt to manage both family responsibilities and education. Billings (1988) concluded that dropout was no longer attribute to this element.

Outcome/Motivational Variables

Outcome variables reflect the subjective experience of being a student and are a measure of how well the student's needs and goals are met. Generally, the variables include education goals, satisfaction with the course and lesson component, practical values of the course, and others. In regarding to students' attitude about their educational goals has been shown to be related to attrition in a variety of programs and settings (Billings, 1988). Kember (1989) noted that students with unrealistic educational or vocational goals tend to drop out more. Furthermore, according to the author, intrinsic motivation is seen as particularly important for adult students, because the adult's concept of self-directivity is direct conflict with the traditional practice of the teacher telling the student what is to be learnt. Adults are seen as unique individuals able to make rational decisions on the relevance of skills and subject matter to their employment situation and career and life goals.

Self-Directed Learning and Distance Education

Verduin and Clark (1991) suggested distance education may be characterized as a form of adult education, although it is also used in K-12 instruction. Adult education characteristics of distance education include:

1. Time and place: The choice of time and location in distance education appeals to adults because they have more outside-of-school obligations.
2. Traditional affiliation: Distance education has traditionally been provided through continuing education and extension units as a part of the outreach programs of these institutions. These programs generally provide service for adults.
3. Literature: Reports or books about distance education largely concern programs in which adults are their principle audiences.
4. Learner traits: Successful study at a distance requires certain traits that are more typical of adults. The ability to be self-directed and internally motivated can affect a learner's achievement and likelihood of completing a program.

Based on these reasons, adult education has been a major theme in the field of distance education. However, the foundation of the theory, such as adult learners have special personal qualities to be success in distance programs, is questioned by many authors (Day & Baskett, 1982; Willen, 1988). Thus, increasing students' self-directed learning competence becomes an important issue in the field of distance education.

Because the concept of distance or physical separation is crucial, learners must be emotionally independent, self-motivated, and capable of coping with learning problems on their own (M. G. Moore, 1973; Verduin & Clark, 1991). The assumption is substantially supported by studies of field independence and dependence in distance

learners. M. G. Moore (1973), thus, suggested autonomy as an important feature of distance education.

In addition, adults are most motivated to learn things related to their personal development through the various life stages and tasks (Knowles, 1970; M. G. Moore, 1973, 1983; Verduin & Clark, 1991). Life transitions are common to every person, yet each of them is experienced differently and, in turn, contributes to the uniqueness of each individual. Learning to cope with each life stage or task is different from each other, and educational programs to aid such learning must be designed to allow individuals to meet their particular interest. In practice, this is best done by self-directed learning in which the learner has control to choose relevant topics and initiate actions in a learning program.

The commitment of self-direction requires four key aspects possessed by learners: personal autonomy, self-management (willingness and capacity to conduct one's own education), learner-control (mode for organizing instruction in formal settings), and autodidaxy (non-institutional pursuit of learning opportunities in natural society settings) (Candy, 1991). It indicates a unique developmental journey in which adult learners develop the skills, knowledge, and attitudes as they engage in increasingly advanced forms of self-direction. Seeing adult learners as capable of initiating and directing their own learning only when appropriate technological support and faculty assistance are available, Kasworm and Yao (1992) suggested that, in order to enhance learners to assume a more active role in the learning process, particular designs of distance education should concern certain factors, such as individual learning styles, the goals or experiences

for involvement in learning, motivations, educational history and beliefs of learning, and capacity.

Facilitating Self-Direction in Distance Education

Research suggests distance students bring basic characteristic to their learning experience, which influence their success in course work. These factors include the willingness to seek further education and assistance (California Distance Learning Project [CDLP], 1998), completion of a college degree (Bernt & Bugbee, 1993; CDLP, 1998), participation in the learning field which is career related (CDLP, 1998; Ross & Powell, 1990), high motivation and self-discipline in learning (CDLP, 1998), and a more advanced age (CDLP, 1998). Besides these individual determinants, support of human and material resources, instructional design, and technology are of paramount important to any successful distance education practice (Porter & Lane, 1998).

Institutional Support Services

Garrison and Baynton (1987) defined support as the resources that the learner can access in order to carry out the learning process. Support refers to the availability and accessibility of courses, learning materials, and instructors/facilitators. According to Garrison (1989b), distance learning should provide a full-range of support relationships based on content requirements, individual learning needs, and situational constraints.

Administrative personnel support services. Tallman (1994) found the admissions process is the single most influential factor associated with student satisfaction from the survey of college correspondence learners. The factor of the admission process, as Tallman pointed out, includes the usability or user-friendliness of the admission materials and the helpfulness of the admission personnel. He believed that once students are

satisfied, they will continue to participate in the study until they reach their goals or their course of study is completed. Holmberg (1989) also suggested a guided didactic conversation model including institutional and instructional support services, which should be delivered to distance learners. The conversational character and dialogical structure of this model allows the students to be present at a distance (Holmberg, 1989; Munro, 1991).

Information-access services. Effective information access skills are important to students' satisfaction and the degree of self-direction. Distance learners are dependent on materials sent in study packages or obtained by their own efforts through other means (Redding, 1991; Wilson, 1994). The institution needs to establish and maintain effective communication between teacher and students (Beaudoin, 1990). In order to access information from various sources for students, Wilson (1994) suggested that information-access-skills education should be integrated into the structure of study material during the design stage. Besides, the institution's library services and external databases should play an important role to help students access information (Beaudoin, 1990; Dillon, Gunawardena, & Parker, 1992; Wilson, 1994). The development of information and communication technology has the potential to better serve distance learners. For example, fax transmission of journal articles has changed the turnaround time for delivery of requested articles from days or sometimes weeks to just hours. Electronic networks, the Internet, and the dial-up access to online library catalogues are providing access to library catalogues worldwide (Schieman & Jones, 1993; Wallace, 1996; Wilson, 1994). Libraries may also provide hypertext and videodisc as an orientation tool to teach

students information retrieval skills, which provide opportunities for learners to be more self-directed.

Orientation. Distance education with its separation of teacher and learner, and often learner from peers, places considerable responsibility in the hands of learners (Gibson, 1996). Because the variability among students in their willingness to assume control and responsibility in part as a result of negative assessments of their abilities as learners, a student orientation that introduces procedures for learning at a distance including roles and responsibilities of teachers and learners should be offered. Instructions in the process of directing one's own learning and in study strategies also seem important. Besides, educational experiences that incorporate information about adult development, especially about learning in adulthood and learning how to learn, should be incorporated into orientation or a course. Optional time-management and stress-management programs also seem to help students integrate their lives as students with responsibilities in other territories (Gibson, 1996).

Many authors (Guglielmino, 1977; Margarones, 1961; Rogers, 1969) indicated that the key to effective facilitation of self-direction in learning is the provision of an orientation to the learner. Dunbar and Dutton (1972) reported negative results which occur when a self-directed learning teaching approach is thrust upon unprepared students when they attempted to make a business school program more a self-directing experience. After conducting a national survey, Margarones (1961) also noted that students should participate in an orientation about self-directed learning before undertaking it. Thus, as recognizing the need for preparation for self-directed learning, should compel the institution to hold self-directed learning orientations for distance

learners. The content of orientation might include the process of learning, accessing information, instruction of technology, and the spirit of being a self-directed learner.

Instructional Support Services

Roles of the instructor. The involvement of the faculty is key to the success of any distance-education based program besides adequate support (Titsworth, Hess, & Hawkins, 1992). The teacher, as the locus of control for all aspects of instruction, has shifted to a "team approach" where teachers work in collaboration with instructional designers, production technicians, administrative support personnel, and evaluation specialists in distance education. Faculty must remain at the apex of the instructional process and work in collaboration with these professionals to adapt curriculum for technology to improve teaching and enhance learning (Olcott, 1997).

Within instructional practice, the concept of effective self-directed facilitation has been centralized to the issue of andragogy. Andragogical practice takes the learning-teaching transition as the mutual responsibility of learners and instructors. The teacher's role is defined as a resource person, co-inquirer, consultant, and facilitator (Chené, 1983; Knowles, 1980; M. G. Moore, 1983). Brockett (1983) suggested that the successful teacher in self-directed learning situations needs to act as a manager of the teaching-learning transaction as well as an information provider. As further stated by Brockett and Hiemstra (1985), the role of the manager differs from what often appears to be the norm in traditional teaching-learning situations, in which the teacher plays an authoritarian role or expert with an autocratic manner and expects learner to recall and recite every thing from the class or book assigned to read. On the other hand, in self-directed situations, the notions of interaction, which encourage and expect learners to take responsibility for their

own learning, are very important. Therefore, learners may develop positive feelings toward the subject matter, desire to explore the area of knowledge further, and formulate positive attitudes toward the total learning experience.

Cheren (1983) further indicated two roles that an educator plays in the self-directed learning process. As the author pointed out, if facilitating self-direction is part of the objective of a learning project, the educator's first role is that of co-diagnostician. The instructor would work with the learner to identify where the effort fits into interests and priorities. They will also need to assess the learner's abilities in order to decide the kinds and levels of support needed. The diagnosis should be held both at the beginning and throughout the learning project to assess and reassess the points and make appropriate and explicit recommendations (Cheren, 1983).

The second role is the role of negotiator. Negotiation is made regarding learner control and performance concerns in the learning process. The ultimate goal of negotiation is contributing to the empowerment of the learner. The educator may press strongly for a revision of plans when the assessment suggests the plans that the learner has set are unachievable or inefficient in relation to the performance concern. Attempts should be made by explaining the project criteria, sharing options and new territory, and possible decisions based on understanding the learner's interests or desire for greater control.

Furthermore, as suggested by Olcott and Wright (1995), faculty participation in distance education needs to provide instructional leadership beyond the fundamental role of teacher. Instructional leadership theories revealed that faculty must be involved in the instructional design process, the design of student support services, in student advising,

and in the evaluation of technologically-mediated instruction. They also noted that distance faculty must play a role in the development of technology training programs and are willing to provide assistance to potential colleagues. Egan, Sebastian, and Welch (1991) made similar suggestions. They further suggested teachers must be properly trained in matching their teaching skills to technology. For example, students learn more from the instructor when the instructor seems comfortable with the technology, maintains eye contact with the camera, and repeats questions and important ideas.

Teaching strategies. Self-directedness can be enhanced through a range of possible teaching strategies, such as contract learning (Brockett & Hiemstra, 1985; Hiemstra, 1994). Competence, such as note taking, listening, reading, and performing mathematical procedures characterized as academic skills, and other higher-order skills, such as information retrieval, time management, goal setting, problem solving, and critical thinking, are essential to the readiness of self-direction.

On the one hand, some authors argued the skills of self-directed learning can not be taught and learned as regular curricular content, but they may only be developed through the opportunity to exercise such personal options in the learning situation. For example, instructors can teach about autonomy, independence, and responsibility, but this is not enough to help a learner to become autonomous in his thoughts and actions unless he is given opportunities to be self-directed and responsible for his actions (Candy, 1991; Pittman, 1976). Therefore, if educators want students to be more self-directed in learning, they must provide a learning environment in which students are encouraged to take responsibility for themselves.

Instructional strategies, such as contract learning, experiential learning, journal writing, and other forms of learner-centered instruction, have been applied to increase students' learning responsibilities (Brockett & Hiemstra, 1985; Hiemstra, 1994; M. G. Moore, 1983). For instance, M. G. Moore (1983) suggested that an educator should place great emphasis on techniques that tap the experience of learners. The instruction approaches, such as discovery learning, especially in field projects, can give the learner a chance to be actively involved. However, Candy (1991) noted these approaches are generally advocated in the belief that the best way to become self-directed is to behave autonomously. The author believed such opportunities are necessary but not sufficient for the development of the competence required to be a self-directed learner. He further suggested a set of instructional strategies to enhance the learner's ability for self-direction. The strategies are: making connections with learner's existing knowledge, encouraging deep-level learning, increasing question-asking by learners, developing critical thinking, enhancing reading skills, improving comprehension monitoring, and creating a supportive climate for learning.

1. Making the connection with the learner's current knowledge. Candy (1991) suggested that instructors use the concept map as a strategy to find out a learner's previous knowledge. A concept map is an attempt to illustrate ideas, examples, relationships, and implications about particular concepts in a diagrammatic form, as they are perceived by a learner. The concept map has been proven useful in helping learners to visualize their patterns of understanding in a certain domain and provide an opportunity for instructors to better understand their audiences (Candy, 1991; Hampden-Turner, 1982).

2. Encouraging deep-level learning. Deep-level learning involves the attempt to probe beneath the words or symbols to the underlying ideas. Similar to surface-learning, deep-level learning is driven by the learner's motivation and learning strategy (Candy, 1991). According to Biggs (1986), one who wants to approach deep-level learning needs to develop an orientation towards learning in which they:

- are interested in the learning task and receive enjoyment from carrying it out
- search for the meaning inherent in the task
- make the task or content meaningful to their own experiences and to the real world
- integrate aspects of a learning endeavor into a whole
- seek relationships between their domain and previous knowledge
- Try to theorize about the task and go beyond the information given.

3. Increasing question-asking by learners. One strategy that seeks to increase question-asking by learners is to provide various stimuli, such as readings or videos, and then ask learners to generate as many questions as they can about the topic presented (Candy, 1991). Hynes (1986) pointed out that an entire teaching project could be build around a cluster of questions generated by learners themselves. After the questions are generated, learners can group and rank them for further collaborative study or individual inquiry.

4. Developing critical thinking. Critical thinking is one of the most highly esteemed educational goals at all levels. Closely related to question-asking, critical thinking is a reflective skepticism in which the critical thinker argues, questions, or evaluates the ideas. Brookfield (1987) described effective strategies for facilitating the

development of critical thinking by creating a supportive social climate, challenging old modes of thoughts, reflecting back to the learner's attitudes, so they can see themselves from different perspectives and rationalize their ideas. Hiemstra (1994) suggested educators use personal journal writing to encourage learners to reflect and react critically to readings, discussions, or other learning experiences.

5. Enhancing reading skills. Even though a great deal of learning occurs through media, direct experiences, and personal contacts, reading still remains the most important and common mode of learning (Candy, 1991). Summarizing the works from Morris and Stewart-Doro (1984), Candy (1991) suggested that, if we want the learner to be able to become a flexible problem solver and to adapt to a variety of situations, we need to focus on the process of gaining and applying information through reading. To achieve the goal, learners must first overview the structure, including the major concepts, ideas, and arguments. The second step is thinking through the reading, which addresses the common problem of reading without understanding. Thinking through reading helps learners reflect more deeply on the text and interaction with others. Extracting and organizing information as the third step represents a stage beyond simply understanding. Learners at this stage distinguish important points from flat text. The fourth stage is translating information from reading to writing or performing the knowledge in some form. Generally, it emphasizes the ability to express ideas gained from the reading clearly in one's own words, to perform the procedures correctly, or change the learner's insight.

6. Improving comprehension monitoring. In the self-directed learning approach, learners are given control to monitor their own progress or understanding. However,

since learners might not have sufficient knowledge in the subject area to judge themselves effectively, seeking out experts for help in obtaining information and formulating standards/criteria is essential to the device.

7. Creating a supportive climate for learning. The supportive environment is a central theme of good adult education practice. The elements of such a climate include the features of low threat, unconditional positive regard, honest and open feedback, respect for the ideas of others, self-improvement as a goal, and collaboration rather than competition. An instructor should try to create these in the environment.

Instructional attitude. Besides the ordinary tasks of teaching, grading, advising, and maintenance of office hours, in order to become an effective distance educator there are specific content areas a facilitator needs to acquire. The areas include the ability to access information from various sources, to overcome structural constraints, to establish and maintain effective communication and interaction with students, to be able to motivate learning at a distance, and to use the techniques of technologies (Beaudoin, 1990).

According to Pierre and Olsen (1991), motivation triggered from the instructor is an important factor that predicts correspondence learners' satisfaction. Instructors' positive reinforcements, suggestions for improvement, and indications of students' strengths and weaknesses are a collaboration to positively affect students' perceptions.

Course Design

In discussing the nature of the andragogical approach to education, Knowles (1970) suggested the main characteristics of adult learners are (a) the increase of self-directedness, (b) the rich life experiences that can become resources for learning, (c) a

readiness to learn associated with the tasks of social roles, and (d) a problem-centered rather than a subject-centered orientation to learn. These assumed characteristics of the adult learners, if they are to be respected, imply the adoption of a relatively non-directive approach to course design. However, within a system based on a highly structured approach, prescribed educational objectives, and prepackaged and mass-produced course materials, it is difficult for students to adopt self-directed learning or to vary their approaches in their learning. Therefore, Taylor and Kaye (1986) suggested that the highly structured and packed course might be inappropriate to many learners who have relevant knowledge and insight to contribute in the courses. They further introduced several strategies in order to enhance a more flexible course design. In addition to the flexibility of schedule and sequence of study, first of all, they suggested the instructor or program designer to build the course around a wide-ranging selection of existing and specially commissioned readings. The instructor will provide the conceptual framework rather than produce straight teaching texts, which tightly define the field of study. Secondly, students can choose their own topics as projects for major course work assessment. They are asked to negotiate with their correspondence tutor about the scope and phasing of their works on the projects, as well as the criteria on which they want their final products to be assessed. The contract learning procedure allows the program to attract students with various backgrounds and interests, and it also allows learners to specialize to some extent on issues in which they are particularly interested or relevant to their personal experiences.

Interaction

Many distance institutions recognize that the distance learners want to be autonomous, so their goal is to have the learners become as independent as possible. Consequently, they emphasize developing learning packages that enable students to work on their own with minimum contact with support agencies. However, Many authors (Burge & Howard, 1990; CDLP, 1998; Coldeway, MacRury, & Spencer, 1980) suggested that learners are more motivated, benefited, and satisfied if they frequently interact with students and instructors.

M. G. Moore (1989a) identified three types of interactions existing in distance education. They are learner-content, learner-instructor, and learner-learner interaction. Even though content is a necessary component in the educational process, students interacting only with course materials does not ensure an educational experience. Hence, the significant characteristic of an educational learning experience is the teacher-learner interaction. As such, the teacher possesses the necessary content, or the content becomes secondary and the teacher is more a vehicle to develop a higher level thinking or new knowledge (M. G. Moore, 1989a; Garrison, 1990). In regards to learner-learner interaction, M. G. Moore believed it is not only valuable, but also essential.

In addition, interaction as an independent variable has been studied in relation to program satisfaction (Pierre & Olsen, 1991; Tallman, 1994; Walace, 1996). Pierre and Olsen (1991) reported there is only a minimal relationship between a student's satisfaction and their interactions with support staff and course instructor. On the other hand, Tallman (1994) reported the factors that continued communication between the support staff and the student, and the instructor timely return of assignments are all

related to a student's satisfaction. Zigerell (1991) also found that students enrolled in video-based courses complain that they are not given enough opportunities to meet with the instructor and are denied any genuine personal contacts.

Characteristics of the Distance Learners

Age

An underlying theme of Knowles' andragogical model suggests that self-directed learning is a function of a natural maturation process that develops as a person ages. According to Humphrey (1974), older students seem to prefer a more self-directed style of learning. Hough (1984) also reported that older students possess lower expectations for academic success and seem to be more problem-oriented than curriculum-oriented in their academic interests. Similar findings were reported by Willett and Adams (1985) in their study on external degree program students. Brocket (1985) also found there is a relationship between older adults' perceptions of self-directedness and the degree of satisfaction they ascribe to their lives. On the other hand, Underwood (1974) found that British adult distance learners, aged 45-59, are more likely to drop out than younger students, while Horton (1976) reported no age difference between dropouts and persisters in New Zealand adult university extension.

Gender

Gender differences have been researched in relation to dropout rate (Tinto, 1975; Cope & Hannah, 1975), participation rate in distance education (Anderson, 1993), and readiness for self-direction (Darmayanti, 1994). Darmayanti's (1994) investigation of distance education in the Indonesian Open Learning University found that female students show higher self-directed learning readiness than do males by responding to

Guglielmino's Self-Directed Learning Readiness Scale. Darmayanti explains the result might be due to the fact that more responsibility is placed on men to support their families and therefore, are lees self-directed in approaching their studies. Compared to males, there are fewer demands on females to support their families, economically. Females who attend school may be motivated by intrinsic orientations, such as interests and self-enrichment; they, hence, achieve greater growth in their readiness for self-directed learning.

Furthermore, Tinto (1975) reviewed over ten United States studies of dropouts in higher education and reports that males are less likely to drop out than females. Tinto speculated that males may perceive their occupational attainments as more directly related to their occupations and careers, and, thus, as more of an economic necessity than do females. Furthermore, there is higher percentage of females participating in distance education. Compared with conventional education students, distance female students tend to be married (Anderson, 1993). Cope and Hannah (1975) suggested that reasons for dropout are gender related. Women who drop out tend toward external or non-academic reasons, such as marriage, while men do so for internal and academic reasons, such as lack of motivation, dissatisfaction, or low grades.

Educational Characteristics

Educational level. According to Kember (1995), students with less formal schooling and little history of study since leaving school are likely to face more problems with academic integration than those who have had a through exposure to the process of study either at school or since leaving school. Kember further indicated that students with a limited history of schooling are less likely to have developed a study approach that

is compatible with the demands of distance education. Similarly, Bernet and Bugbee (1993) reported that distance learners, who have not completed college, are "at-risk" primarily because they lack executive skills in time management, concentration, and testing strategies. These students may need more structure and direction.

However, Adenuga (1991), Darmayanti (1994), and Long (1991c) reported no relationship between college students' self-directed learning readiness and their years of schooling (defined as freshman, sophomore, and senior). On the other hand, if defining educational level as degree program levels (bachelor, master, and doctorate degree), Adenuga (1991) found positive relationships exist in relation to self-directed learning readiness.

Educational experiences. Bonham (1987) viewed self-directed learning as a function of a person's experience. Indeed, researchers have found a correlation between self-directed learning and adult formal educational experiences (Eisenman, 1990; Hassen, 1982; Long & Agyekum, 1983, 1984). The results suggest the presence of an extrinsic variable related to early educational experiences in the earlier life of the person that affects the development of a tendency toward independence in learning (Eisenman, 1990).

When Andenuga (1991) and Long (1991c) reported there is no relationship between years of program completion and self-directed learning readiness, Darmanti (1994) and Long (1991c) found there is a significant positive relationship between Grade Point Average and self-directed learning readiness.

Insight about Self

According to Sabbaghian (1980), highly self-directed adult students have more self-esteem and self-acceptance, and they are more effective in different aspects of life than are low self-directed adults. Stephenson (1988) noted some students avoid taking risks and pursue safe and familiar programs of study, and often under close supervision from a specialist. They often accomplish less when a learning project is over. On the other hand, those who accept risk and attempt to achieve their goals experience the greatest benefits. Their growth involves both the knowledge skills particular to their fields and their beliefs in themselves.

Learning Style

Several researchers have found that people enrolling in distance education are likely to have higher than average levels of field-independence. Chickering (1976) reported that field-dependent enrollees might be contributing heavily to the high dropout rate in distance education. M. G. Moore (1976) claimed that field-independent students are more likely to enroll in correspondence study.

Furthermore, Theil (1984) reported that the majority of successful self-directed learners, based on Kolb's (1976) classification, are accomodators. DeRoos (1982) found that an abstract learning style is related to persistence in self-directed learning based on Kolb's classification, as well. On the other hand, Anderson (1993) found individual learning styles do not predict a student's successful completion of a distance education course by using Kolb's learning style classification, as compared to a traditional classroom course.

Readiness for Self-Direction

Readiness for self-directed learning is associated with skills in originality of thinking, the ability to produce analogies, motivations of creative personalities, creative experiences and achievements, and a right-hemisphere style of learning and thinking (Torrance & Mourad, 1978). More specifically, Knowles (1990) indicated the skills of self-directed learning as:

1. The ability to develop and be in touch with curiosities.
2. The ability to perceive oneself objectively and accept feedback about one's performance non-defensively.
3. The ability to diagnose one's learning needs in the light of models of competencies required for performing life's roles.
4. The ability to formulate learning objectives in terms that describe performance outcomes.
5. The ability to identify human, material, and experiential resources for accomplishing various kinds of learning objectives.
6. The ability to design a plan of strategies for making appropriate use of learning resources effectively.
7. The ability to carry out a learning plan systematically and sequentially.
8. The ability to collect evidence of the accomplishment of learning objectives and have it validated through performance (p. 174).

Research involving the Self-Directed Learning Readiness Scale [SDLRS] (Guglielmino, 1977) has found that differences exist among individuals in skills and attitudes related to self-directedness. For example, Hassan (1982) found that highly self-

directed learners conduct a greater number of learning projects and experience a higher level of satisfaction with their projects than subjects with lower SDLRS scores.

However, Anderson (1993) reported no significant difference between self-directed learning readiness of distance education students, who successfully complete the courses, as compared to their traditional classroom counterparts.

Motivation

Motivation is seen by psychologist as a physiological drive that causes a person to behave in a certain way (Anderson, 1993; Gagné, 1965; Mouton & Blake, 1984). Gagné (1965) considered student motivation to be among the highest priorities for teachers in the classroom. Dunn, Dunn, and Price (1981) further suggested that students needs such as light, sound, peer-groups, food intake, and grades, should be as important issues for teacher consideration. The level of students' motivation influences how students learn and achieve. If their needs are met, motivation for learning can be increased (Hammond & Collins, 1991; Kemp, 1988).

Motivation is categorized into extrinsic and intrinsic motivation (Kember, 1995). Extrinsic motivation is related to the rewards a student might receive by obtaining the learning experiences. This temptation is outside the task itself and could take the form of a need for qualification or fear of failure (Kember, 1995; Mouton & Blake, 1984). Many of these will be career oriented, such as promotion, salary increase, or opportunities to find more attractive employment. According to Kember (1995), students, who are extrinsically motivated, probably enroll for the qualification rather than out of interest in the subject matter. Their work and reading are, therefore, defined by the course prescription and the assessment. As these students may not have any particular interest in

the prescribed reading matter, they are more likely to adopt a surface approach and attempt to memorize facts, which appear important, in the hope that they can be used to answer examination questions.

On the other hand, intrinsic motivation is within the person and often results in fulfilling an inner need, such as self-esteem, need for success, or interest in the subject matter (Kember, 1995; Mouton & Blake, 1984). Knowles (1979, 1980) suggested that adult learners are viewed as unique individuals able to determine the relevance of subject matter and skills.

Indeed, interest in the subject matter for its own sake induces students to search for meaning (Garrison, 1985). Some learners find the subject matter itself interesting enough to stimulate the desire to learn, while another need outside sources of motivation and it is the teacher who most often provides these sources (Gagné, 1965; Hammond & Collins, 1991; Mouton & Blake, 1984). Therefore, it is the responsibility of the distance instructors to ensure that the courses are designed to assist the student in motivation toward self-direction.

Furthermore, research on motivation has been discussed in relation to students educational achievement (Garrison, 1990; Heinz, 1983), types of motivation (Garrison, 1985), and education persistence (Cope & Hannah, 1975; Horton, 1976; Spear & Mocker, 1984). According to Anderson (1993), Garrison (1990), and Heinz (1983), educational achievement is very often tied to promotion or career survival for adult learners. Garrison (1985) noted that an important motivational concern for adult learners is that they perceive the curriculum to be relevant to their goals. Cope and Hannah (1975) also suggested that personal commitment to either an academic or occupational

goal is the single most important determinant of persistence in college. On the other hand, Darmayanti (1994) reported there is no significant difference in readiness for self-direction regarding the occupational status for the distance learners at the Indonesian Open Learning University.

In addition, other researchers (Horton, 1976; Garrison, 1985) identified academic achievement and satisfaction as important motivations in a student's decision to stay or drop out. Moreover, conducting a qualitative analysis interviewing 78 self-directed learners, who have not completed high school, Spear and Mocker (1984) found the trigger event for a non-institutional or self-planned learning project proceeds from some change in life circumstances, although the change may be positive or negative or may happen to the individual or to some one who affects a person's life. According to Fox and West (1983), learners who approach self-directed learning tend to believe learning is beneficial. Anderson (1993) found the reasons of "retraining " and "fits my work schedule" are significant motivation factors for student participation in distance education.

CHAPTER III

METHODOLOGY

The purpose of this study is to determine the perceptions of National Open University [NOU, Taiwan, R. O. C.] students' preferences of strategies to facilitate self-directed learning and to see if there are relationships to their background characteristics. The following background characteristics of NOU students were collected: academic status (current vs. inactive), duration of studying at NOU, age, gender, declaration of a major, full-time work experience, internal motivation, external-payoff motivation, insight about self, and readiness of self-direction.

To achieve the purpose of the study, an instrument was developed to quantify background characteristic variables and the facilitating strategy preferences. The relationship between variables was identified through statistical analysis of the data. The following sections contain a discussion of the study participants, components of the instrument, data collection design and procedure, and the validation of the instrument.

Sampling Frame

The survey population for the research was composed of two types of NOU students. The first group included students who were enrolled at NOU during the fall semester of 1998 academic year. The second group was students who enrolled at NOU in the spring semester of 1997 but did not register for the fall semester of 1998. The total

number of participants selected for both groups was 1500; that was 750 for each group. The participants were obtained from the NOU student list through a random sampling method.

Study Participants

The first group of 750 included students who were enrolled at NOU in the fall semester of 1998, although students who just started their program in the fall semester of 1998 were excluded. The second group consisted of 750 students who enrolled at NOU in the spring semester of 1997 but didn't register for the fall semester of 1998. Unfortunately, this list included a few students who graduated in the fall semester of 1997 and spring semester of 1998; such students had identified themselves and were treated as current students. Based on an initial sample size of 1500 students (16 of which were sent back without a forwarding address), 624 students returned the questionnaire. Thus, the survey had a return rate of 42 percent. Of the 624 answered questionnaires, 19 were received after the survey period, 13 answered almost all of items to same way or omitted all the questions on more than one scale. Thus, only 592 returned questionnaires were used for the study.

Initial Instrumentation

The survey instrument used for this study contained two major sections (see Appendix A). Section I, Student Background Information, was used for the collection of students' background characteristics identified from the review of literature. Section II, Student Preferences for Strategies to Facilitate Self-Directed Learning, was used to determine their perceptions about facilitating self-directed learning.

In the first section, Student Background Information, survey subjects were asked to complete the 26-item section. Respondents answered the questions based on their current situations and perceptions. Besides demographic information (academic status--current vs. inactive, duration of studying at NOU, age, gender, declaration of a major, and full-time work experience), respondents were also asked about their motivation for studying at NOU, insight about self, and self-directed learning readiness. Questions 8-13 were developed to identify students' motivation when they first enrolled at the NOU; questions 14-20 were developed to identify students' insight about themselves, and questions 21-26 were designed to quantify their self-directed learning readiness.

In the second section, Student Preferences for Strategies to Facilitate Self-Directed Learning, students were asked to complete a 38-item survey designed to indicate their perceptions about what strategies would facilitate their self-directed learning ability. The 38-item questionnaire is categorized into four areas through a conceptual analysis. After responses were gathered from survey participants, the following categories were further modified based on the result of a factor analysis. The initial four areas were as follows:

1. Institutional Support Services: Ten questions related to institutional support that distance students might like to obtain when developing their self-directed learning skills were listed in this category.

2. Instructional Styles: This category included ten items pertaining to an instructor's manner and the climate that learners might like to experience when developing their self-directed learning skills.

3. Interpersonal Interactions: This 7-item category was developed with a view toward the importance of communication within the learning environment.

4. Course Design Adaptations: This 11-item category included information that an instructor may need to obtain when developing a course in order to meet students' needs and concerns.

A Likert response format was used in Section II, Student Preferences for Strategies to Facilitate Self-Directed Learning, of the instrument because the items of this questionnaire were presented as declarative sentences, followed by response options that indicate varying degrees of agreement with or endorsement of the statement (DeVellis, 1991). Respondents were asked to answer each item on a Likert scale by circling their response on a continuum of 1 to 6, with 1 representing very unimportant and 6 representing very important. The responses of moderately unimportant (2), mildly unimportant (3), and mildly important (4), and moderately important (5) fall in between. Theoretically, students' reactions to the preference they indicated would vary due to their heterogeneous background characteristics.

Data Collection Design and Procedure

Validity Test of the Questionnaire

The items in the questionnaire were developed as the result of a review of the literature. The two main areas selected include respondents' background characteristics and students' perceptions about self-directed learning facilitation. A panel of Taiwanese distance learners and instructors was asked to review the instrument and provide suggestions related to clarity and accuracy of the Chinese version. After student

suggested revisions, the instrument was reviewed by a panel of experts in the fields of adult and distance education for content validity.

Validity is commonly defined as the extent to which an instrument does what it claims to do (Borg & Gall, 1993; Cates, 1985). Content validity is the extent that the items of an instrument represent the content that the test is designed to measure (Borg & Gall, 1993). Frankel and Wallen (1993) and Cates (1985) further suggested that content validity refers to the extent to which the content and format of an instrument are appropriate or comprehensive to the research study. Therefore, based on the foundations presented in the review of literature, content validity was established by a jury of five experts who serve as administrators, adult educators, professors, and tutors in the field of distance education in Taiwan. The jurors were selected through a process of peer identification. Telephone contacts and mail follow-ups were made to those knowledgeable individuals who personally expressed interest in and support of the present study. A cover letter (See Appendix B-1) accompanied the Validity Test Response Sheet and explained the purpose and background of the questionnaire, and provided instruction for completing the validity test.

The jurors were asked to review the questionnaire then rate the appropriateness of each question on the Validity Test Response Sheet (See Appendix B-2, followed by the Chinese version as Appendix C). The Validity Test Response Sheet was designed to obtain their responses for each item according to its appropriateness/relevance to the issue of self-directed learning facilitation skills in distance education. The jurors rated each item as "Inappropriate" or "Appropriate". A suggestion column was added to the response sheet for explanation and modification of any item that is rated inappropriate.

An open-ended comment section was also included. A cover sheet was prepared requesting information from the respondent including name, position or title, mailing address, telephone number, and the date of response.

Establishment of Content Validity

The primary purpose for determining the content validity of the instrument was to decide if the instrument was appropriate for measuring issues related to distance students' self-directed learning competency enhancement in Taiwan. A panel of current NOU students were invited to review the instrument and provide their suggestions related to the clarity and accuracy of the Chinese version. After the revisions were made, content validity testing was done by a jury of knowledgeable individuals who served as adult educators, directors, and professors in the fields of adult education and distance learning. They were asked to provide expert opinions.

Jury Selection

A total of five jurors were selected through a process of peer identification in Taiwan. Two of them were professors in adult education programs at universities; two served as directors in distance-extension education programs at universities, and the remaining juror was a face-to-face session instructor from NOU. The jurors were asked if they were willing to participate in the validation testing process for the questionnaire through telephone contacts. After agreements were reached, the inventory entitled Validity Test Response Sheet (see Appendix B or Appendix C for the Chinese version) was mailed or faxed to each juror.

Validation data was received from all of the five jurors. Their responses were used to establish content validity and the results strongly influenced revisions to the questionnaire.

Test of Content Validity

After revisions were made based on student comments, the jurors were asked to validate the appropriateness/relevance of each item in relation to distance students' self-directed learning competency enhancement. They were also asked to provide an explanation and modification for responses rated "inappropriate". The review of individual response options indicated the relative strength of each item as an indicator of activities that facilitate self-directed learning ability.

Since the aggregate suggestions for Section I and II were more concerned with word phrasing rather than item appropriateness, the questions were considered as appropriate indicators for students' background information and their preferences for strategies of facilitating self-directed learning. Changes in the wording for some items were suggested by the jurors.

As a result, in Section I, minor wording changes were made to items 1, 4, 8, 12 and 19. Questions 2 (when did you start taking class at NOU?) and 11 (to achieve self-actualization) were dropped because they might partially duplicate questions 3 (how many years have you been taking classes at NOU before the 1998 academic year?) and 12 (to enhance personal growth) based on the jurors judgment.

In Section II: Student Preferences for Strategies to Facilitate Self-Directed Learning, most of the questions were rated appropriate except question 8, in the scale of Instructional Styles [IS], was removed because it might be too abstract and might cause

confusion. A few questions were modified and renumbered on the questionnaire. For instance, in the scale of Institution Support Services [ISS], some media, as examples for course delivery systems were listed in question 10. In the Course Design Adaptations scale [CDA], question 3 was modified and renumbered as question 5 and question 4 was removed. The new question 3 was designed as a reversal question of question 4. In addition, a new question (numbered as question 6) was developed regarding the issue between course material design and self-evaluation. The order of these items in the scale was renumbered based on a logical sequence concern. The revised questionnaire is presented in Appendix D (see Appendix E for Chinese version).

Factor analysis was further utilized to reduce the number of variables to a more manageable and meaningful number of summated scales when the data were analyzed. Means, reliability coefficients and correlations were calculated using SPSS for Windows Release 8.0. The significance level for all tests was set at least 0.05. The results of this research may be only generalizable to this population.

Instrumentation after Factor Analysis

Results of Factor Analysis for Section I: Student Background Information

A factor analysis using principle components extraction was run to check the initial conceptualization for composite scales for questions 7-24 in Section I, Student Background Information. The initial conceptualization was that there would be three factors (see Appendix A). The first factor, labeled Motivation, was composed of the perspectives of future career concern, social-culture expectation, updating professional knowledge, enhancing self-growth, and for the joy of learning. The second factor was Insight about Self, composed of the characteristics of persistent, self-confident, self-

disciplined, independent, seeing problem as challenge, taking responsibility, and shaping education program. The third was labeled Self-Directed Learning Readiness and was composed of abilities of setting learning pace, developing plan, knowing learning resources, seeking assistance, setting criteria for assessment, and accepting criticism.

Using the total 18 items for factor analysis, a 4-factor solution seemed to be closest to the original conceptualization. However, it did not make good conceptual sense in regards to the first two scales, Insight about Self and Self-Directed Learning Readiness, so the result did not applied to modify these two conceptual scales.

However, the factor analysis did provide insight into the motivation questions, which split into two clear categories: Internal Motivation and External-Payoff Motivation. According to the nature of the questions, the result is understandable. The Internal Motivation scale contained the items of enhancing self-growth (BGM 10) and for the joy of learning (BGM11). The External-Payoff Motivation contained the items of future career preparation (BGM7), social-culture expectation (BGM 8), and updating professional knowledge (BGM 9).

Results of Factor Analysis for Section II: Student Preferences for Strategies to Facilitate Self-Directed Learning

According to the initial conceptualization, Section II was composed of four factors: Institution Support Services [ISS], Instructional Styles [IS], Interpersonal Interactions [II], and Course Design Adaptations [CDA]. Factor analysis using the original 39 items, resulted in eight factors with Eigenvalues greater than 1; however, in the most meaningful solution the factor analysis was limited to five factors. These five factors accounted for approximately 53 percent of the variance. Specifically, the first component, labeled Course Design Adaptation, had an Eigenvalue of 12.663, and

accounted for 32.469 percent of the variance. The second factor, labeled Institution Support Services, had an Eigenvalue of 2.606, and accounted for 6.682 percent of the variance. The third factor, labeled Interpersonal Interaction, had an Eigenvalue of 1.918, and accounted for 4.917 percent of the variance. The fourth factor, labeled Instructional Styles, had an Eigenvalue of 1.512, and accounted for 3.88 percent of the variance. In addition, a new component was split from the conceptual category of Institution Support Services and labeled as Institution-Provided Orientation Programs. This factor had an Eigenvalue of 1.512, and accounted for 3.876 percent of the variance. Table 1 presents how each of the 39 items loaded for the five factors identified. The principle component analysis was asked to suppress printing of absolute values less than .30.

Table 1

Factor Analysis for Section II: Student Preferences for Strategies to Facilitate Self-Directed Learning Using Five Components (N = 544)

Code	Item	Course Design Adaptations	Institution Support Services	Interpersonal Interactions	Instructional Styles	Institution-Provided Orientation Programs
CDA11	evaluation are competencies and achievements based	.748				
CDA7	curriculum requires to develop learning plan as contract	.747				
CDA10	evaluation are based on learning contracts	.728				
CDA8	the content is designed as easily internalized by self-monitoring methods	.703				
CDA6	course material provides feedback on learning activities	.628				
CDA9	evaluation focuses on contribution, appreciation, and responsibility	.625				
CDA5	course material is written as problem-discussion style	.617				
II7	encourages students work alone and learn independently	.438		.317		
CDA4	course design are adapted to students' personal experiences and needs	.437		.347		
CDA3	content is designed based on logic of subject content	.310				
ISS5	networking students with mentors		.759			
ISS6	ensuring the availability of technology		.685			
ISS4	assisting with forming local study groups		.674			
ISS1	ensuring students have open access to school representatives		.640	.303		
ISS7	providing opportunities for social interaction		.567			.376
ISS3	ensuring faculty has office hours available		.553			
ISS2	ensuring information services can be easily accessed		.443	.316	.302	
II4	media for communication are readily available			.670		
II2	faculty communicate with students frequently		.397	.664		
II1	ensure open access for two-way communication		.423	.658		
II5	faculty provide consistent and timely feedback			.648		
II3	arrange face-to-face meetings	.320	.397	.570		
CDA1	course material has a kit to teach the skills of learning how to learn			.534		
II6	encourages discussion and leads to group problem solving	.308	.356	.499		
IS10	willing to provide additional content resources			.440	.410	
CDA2	content of the curriculum is self-contained	.304		.405		

(Continued)

Code	Item	Course Design Adaptations	Institution Support Services	Interpersonal Interactions	Instructional Styles	Institution-Provided Orientation Programs
IS6	believe teaching is support and facilitation of learning				.734	
IS8	encourage connection between learning and personal life experiences				.719	
IS7	accepts imperfect; but gives credit for willingness to try				.712	
IS9	provides stimuli for question-asking				.571	
IS2	education is the development of life skills				.536	
IS5	correct assignments with explanatory comments				.470	
IS4	understand the student population profile				.426	
IS3	believes learners have the potential to be self-directed				.390	
ISS8	providing time-management programs					.829
ISS9	providing stress-management programs					.800
ISS11	orientations teach self-directed learning					.723
ISS10	ensuring orientations help students in gaining knowledge and skills					.706
IS1	provides systematic assistance course material			.379		.380

Note: 1. Principle component factor analysis with Varimax rotation.
2. The items listed in the table are brief versions of their original format.
3. Eigenvalue for Course Design Adaptations was 12.663 (32.469% of the variance); Eigenvalue for Institution Support Services was 2.606 (6.682% of the variance); Eigenvalue for Interpersonal Interactions was 1.918 (4.917 % of the variance); Eigenvalue for Instructional Styles was 1.788 (4.585 % of the variance); Eigenvalue for Institution-Provided orientation Programs was 1.512 (3.876 % of the variance); five factors accounted for nearly 53% of the variance.
4. Item loadings less than .30 were omitted.
5. Coding was made based on the initial conceptualized categories; CDA = Course Design Adaptations, ISS = Institution Support Services, II = Interpersonal Interactions, IS = Instructional Styles.

For component 1, Course Design Adaptations, ten items were extracted with factor loadings .310 or above. However, of the ten items, II7 (instructor encourages students to work alone and learn independently), an original conceptualized Interpersonal Interactions item also fell into this component. Because the question (II7) focused more on interaction, it was omitted from this category. Also, the question of CDA3 (the content is designed according to the logic of subject content rather than student needs) was omitted because it was a reverse question and had a relatively low factor loading (.310) compared with others. Thus, there were eight items (CDA11, CDA7, CDA10, CDA8, CDA6, CDA9, CDA5, and CDA4) included in this summated scale.

For component 2, Institution Support Services, seven items (ISS5, ISS6, ISS4, ISS1, ISS7, ISS3, and ISS2) were included with factor loadings .443 or above. Of the seven questions, the item of ISS2 (ensuring information services from various sources can be easily accessed by students) also fell into Interpersonal Interactions and Instructional Styles. The item was kept not only because it had a higher factor loading (.443) on this component than on the other two categories (.316 and .302) but also the question itself emphasized services.

For component 3, Interpersonal Interactions, nine items were extracted in this component with factor loadings .405 or above. Of the nine items, two questions (CDA1--the course material includes a kit to teach the skills of learning how to learn and CDA2--the content of the curriculum is self-contained, allowing students to proceed without other assistance) of the initial conceptualized Course Design Adaptations were omitted because the nature of these questions emphasized course material design rather than interaction and they had relatively low loadings. Question II7 (instructor/facilitator encourages students to work alone and learn independently) also fell into Course Design Adaptations category with a higher factor loading (.438) than it did in Interpersonal Interaction component (.317). The question was omitted both from the Course Design Adaptations or Interpersonal Interactions category. In addition, IS10 (instructor willing to provide content resources through fax, mail, or e-mail if student needed), an original conceptualized Instructional Styles question, was also omitted to avoid confusion. Thus, six questions (II4, II2, II1, II5, II3, and II6) were included in this component. These items had relatively low factor loadings (.405, .440, and .534).

For component 4, Instructional Styles, eight questions (IS6, IS8, IS7, IS9, IS2, IS5, IS4, and IS3) were clearly extracted into this component with factor loadings above .390. The fifthth component labeled Institution-Provided Orientation Programs was mostly split out from the originally conceptualized Institution Support Services scale. Based on factor analysis, four items (ISS8, ISS9, ISS11, and ISS10) were clearly extracted into this component with factor loadings .706 or above. A fifth item (IS10--instructor provides systematic assistant course material and learning instruction) fell into this scale and the Interpersonal Interactions scale. In order to avoid confusion, the question was omitted. The factor of Institution-Provided Orientation Programs, thus, included four questions.

Differences between Conceptualized Categories and Factored Categories

Although an instrument could have been developed based on the initial conceptualization and the literature, performing a factor analysis was appropriate in order to either confirm or reorganize these groupings. Regarding the results of factor analysis on Section II, most of the initial conceptual-categorized items were supported by the principle components analysis, but others were reorganized or dropped.

Table 2 (see page 89) presents the items for each factored category in the instrument. Specifically, the following statements are differences between the conceptualized categories and factored categories. First of all, the initial Institution Support Services scale was factored into two different categories. CDA1 to CDA7 included the perspectives of ensuring open access, ensuring information services, ensuring availability of office hours, forming local study groups, networking students, ensuring availability of technology, and ensuring opportunities for social interaction.

Questions ISS8-ISS11 included availability of time and stress management programs, availability of orientation in self-directed learning strategies and skills were located in this new component labeled as Institution-Provided Orientation Programs.

Second, items IS1 (provide systematic assistant course material and guidance) and IS10 (willing to provide content resources through fax, mail, and e-mail) in the initial Instructional Styles scale were omitted. Third, the item of IS7 (encourage students to work alone and learn independently in the initial Interpersonal Interactions scale was dropped. Fourth, the initial Course Design Adaptations scale had eleven questions. After factor analysis, items CDA1 (course material includes a kit to teach the skills of learning how to learn), CDA2 (content of the curriculum is self-contained, allowing students to proceed without other assistance), and CDA3 (content is designed according to the logic of subject content not students' needs) were omitted from the category.

Table 2
Questionnaire Categories and Items after Factor Analysis

Section	Category	Initial code	Item
Section I: Student Background Information			
	External-Payoff Motivation		
		BGM7	To prepare for a future career.
		BGM8	To meet social-cultural expectations as being a college graduate.
		BGM9	To update professional knowledge to my current career.
	Internal Motivation		
		BGM10	To enhance personal growth.
		BGM11	For the joy of learning.
	Insight about Self		
		BGI12	Overall, I am a person with persistence in learning.
		BGI13	Overall, I am a person with self-confidence about learning.
		BGI14	Overall, I am a self-disciplined learner.
		BGI15	Overall, I tend to see problems as challenges rather than obstacle in learning.
		BGI16	Overall, I see myself as an independent learner.
		BGI18	I prefer to be a student who is active in shaping my educational program to meet personal desires and interests.
	Self-Directed Learning Readiness		
		BGR19	Overall, I have the ability to set an appropriate pace for learning.
		BGR20	Overall, I have the ability to develop a plan for completing course work.
		BGR21	Overall, I have knowledge of a variety of potential learning resources.
		BGR22	Overall, I have the ability to get assistance from various resources to discover new approaches to deal with learning problems.
		BGR23	Overall, I have the ability to set appropriate criteria to assess my own learning.
		BGR24	Overall, I have the ability to accept and use criticism.
Section II: Student Preferences for Strategies to Facilitate Self-Directed Learning			
	Institutional Support Services		
		ISS1	Ensuring students have open access to school representatives for advice and counsel.
		ISS2	Ensuring that information service from various sources (libraries & database) can be easily accessed by students.
		ISS3	ensuring each faculty/on-site facilitator has office hour available for students
		ISS4	Assisting with forming geographical or local study group.
		ISS5	Networking students with mentors at learning centers.
		ISS6	Ensuring the availability of various technologies, which allows interaction among students and between students and faculty.
		ISS7	Providing opportunities for social interaction with peers and faculty.
	Institution-Provided Orientation Programs		
		ISS8	Providing time-management programs as part of orientations.
		ISS9	Providing stress-management programs as part of orientations.
		ISS10	Ensuring that orientations help students in gaining knowledge and skills necessary to use the delivery systems (such as television, broadcast, video, video tape, internet, etc.)
		ISS11	Ensuring that orientations include instruction in the process of directing one's own learning and study strategies.

(continued)

Instructional Styles		
	IS2	Believes the main goal of the education is the development of life skills not just the results of academic achievement.
	IS3	Believes learners have the potential to be self-directed.
	IS4	Understand the student population profile, including their prior knowledge, educational experiences, and context for undertaking the program.
	IS5	Corrects assignments with explanatory and individualized comments and further suggestions rather than factual statement only.
	IS6	Believes teaching is support and facilitation of learning not control.
	IS7	Accepts imperfect; but gives credit for willingness to try.
	IS8	Encourages connection between learning and personal life experiences.
	IS9	Provides stimuli for question-asking to improve critical thinking ability.
Interpersonal Interactions		
	II1	The institution and faculty ensure open access for two-way communication.
	II2	Faculty (tutors and counselors) communicate with students frequently.
	II3	The institution and faculty arrange face-to-face meetings among students and between students and faculty.
	II4	The media for communication are readily available and are familiar to instructors and students.
	II5	Motivate learning by providing consistent and timely feedback.
	II6	Instructor/facilitator encourages discussions among students and leads to group problem solving.
Course Design Adaptations		
	CDA4	The course design including delivery systems, sequencing, and course presentation are adapted to students' personal experiences and needs.
	CDA5	The course material is written as question or problem-discussion style to invite students to contribute their ideas.
	CDA6	The course material provides feedback on learning activities to help students assess learning outcome themselves.
	CDA7	The content of curriculum requires students to develop their own learning plan as a contract.
	CDA8	The content is designed as easily internalized by self-monitoring methods such as journals, checklists, project-based, and time-management charts.
	CDA9	The evaluation focuses on assets, contribution, appreciation, and personal responsibility.
	CDA10	Evaluation criteria are decided based on learning contracts, which allow validation through options other than exams.
	CDA11	Evaluation standards are anchored in individual student's specific competencies and achievements.

Note: 1. BGI: Background Information-Insight about Self, BGR: Background Information-Self-Directed Learning Readiness, BGM: Background Information-Motivation.
2. Coding was made based on the initial conceptualized categories. ISS = Institution Support Services, IS = Instructional Styles, II = Interpersonal Interactions, CDA = Course Design Adaptations.

Reliability of the Questionnaire

Reliability refers to the consistency with which an instrument produces equivalent scores (Cates, 1985). After the factor analysis procedure, reliability of the scales in this study was determined by internal consistency using the Cronbach alpha statistic. Internal consistency reliability determines if the instrument has consistency among the items using the results of a single administration of the instrument. Because each item on the instrument has multiple choices, as represented by a Likert type scale, Cronbach's alpha was used to determine interitem reliability (Gliner & Morgan, 1998).

Results of Internal Consistency Reliability for Section I: Student Background Information

Reliability measures are used to determine the consistency, stability, and/or predictability of an instrument. The reliability coefficients for each of the four scales had alphas between .6243 and .8502 (see Table 3). Two of these scales had strong reliability but it should be noted that the scales of Internal Motivation and External-payoff motivation have lower reliability coefficients of .68 and .62. This is probably due to the small number of items for these two scales because an alpha value is dependent upon the number of items measured as well as the average inter-item correlation.

Table 3
Reliability Coefficients by Section I: Student Background Information

Category by Factor Analysis	Number of Cases	Number of Items	Alpha
External-Payoff Motivation	591	3	.6243
Internal Motivation	592	2	.6813
Insight about Self	588	6	.8502
Self-Directed Learning Readiness	591	6	.8416

Results of Internal Consistency Reliability for Section II: Student Preferences for Strategies to Facilitate Self-Directed Learning

Using the items for each revised scale as just described, provided alphas between .8016 and .8902 (see Table 4). The correlations within each of the five scales were relatively high and indicated strong reliability.

Table 4
Reliability Coefficients for Section II by Five Self-Directed Learning Facilitation Preference Scales

Category by Factor Analysis	Number of Cases	Number of Items	Alpha
Course Design Adaptations [CDA]	572	8	.8706
Institution Support Services [ISS]	588	7	.8416
Interpersonal Interactions [II]	588	6	.8902
Instructional Styles [IS]	586	8	.8016
Institution-Provided Orientation Programs [IPSP]	581	4	.8815

Research Design and Procedure

The study compared current and inactive students' preferences for strategies to facilitate self-directed learning. The dependent variables were Institution Support Services, Institution-Provided Orientation Programs, Instructional Styles, Interpersonal Interactions, and Course Design Adaptations. Independent variables were types of academic status (i.e., current and inactive students) and the background characteristics of duration of studying at NOU, age, gender, declaration of a major, full-time work experience, internal motivation, external-payoff motivation, insight about self, and self-directed learning readiness.

To examine these relationships, a 62-item mailed questionnaire was designed to collect preferences for self-directed learning facilitation and background information from current and inactive NOU students. A cover letter (see Appendix A-1) was included in the questionnaire to explain the purpose of the study and assure anonymity to

the respondents. To insure confidentiality, respondents' names were not entered into a database, report, summary, or written statement.

The questionnaire and cover letter were translated into Chinese. Because the survey participants were distance learners in Taiwan and they might have had difficulty with the English language. After the translation was finished, a back translation was conducted to check the accuracy. The Chinese version (see Appendix E) of the questionnaire was mailed to the subjects. Respondents needed about 20 minutes to complete the questionnaire and were asked to return it in an attached stamped envelope by November 30, 1998.

Data Analysis Procedure

Data analysis such as validity, reliability coefficients, differences, and correlations for the study were calculated using the Statistical Package for the Social Sciences [SPSS] for Windows Release 8.0. The section on Student Background Information was utilized first to describe students' backgrounds. These background data were further analyzed to examine their relationships with self-directed learning facilitation perceptions. The data were tested for the assumption of homogeneity of variance by using Levene's test for equity of variances to determine whether the "equal variances assumed" or "equal variances not assumed" adjustment performed in SPSS was used.

The study were attempted to answer the following research questions:

1. What are the background characteristics (i.e., duration of studying at NOU, age, gender, declaration of a major, full-time work experience, internal motivation, external-payoff motivation, insight about self, and self-directed learning readiness) and

preferences for the 33 self-directed learning facilitation items of National Open University [NOU] students, current and inactive combined?

Regarding research Question 1, descriptive statistical methods will be applied to provide the information on students' background and the means and standard deviations of their preferences for the 33 self-directed learning facilitation items.

2. Are there differences between current NOU students and inactive students' background characteristics on duration of studying at NOU, age, gender, declaration of a major, full-time full-time work experience, internal motivation, external-payoff motivation, insight about self, and self-directed learning readiness as well as on students' preferences for the five scales of Institution Support Services, Institution-Provided Orientation Programs, Instructional Styles, Interpersonal Interactions, and Course Design Adaptations?

For Question 2, academic status has two levels: current and inactive NOU students. The statistical techniques of independent sample *t*-test will be applied in analyzing the difference between current and inactive NOU students' background characteristics of duration of studying at NOU, age, full-time work experience, internal motivation, external-payoff motivation, insight about self, and self-directed learning readiness as well as the overall scales of Institution Support Services, Institution-Provided Orientation Programs, Instructional Styles, Interpersonal Interactions, and Course Design Adaptations, because the data of these dependent variables are approximately interval or ratio. Because the design is a between groups design with one independent variable and two levels, *t* test is an appropriate method for measuring the statistical significance of an observed difference between sample means. If the assumption of homogeneity of

variance, using Levene's test for equality of variances is violated, the line of equal variances not assumed in the *t* test will be used to get the values of *t*, degree of freedom, probability of significance. Furthermore, the statistical techniques of Chi-square (χ^2) was applied in analyzing the difference between current and inactive NOU students' background characteristics of gender and major, because the data of these dependent variables are categorical.

3. Are there relationships between student background characteristics (academic status--current vs. inactive, duration of studying at NOU, age, gender, declaration of a major, full-time work experience, internal motivation, external-payoff motivation, insight about self, and self-directed learning readiness) of the NOU students and their preferences for how the *institution provides support services* that are conducive to self-directed learning? Also is there a combination of these independent variables that predicts NOU students preferences for how the institution provides support services better than any one variable alone?

4. Are there relationships between student background characteristics (academic status--current vs. inactive, duration of studying at NOU, age, gender, declaration of a major, full-time work experience, internal motivation, external-payoff motivation, insight about self, and self-directed learning readiness) of the NOU students and their preferences for how the *institution provides orientation programs* that are conducive to self-directed learning? Also is there a combination of these independent variables that predicts NOU students preferences for how the institution provides orientation programs better than any one variable alone?

5. Are there relationships between student background characteristics (academic status--current vs. inactive, duration of studying at NOU, age, gender, declaration of a major, full-time work experience, internal motivation, external-payoff motivation, insight about self, and self-directed learning readiness) of the NOU students and their preferences for *instructor instructional styles* that are conducive to self-directed learning? Also is there a combination of these independent variables that predicts NOU students preferences for instructor's instructional styles better than any one variable alone?

6. Are there relationships between student background characteristics (academic status--current vs. inactive, duration of studying at NOU, age, gender, declaration of a major, full-time work experience, internal motivation, external-payoff motivation, insight about self, and self-directed learning readiness) of the NOU students and their preferences for *interpersonal interactions* within learning situations that are conducive to self-directed learning? Also is there a combination of these independent variables that predict NOU students preferences for interpersonal interactions within learning situations better than any one variable alone?

7. Are there relationships between student background characteristics (academic status--current vs. inactive, duration of studying at NOU, age, gender, declaration of a major, full-time work experience, internal motivation, external-payoff motivation, insight about self, and self-directed learning readiness) of the NOU students and their preferences for how an *instructor designs courses* to meet their concerns that are conducive to self-directed learning? Also is there a combination of these independent variables that predicts NOU students preferences for how an instructor designs courses better than any one variable alone?

Research questions 3-7 are complex associational questions because there are more than one independent variables involved in these questions. The statistical techniques of multiple regression will be applied in analyzing the relationship between the NOU students' background characteristics of academic status (current vs. inactive), duration of studying at NOU, age, gender, declaration of a major, full-time work experience, internal motivation, external-payoff motivation, insight about self, and self-directed learning readiness in related to their preferences for self-directed learning facilitation on the dependent variables of Institutional Support Services, Institution-Provided Orientation Programs, Instructional Styles, Interpersonal Interactions, and Course Design Adaptations. Multiple regression is used to predict an interval scale dependent variable from a combination of several interval scale and/or dichotomous predictors (Gliner & Morgan, 1998). We take these dependent variables, Institutional Support Service, Institution-Provided Orientation Programs, Instructional Styles, Interpersonal Interactions, and Course Design Adaptations as interval scales thus, multiple regression is applied to test the relationships between the independent variables and each dependent variable of students' self-directed learning perception.

8. Are there differences among each of the five sets of dependent variables (Institution Support Services, Institution-Provided Orientation Programs, Instructional Styles, Interpersonal Interactions, and Course Design Adaptations) of students' preferences for self-directed learning facilitation (i.e., do the scales different in importance)?

The research question is a within-subject design. The five self-directed learning preference scales (i.e., Institution Support Services, Institution-Provided Orientation Programs, Instructional Styles, Interpersonal Interactions, and Course Design

Adaptations) were treated as the within subject factor labeled as "preference" with five levels. Each subject will be repeated measured across each of the five scales. But they only provide one score to the data set for each level. Thus, an univariate one-way analysis of variance for repeated measures will be used for the statistical analysis. In SPSS, the general linear model with repeated measure was applied to perform the analysis.

9. Which student preference items combine to predict whether or not a student will drop out of NOU?

The dependent variable for this question is academic status with two levels, either inactive or current. The independent variables are the 33 items of Section II—Student Preferences for Strategies to Facilitate Self-Directed Learning. The statistical method of discriminant analysis was used to test the relationship between the combination of the 33 items and students' academic status. Discriminant analysis is used to predict a categorical dependent variable from a combination of several interval scale independent variables (Gliner & Morgan, 1998). The criteria for using the technique is that the dependent variable must be categorical scale and independent variables must be interval scales.

CHAPTER IV

RESULTS

This chapter includes the findings and statistical analysis of the data gathered to determine the characteristic differences between the current and inactive NOU students and, further to investigate students' preferences for strategies to facilitate self-directed learning. The study participants, data collecting procedures, and results of reliability and validity tests were discussed in Chapter 3. The students' preferences for strategies of facilitating self-directed learning have been grouped as institution support services, institution-provided orientation programs, instructional styles, interpersonal interactions, and course design adaptations. To facilitate the reporting of the data, the sequence of this chapter was divided into sections organized by research questions.

Results Related to Research Question 1: What are the background characteristics and preferences for the 33 self-directed learning facilitation items of the current and inactive NOU students?

Academic status

Of the 589 students who answered this question, 449 (76%) of them were current or recently graduated students and 140 (24%) of them were inactive students.

Age

The age distribution for the study participants was divided into five categories (see Table 5). It is noteworthy that 41 percent of the respondents were between 26-35

years of age and 37 percent of them were between 36-45 years of age. Therefore, approximately 78 percent of respondents were between 26-45 years of age.

Table 5
Frequency and Percentage of Respondents by Age (N = 586)

Age	Frequency	Percentage
Under 25	41	7.0
26-35	240	41.0
36-45	219	37.3
46-55	71	12.1
56 and older	15	2.6

Gender

The frequency distribution and percentages of gender are presented in Table 6. The number of female students was approximately twice that of male students in the study respondents. The finding reflects Wu's (1997) report on NOU student profile that female students composed 70 percent of NOU student population.

Table 6
Frequency and Percentage of Respondents by Gender (N = 589)

Gender	Frequency	Percentage
Male	197	33.4
Female	392	66.6

Duration of Studying at NOU

About 67 percent of the 580 participants had been studying at NOU for one-half to 3 years and about 22 percent of the respondents had been studying at NOU for 3.5 to 6 years. Furthermore, approximately 11 percent of them had been studying at NOU for 7-12 years. The frequency distribution and percentages of respondents' duration of studying at NOU before academic year 1998 were analyzed and are listed in Table 7.

Table 7
Frequency and Percentage of Respondents by Duration of Studying at NOU before the 1998 Academic Year (N = 580)

Duration of Studying at NOU	Frequency	Percentage (%)	Subtotal
0.5	48	8.3	
1.0	178	30.7	
1.5	12	2.1	
2.0	86	14.8	
2.5	3	0.5	
3.0	61	10.5	66.9%
3.5	2	0.3	
4.0	53	9.1	
4.5	3	0.5	
5.0	49	8.4	
6.0	23	4.0	22.4%
7.0	14	2.4	
8.0	8	1.4	
9.0	8	1.4	
10.0	19	3.3	
11.0	4	0.7	
12.0	9	1.6	10.7%

Note: There were no students that had been studying at NOU for five and one-half, six and one-half, seven and one-half, and so on, because the National Open University had recruited students for the spring semesters since 1990.

Declaration of a Major

The frequency distribution and percentages of respondents by whether they had decided on a major or not are presented in Table 8. Of the 588 respondents, 73 percent of them had decided on their major before the 1998 academic year or before they stopped taking classes from NOU.

Table 8
Frequency and Percentage of Respondents by Declaration of a Major (N = 588)

Declaration of a Major	Frequency	Percentage
Yes	432	73.5
No	156	26.5

Full-time Work Experience

Table 9 contains the frequency distribution and percentages of respondents by how much full-time work experience they had had. It is noteworthy that almost all respondents had some full-time work experience; 49 percent of respondents had full-time work experience between 6-15 years; and 38 percent of them had full-time work experience of over 16 years.

Table 9
Frequency and Percentage of Respondents by Full-time Work Experience (N = 588)

Full-time Work Experience	Frequency	Percentage
Haven't Started Working	3	0.5
Less than 6 Years	62	10.5
6-10 Years	147	25.0
11-15 Years	138	23.5
16-20 Years	115	19.6
21 Years and longer	108	18.4
I am a Homemaker	15	2.6

External-Payoff Motivation

The external-payoff motivation summated scale was composed of three items. The frequency distribution for each will be examined separately. The frequency distribution and percentage of respondents whose motivation for studying at NOU was that it would provide preparation for their future career was presented in Table 10.1. Approximately 60 percent of participants agreed that future career preparation was their motive for studying at NOU. More than two-thirds (66%) of the students agreed that becoming a college graduate to meet social-culture expectations was a motivator to them (Table 10.2). Shown in Table 10.3, approximately 82 percent of students agreed that

updating professional knowledge in relation to their current job was an important motivator of studying at NOU.

Table 10.1
Frequency and Percentage of Respondents by External-Payoff Motivation: Future Career Preparation (N = 591)

Future Career Expectation	Frequency	Percentage
Strongly Disagree	37	6.3
Moderately Disagree	137	23.2
Mildly Disagree	58	9.8
Mildly Agree	158	26.7
Moderately Agree	141	23.9
Strongly Agree	60	10.2

Table 10.2
Frequency and Percentage of Respondents by External-Payoff Motivation: Social-Culture Expectation (N = 592)

Social-Culture Expectation	Frequency	Percentage
Strongly Disagree	20	3.4
Moderately Disagree	101	17.1
Mildly Disagree	81	13.7
Mildly Agree	158	26.7
Moderately Agree	175	29.6
Strongly Agree	57	9.6

Table 10.3
Frequency and Percentage of Respondents by External-Payoff Motivation: Update Professional Knowledge (N = 592)

Update Professional Knowledge	Frequency	Percentage
Strongly Disagree	17	2.9
Moderately Disagree	36	6.1
Mildly Disagree	55	9.3
Mildly Agree	133	22.5
Moderately Agree	219	37.0
Strongly Agree	132	22.3

Internal Motivation

The internal motivation summated scale was composed of two items; the frequency distribution for each item will be examined separately. Ninety-nine percent of students agreed that to promote their self-growth was their motive for studying at NOU although in varying degree. It is noteworthy that nobody strongly disagreed with it (see Table 11.1). Also, 96 percent of students agreed that "for the joy of learning" was their motivator for studying at NOU (see Table 11.2).

Table 11.1
Frequency and Percentage of Respondents by Internal Motivation: Enhance Self-Growth (N = 592)

Enhance Self-Growth	Frequency	Percentage
Strongly Disagree	0	0
Moderately Disagree	1	.2
Mildly Disagree	3	.5
Mildly Agree	33	5.6
Moderately Agree	232	39.2
Strongly Agree	323	54.6

Table 11.2
Frequency and Percentage of Respondents by Internal Motivation: For the Joy of Learning (N = 592)

For the Joy of Learning	Frequency	Percentage
Strongly Disagree	2	.3
Moderately Disagree	6	1.0
Mildly Disagree	14	2.4
Mildly Agree	134	22.6
Moderately Agree	245	41.4
Strongly Agree	191	32.3

Insight about Self

The scale of insight about self included six items and their frequency and percentages of how respondents judged themselves on these points are listed in Tables 12.1 to 12.6. Shown in Table 12.1, 87 percent of the 591 respondents agreed that they were persistent in learning. As regarding the perspective of being a confident learner, 83 percent of them agreed, although the degree of agreement was varied from mildly agree to strongly agree (see Table 12.2). Also, approximately the same percentage (83.4%) was found in the perspective of how students evaluate themselves as self-disciplined students (see Table 12.3). According to Table 12.4, about 81 percent of respondents agreed that they saw problems as challenges rather obstacles. Consistently, 89 percent of respondents saw themselves as independent learners (see Table 12.5). And 87 percent of them preferred to be active in shaping their own educational programs (see Table 12.6). Although, item BGR17 (necessity of taking whole responsibility for learning outcomes) was omitted after factor analysis, it was interesting to note that 93 percent of respondents perceived themselves as the one who needed to take the whole responsibility for their own learning outcomes; however, the degree of agreement were varied from mildly agree to strongly agree.

Table 12.1
Frequency and Percentage of Respondents by Insight about Self: Persistent Learner (N = 591)

Persistent Learner	Frequency	Percentage
Strongly Disagree	8	1.4
Moderately Disagree	41	6.9
Mildly Disagree	76	12.9
Mildly Agree	179	30.3
Moderately Agree	197	33.3
Strongly Agree	90	15.2

Table 12.2
Frequency and Percentage of Respondents by Insight about Self: Self-Confident Learner (N = 592)

self-confident Learner	Frequency	Percentage
Strongly Disagree	7	1.2
Moderately Disagree	23	3.9
Mildly Disagree	69	11.7
Mildly Agree	194	32.8
Moderately Agree	219	37.0
Strongly Agree	80	13.5

Table 12.3
Frequency and Percentage of Respondents by Insight about Self: Self-Disciplined Learner (N = 591)

Self-Disciplined Learner	Frequency	Percentage
Strongly Disagree	5	.8
Moderately Disagree	23	3.9
Mildly Disagree	70	11.8
Mildly Agree	182	30.8
Moderately Agree	228	38.6
Strongly Agree	83	14.0

Table 12.4
Frequency and Percentage of Respondents by Insight about Self: See Problems as Challenges Rather Than Obstacles (N = 590)

See Problems as Challenges Rather Than Obstacles	Frequency	Percentage
Strongly Disagree	5	.8
Moderately Disagree	24	4.1
Mildly Disagree	85	14.4
Mildly Agree	213	36.1
Moderately Agree	203	34.4
Strongly Agree	60	10.2

Table 12.5
Frequency and Percentage of Respondents by Insight about Self: Independent Learner (N = 592)

Independent Learner	Frequency	Percentage
Strongly Disagree	3	.5
Moderately Disagree	9	1.5
Mildly Disagree	52	8.8
Mildly Agree	132	22.3
Moderately Agree	274	46.3
Strongly Agree	122	20.6

Table 12.6
Frequency and Percentage of Respondents by Insight about Self: Active Shaping Educational Program (N = 592)

Active Shaping Educational Program	Frequency	Percentage
Strongly Disagree	1	.2
Moderately Disagree	4	.7
Mildly Disagree	12	2.0
Mildly Agree	56	9.5
Moderately Agree	266	44.9
Strongly Agree	253	42.7

Self-Directed Learning Readiness

The scale of self-directed learning readiness provided different perspectives about students' ability of being a self-directed learner. This summated scale included six items and their frequency and percentages of how respondents judged themselves on these perspectives were tabulated in Tables 13.1 to 13.6. Shown in Table 13.1, about 86 percent of participants agreed that they had the ability to set the appropriate pace for learning. While 82 percent of respondents judged themselves having the competency to develop a plan for completing course work (see Table 13.2), about 81 percent of them agreed they were able to get assistance from various sources (see Table 13.3). On the

other hand, only 78 percent of students had positive answers when they were asked whether they had knowledge of a variety of learning resources and the ability to use them (see Table 13.4). The percentage was slightly lower. Similarly, only about 76 percent of respondents felt positive when they were asked if they had the ability to set appropriate criteria to assess learning outcomes (see Table 13.5). Regarding the perspective of the ability to accept and use criticism, 96 percent of participants had a positive attitude on this point (see Table 13.6).

Table 13.1
Frequency and Percentage of Respondents by Self-Directed Learning Readiness: Setting Appropriate Pace (N = 592)

Setting Appropriate Pace	Frequency	Percentage
Strongly Disagree	6	1.0
Moderately Disagree	30	5.1
Mildly Disagree	48	8.1
Mildly Agree	156	26.4
Moderately Agree	264	44.6
Strongly Agree	88	14.9

Table 13.2
Frequency Distribution and Percentage of Respondents by Self-Directed Learning Readiness: Develop a Plan to Complete Course Work (N = 592)

Develop a Plan to Complete Course Work	Frequency	Percentage
Strongly Disagree	4	.7
Moderately Disagree	30	5.1
Mildly Disagree	72	12.2
Mildly Agree	168	28.4
Moderately Agree	238	40.2
Strongly Agree	80	13.5

Table 13.3
Frequency and Percentage of Respondents by Self-Directed Learning Readiness: Getting Assistance from Various Resources (N = 592)

Getting Assistance from Various Resources	Frequency	Percentage
Strongly Disagree	5	.8
Moderately Disagree	27	4.6
Mildly Disagree	81	13.7
Mildly Agree	203	34.3
Moderately Agree	225	38.0
Strongly Agree	51	8.6

Table 13.4
Frequency and Percentage of Respondents by Self-Directed Learning Readiness: Knowledge of Learning Resources and Ability to Use Them (N = 592)

Knowledge of Learning Resources and Ability to Use Them	Frequency	Percentage
Strongly Disagree	5	.8
Moderately Disagree	21	3.6
Mildly Disagree	103	17.4
Mildly Agree	197	33.3
Moderately Agree	233	39.4
Strongly Agree	32	5.4

Table 13.5
Frequency and Percentage of Respondents by Self-Directed Learning Readiness: Setting Criteria to Assess Learning Outcomes (N = 592)

Setting Criteria to Assess Learning Outcomes	Frequency	Percentage
Strongly Disagree	6	1.0
Moderately Disagree	29	4.9
Mildly Disagree	108	18.2
Mildly Agree	230	38.9
Moderately Agree	193	32.6
Strongly Agree	26	4.4

Table 13.6
Frequency and Percentage of Respondents by Self-Directed Learning Readiness: Ability to Accept and Use Criticism (N = 592)

Ability to Accept and Use Criticism	Frequency	Percentage
Strongly Disagree	2	.3
Moderately Disagree	2	.3
Mildly Disagree	16	2.7
Mildly Agree	139	23.5
Moderately Agree	345	58.3
Strongly Agree	88	14.9

In summary, most of the NOU students in the study were between 26-45 years of age, had been studying at NOU for three years, and had chosen their majors. The number of female students was twice as large as the number of males. Almost all of them had some full-time work experience and approximately half of the respondents had full-time work experience ranging from six to fifteen years.

Also, in order to get a more clear picture about the respondents' characteristics of external-payoff motivation, internal motivation, insight about self, and self-directed learning readiness, the means and standard deviations for each item included in each of these summated scales are presented in Table 14.

Table 14
Mean and Standard Deviation for Items in Students' External-Payoff Motivation, Internal Motivation, Insight about Self, and Self-Directed Learning Readiness

Initial Code	Item	N	Mean	SD
External-Payoff Motivation				
BGM7	To prepare for a future career	5.91	3.69	1.46
BGM8	To meet social-cultural expectation	592	3.91	1.34
BGM9	To update professional knowledge related to current job	592	4.52	1.26
Internal Motivation				
BGM10	To enhance self-growth	592	5.47	.64
BGM11	For the joy of learning	592	5.01	.89
Insight about Self				
BGI12	Overall, I am a person with persistence in learning.	591	4.33	1.17
BGI13	Overall, I am a person with self-confidence about learning.	592	4.41	1.06
BGI14	Overall, I am a self-disciplined learner.	591	4.45	1.05
BGI15	Overall, I tend to see problems as challenges rather than obstacle in learning.	590	4.30	1.02
BGI16	Overall, I see myself as an independent learner.	592	4.74	.97
BGI18	I prefer to be a student who is active in shaping my educational program to meet personal desires and interests.	592	5.27	.79
Self-Directed Learning Readiness				
BGR19	Overall, I have the ability to set an appropriate pace for learning.	592	4.53	1.07
BGR20	Overall, I have the ability to develop a plan for completing course work.	592	4.43	1.07
BGR21	Overall, I have knowledge of a variety of potential learning resources.	592	4.30	1.02
BGR22	Overall, I have the ability to get assistance from various resources to discover new approaches to deal with learning problems.	591	4.23	.98
BGR23	Overall, I have the ability to set appropriate criteria to assess my own learning.	592	4.10	.98
BGR24	Overall, I have the ability to accept and use criticism.	592	4.84	.74

Note: The scales of the answers are: 1 = Strongly Disagree, 2 = Moderately Disagree, 3 = Mildly Disagree, 4 = Mildly Agree, 5 = Moderately Agree, and 6 = Strongly Agree.

Students' preferences for the 33 self-directed learning facilitation items

The means and standard deviations for the 33 self-directed learning facilitation items answered by the respondents are presented in Table 15 in a descending order.

Table 15
Mean and Standard Deviation for the 33 Self-Directed Learning Facilitation Items

Initial Code	Item	N	Mean	SD
IS2	Believes the main goal of education is the development of life skills not just the result of academic achievement	591	5.40	.69
IS8	Encourage connection between learning and personal life experiences	590	5.39	.68
IS6	Believe teaching is the support and facilitation of learning	590	5.28	.73
ISS2	Ensuring that information services from various sources can be easily accessed by students	592	5.23	.81
IS7	Accepts imperfect; but gives credit for willingness to try	590	5.23	.74
IS5	Correct assignments with explanatory and individualized comments and further suggestions rather than factual statements only	592	5.16	.93
IS9	Provides stimuli for question-asking to improve critical thinking ability	592	5.15	.82
II1	The institution and faculty ensure open access for two-way communication	589	5.05	.86
ISS6	Ensuring the availability of various technologies which allows interaction among students and between students and faculty	590	5.03	.86
CDA4	The course design including delivery systems, sequencing, and course presentation are adapted to students' personal experiences and needs	587	5.03	.83
ISS1	Ensuring that students have open access to school representatives for advice and counsel	592	5.01	.95
ISS5	Networking students with mentors at learning centers	591	4.98	.84
ISS10	Ensuring that orientations help students in gaining knowledge and skills necessary to use the delivery systems	588	4.98	.97
CDA6	The course material provides feedback on learning activities to help students assess learning outcomes	589	4.91	.83
II5	Faculty motivate learning by providing consistent and timely feedback	588	4.90	.90
II4	The media for communication are readily available and are familiar to instructors and students	588	4.90	.90
ISS11	Ensuring that orientations include instruction of directing one's own learning and study strategies	586	4.87	.99
ISS3	Ensuring that each faculty and on-site facilitator has office hours available for students	592	4.87	.99
II2	Faculty (tutors and counselors) communicate with students frequently	590	4.86	.91
IS3	Believes learners have the potential to be self-directed	591	4.85	.85
IS4	Understand the student population profile, including their prior knowledge and educational experiences, and context for undertaking the program	590	4.79	.97
II6	Instructor/facilitator encourages discussion among students and leads to group problem solving	588	4.79	.95
CDA9	The evaluation focuses on assets, contribution, appreciation, and personal responsibility	589	4.76	.95
II3	The institution and faculty arrange face-to-face meetings among students and between students and faculty	588	4.71	1.01

Initial Code	Item	N	Mean	SD
ISS4	Assisting with forming geographical or local study groups	591	4.61	1.02
ISS8	Providing time-management programs as part of orientations	589	4.58	1.07
ISS9	Providing stress-management programs as part of orientations	590	4.54	1.09
CDA5	The course material is written as question or problem-discussion style to invite students to contribute their ideas	586	4.53	1.02
CDA8	The content is designed as easily internalized by self-monitoring methods such as journals, checklists, project-based, and time-management charts	588	4.53	.97
CDA10	Evaluation criteria are based on learning contracts which allow validation through options other than exams	585	4.51	1.00
CDA7	The content of curriculum requires students to develop their own learning plan as contract	585	4.50	1.03
CDA11	Evaluation standards are anchored in specific competencies and achievements	587	4.44	1.16
ISS7	Providing opportunities for social interaction with peers and faculty	591	4.36	1.03

Note: The scales of the answers are: 1 = Strongly Unimportant, 2 = Moderately Unimportant, 3 = Mildly Unimportant, 4 = Mildly Important, 5 = Moderately Important, and 6 = Strongly Important.

Furthermore, supplemental analyses using Pearson correlation and *t*-test to test the relationships and differences among the students' background characteristics were applied. Students who were older in age tended to have higher score in internal motivation ($r = .095, p < .05$), insight about self ($r = .231, p < .001$), and self-directed learning readiness ($r = .195, p < .001$) while they had a lower score in external-payoff motivation ($r = -.113, p < .05$) for studying at NOU. Similarly, students who had longer full-time work experience also had a higher score on internal motivation ($r = .130, p < .05$), insight about self ($r = .149, p < .001$), and self-directed learning readiness ($r = .130, p < .05$) while they had a lower score in external-payoff motivation ($r = -.121, p < .05$) of studying at NOU. Accordingly, the correlation between age and external pay-off motivation, full-time work experience and external pay-off motivation, were negative, which meant students who were older and had longer full-time work experience attending NOU tended to be motivated less by external pay-off motivators.

The independent sample *t* test was applied to compare the mean differences for the characteristics of duration of studying at NOU, age, full-time work experience, internal and external-payoff motivation, insight about self, and self-directed learning readiness between male and female students and whether they had declared their majors or not. Based on the results, age ($t = 4.284$, $df = 578$, $p < .001$) and internal motivation ($t = -3.015$, $df = 587$, $p < .05$) were tested statistically significant difference between male and female students. The results indicate that male students were older in age than females; and female students were more motivated by internal motivators for studying at NOU. Also, the characteristics of duration of studying at NOU ($t = 5.904$, $df = 354.932$, $p < .001$, equal variance not assumed), age ($t = 3.229$, $df = 583$, $p < .05$), external pay-off motivation ($t = 2.196$, $df = 586$, $p < .05$), insight about self ($t = 7.086$, $df = 586$, $p < .001$), and self-directed learning readiness ($t = 5.113$, $df = 586$, $p < .001$) were found to be statistically significantly different when comparing students who had decided their majors with those who had not. Students who had decided their majors were older, tended to study at NOU longer, and had higher scores on insight about self and self-directed learning readiness. They were also more motivated by external pay-off motivators to study at NOU.

Results Related to Question 2: Are there differences between current and inactive National Open University [NOU] students' background characteristics and their preferences for the five self-directed learning facilitation scales?

Differences between current and inactive students' background characteristics and their preferences for the five self-directed learning scales were tested with independent

sample *t* tests for dependent variables with either interval or ratio data that was normally distributed. As mentioned previously in Chapter 3, the assumption of homogeneity of variance was evaluated with the Levene's test for equity of variances when applying the *t* test. If the assumption of homogeneity of variance was not met, the "equal variances not assumed" adjustment in the *t* test performed in SPSS was used. Also, Chi-square (χ^2) was used for variables such as gender and declaration of a major, with categorical data.

Tests of Significance Using *t* Tests

The independent sample *t* test was applied to compare the mean differences between students' persistence-dropout statuses on the variables of duration of studying at NOU, age, full-time work experience, internal motivation, external-payoff motivation, insight about self, self-directed learning readiness, institution support service, institution-provided orientation programs, instructional styles, interpersonal interactions, and course design adaptations. The Levene's tests were significant for the variables of duration of studying at NOU ($F = 20.647, p < .001$), internal motivation ($F = 9.751, p < .05$), and self-directed learning readiness ($F = 5.787, p < .05$), the assumption of homogeneity of variances for these variables was violated. Thus, the "equal variances not assumed" line in the SPSS *t* test was applied to get *t*, degree of freedom, and significance.

As presented in Table 16, six out of twelve variables indicated statistically significant differences between current and inactive students. The six variables were students' duration of studying at NOU ($t = 6.286$, $df = 308.504$, $p < .001$), age ($t = 3.295$, $df = 584$, $p < .05$), full-time work experience ($t = 2.273$, $df = 586$, $p < .05$), internal

motivation ($t = 2.311$, $df = 195.700$, $p < .05$), insight about self ($t = 6.722$, $df = 215.30$, $p < .001$), and students' self-directed learning readiness ($t = 4.679$, $df = 206.181$, $p < .001$).

The results indicate that current students were those who had been studying at NOU longer, were older in age, and had longer full-time work experiences. Also, students who had higher overall scores on internal motivation, insight about self, and self-directed learning readiness tended to keep taking class from NOU. However, there was no significant difference found on external-payoff motivation or any of the five self-directed learning facilitating preference scales (i.e., institution support services, institution-provided orientation programs, instructional styles, interpersonal interactions, and course design adaptations) between current and inactive students.

Table 16

T Test for Students' Academic Status by Insight about Self, Self-Directed Learning Readiness, External-Payoff Motivation, Course Design Adaptations, Instructional Styles, and Institution-Provide Orientation Programs

Variables	Academic Status	N	*Mean*	*SD*	*t*	*df*
Duration of Studying at NOU					6.29**	308.54[a]
	Current Student	443	3.38	2.80		
	Inactive Student	137	2.01	2.04		
Age					3.30[b]*	584
	Current Student	446	37.49	8.56		
	Inactive Student	140	34.79	8.03		
Full-time Work Experience					2.27*	586
	Current Student	448	4.23	1.34		
	Inactive Student	140	3.94	1.40		
Insight about Self					7.07**	587
	Current Student	449	4.70	.72		
	Inactive Student	140	4.19	.79		
Internal Motivation					2.31*	195.70[a]
	Current Student	449	5.28	.63		
	Inactive Student	140	5.11	.80		
External-Payoff Motivation					.10	587
	Current Student	449	4.04	1.02		
	Inactive Student	140	3.00	1.04		
Self-Directed Learning Readiness					5.08**	587
	Current Student	449	4.49	.69		
	Inactive Student	140	4.14	1.00		
Institution Support Services					.22	587
	Current Student	449	4.87	.64		
	Inactive Student	140	4.86	.75		
Institution-Provided Orientation Programs					-.46	586
	Current Student	448	4.73	.90		
	Inactive Student	140	4.77	.85		
Instructional Styles					.20	587
	Current Student	449	5.16	.52		
	Inactive Student	140	5.15	.57		
Interpersonal Interactions					.60	585
	Current Student	448	4.88	.71		
	Inactive Student	139	4.84	.85		
Course Design Adaptations					1.38	585
	Current Student	447	4.67	.70		
	Inactive Student	140	4.58	.73		

The question was asked as "Are you currently taking any class at NOU?" [a]: Degree of freedom was reduced because equal variances not assumed using Levene's test for equity of variance.

[b]*: $p = .001$

*$p < .05$, **$p < .001$.

Tests of Significance Using Chi-square (χ^2)

The statistic method of Pearson chi-square (χ^2) was applied to determine if there was a difference on the variables of gender and declaration of a major between current and inactive students (see Table 17). Based on the results, there was no significant difference found on the variable of gender {χ^2 (1, N = 589) = .336, ns} between current and inactive students. Male and female students were not different on whether they keep taking classes from NOU or not. On the other hand, a statistical relationship was found between students' declaration of a major {χ^2 (1, N = 588) = 49.875, $p < .001$} and their current academic status. According to Table 17, about 84 percent [61.6 ÷(16.6 + 11.9)] of current students had declared their majors while 16 percent [11.9 ÷(16.6 + 11.9)] of them had not. On the other hand, only 56 percent [14.8 ÷(14.8 + 11.7)] of inactive students had their majors declared and about 44 percent [11.7 ÷(14.8 + 11.7)] of them had not decided before they drop out. As expected, students who had already made their declaration of majors tended to drop out less.

Table 17
Chi-square Test of Academic Status by Gender and Declaration of a Major

Academic Status	Gender			Declaration of a Major		
	N = 589			N = 588		
	Female	Male	Pearson χ^2	Yes	No	Pearson χ^2
Current Student	50.3%	26.0%	.336	61.6%	11.9%	49.875**
Inactive Student	16.3%	7.5%		14.8%	11.7%	

The question was asked as "Are you currently taking any class at NOU?"
**$p < .001$.

Results Related to Research Question 3: Are there relationships between student background characteristics and their preference for how the *institution provides support services* that are conducive to self-directed learning? Also, is there a combination of these independent variables that predicts NOU student's preferences for support services better than any one variable alone?

The correlation coefficients between student background characteristics (i.e., academic status, duration of studying at NOU, age, gender, declaration of a major, work experience, internal motivation, external-payoff motivation, insight about self, and self-directed learning readiness) and students self-directed learning facilitating preferences for the overall institution support services scale were calculated and listed in Table 18. Of the ten variables, students' duration of studying at NOU, gender, internal and external-payoff motivations, insight about self, and self-directed learning readiness were statistically significant in relation to students' preferences for institution support services scale. However, the correlation coefficients were relatively low. Of the six significant predictors, gender had the relatively lowest correlation ($r = .074, p < .05$) with students' preferences for institution support services. It indicates that female students were somewhat more likely to prefer stronger services from the institution. In addition, the variable of duration of studying at NOU had a negative correlation ($r = -.101, p < .05$) with this criterion variable, which indicates that the longer the students took classes from NOU the less institution support services they preferred. Internal motivation had the highest correlation ($r = .214, p < .001$) with this criterion variable. The results showed that the higher the students' internal motivation score the more institution support services they preferred.

Table 18
Correlations of Student Background Characteristics and Overall Institution Support Services Scale (N = 578)

Variables	Correlation
Academic Status	.010
Duration of Studying at NOU	-.101*
Age	-.012
Gender	.074*
Declaration of a Major	-.043
Work Experience	-.060
Internal Motivation	.214**
External-Payoff Motivation	.170**
Insight About Self	.153**
Self-Directed Learning Readiness	.176**

* $p < .05$, ** $p < .001$.

Furthermore, the coefficients for multiple linear regression using the simultaneous/enter method to test whether there is a combination of the ten student background characteristics that predicts students' positive preferences score for institution support services are presented in Table 19. The results of the analysis showed that five of these ten variables were significant predictors. The five predictors were low duration of studying at NOU and low full-time work experience, and high scores on internal motivation, external-payoff motivation, and self-directed learning readiness. They combined to predict students' preferences for institution support services better than any one variable alone. The multiple correlation coefficient for the combination was .342. Knowing students' duration of studying at NOU, full-time work experience, internal motivation, external-payoff motivation, and self-directed learning readiness explained 10 percent of the variability in students' self-directed learning facilitating preferences about institution support services. It is interesting to note that the variable of students' duration of full-time work experience did not correlate with institution support services as a single

predictor, but it added statistically significant contribution to the prediction when it was entered into the combination. On the other hand, the variables of gender and insight about self did not improve the prediction even though they correlated with the institution support services scale initially. This was no doubt due to multicollinearity with other predictors.

Table 19
Summary of Multiple Linear Regression for Variables Predicting Students' Preference on the Overall Institution Support Services Scale, Method = Enter (N = 578)

Variable	B	Std. Error	β
Academic Status	.058	.326	.038
Duration of Studying at NOU	-.031	.010	-.128*
Age	.007	.005	.091
Gender	.094	.056	.068
Declaration of a Major	-.0384	.064	-.026
Full-time Work Experience	-.060	.028	-.124*
Internal Motivation	.180	.042	.183**
External-Payoff Motivation	.100	.026	.155**
Insight about Self	.001	.049	.012
Self-Directed Learning Readiness	.121	.048	.137**

*$p < .05$, **$p < .001$.

Results Related to Research Question 4: Are there relationships between student background characteristics and their preference for *orientation programs* that are conducive to self-directed learning? Also, is there a combination of these independent variables that predicts NOU student's preferences for orientation programs better than any one variable alone?

The correlation coefficients between students' background characteristics (i.e., academic status, duration of studying at NOU, age, gender, declaration of a major, work experience, internal motivation, external-payoff motivation, insight about self, and self-directed learning readiness) and students' self-directed learning facilitating preferences for the overall institution-provided orientation programs scale are presented in Table 20. Of the ten variables, four (i.e., gender, internal motivation, external-payoff motivation,

and self-directed learning readiness) were statistically significant in relation to students' preferences for institution-provided orientation programs. However, the correlation coefficients were relatively low. Of the four significant predictors, self-directed learning readiness had the lowest correlation ($r = .087, p < .05$) with students' preference for institution-provided orientation programs. Internal motivation had the highest correlation ($r = .220, p < .001$) with this criterion variable. It indicates that the higher the students' internal motivation scores the stronger their preference for the institutional orientation programs.

Table 20
Correlations of Student Background Characteristics and Overall Institution-Provided Orientation Programs Scale (N = 577)

Variables	Correlation
Academic Status	.027
Duration of Studying at NOU	-.046
Age	-.016
Gender	.142**
Declaration of a Major	.011
Work Experience	-.016
Internal Motivation	.220**
External-Payoff Motivation	.194**
Insight about Self	.075
Self-Directed Learning Readiness	.087*

* $p < .05$, ** $p < .001$.

Using the simultaneous/enter method to test whether there is a combination of the ten student background characteristics that predicts students' preferences for institution-provided orientation programs, the analysis of the multiple linear regression revealed that three of these ten variables were significant predictors. The three predictors were female gender, high internal motivation score, and high external-payoff motivation score (see Table 21). They combined to predict students' preferences for institution-provided

orientation programs better than any one variable alone. The multiple correlation coefficient for the combination was .325. Knowing students' gender, internal motivation, and external-payoff motivation explained 9 percent of the variability of students' self-directed learning facilitating preferences for institution-provided orientation program services. It is interesting to note that the variable of students' overall self-directed learning readiness score did not improve the prediction even though it correlated with institution-provided orientation programs significantly.

Table 21
Summary of Multiple Linear Regression for Variables Predicting Students' Preference on the Overall Institution-Provided Orientation Programs, Method = Enter (N = 577)

Variable	B	Std. Error	β
Academic Status	.070	.447	.033
Duration of Studying at NOU	-.019	.014	-.059
Age	.005	.006	.051
Gender	.237	.077	.126*
Declaration of a Major	.041	.087	.020
Full-time Work Experience	-.029	.039	-.043
Internal Motivation	.267	.058	.199**
External-Payoff Motivation	.163	.035	.186**
Insight about Self	-.035	.067	-.031
Self-Directed Learning Readiness	.090	.035	.075

*$p < .05$, **$p < .001$.

Results Related to Research Question 5: Are there relationships between student background characteristics and their preference for *instructor instructional styles* that are conducive to self-directed learning? Also, is there a combination of these independent variables that predicts NOU student's preferences for instructional styles better than any one variable alone?

The relationships of simple correlation between students' ten background characteristics and students self-directed learning facilitating preferences for the overall instructional styles scale were examined with resulting coefficients listed in Table 22. Of the ten variables, five (i.e., gender, internal motivation, external-payoff motivation,

insight about self, and self-directed learning readiness) were statistically significant in relation to students' preferences for the instructional styles scale, although the correlation coefficients were relatively low. Of the five significant predictors, gender had the lowest correlation ($r = .122, p < .05$) with students' preferences for instructional styles. Internal motivation had the highest correlation ($r = .306, p < .001$) with this criterion variable. It indicates that the higher the students' internal motivation scores the more they preferred for the instructional styles listed on the scale, all of which the literature indicated improve self-directed learning. In addition, students' self-directed learning readiness had a statistically significant correlation coefficient ($r = .262, p < .001$) with instructional styles preferences, which showed the higher the students rated themselves on self-directed learning readiness the more importance they placed on instructional styles.

Table 22
Correlations of Student Background Characteristics and Overall Instructional Styles
(N = 578)

Variables	Correlation
Academic Status	.008
Duration of Studying at NOU	-.027
Age	-.053
Gender	.122*
Declaration of a Major	-.014
Work Experience	-.003
Internal Motivation	.306**
External-Payoff Motivation	.171**
Insight About Self	.221**
Self-Directed Learning Readiness	.262**

*$p < .05$, **$p < .001$.

To test whether there is a combination of the ten student background characteristics that predicts students' preferences for the listed instructors' instructional styles, the multiple linear regression using the simultaneous/enter method was applied

and the results are presented in Table 23. The result of this method showed that four of these ten variables were significant predictors. They were female gender, higher internal motivation, higher external-payoff motivation, and higher self-directed learning readiness. They combined to predict students' preferences on instructors' instructional styles better than any one variable alone. The multiple regression for the combination was .425. Knowing students' gender, internal motivation, external-payoff motivation, and self-directed learning readiness explained 17 percent of the variability of students' preferences for instructional styles. As compared with Table 22, the variable of insight about self did not make a significant partial contribution to improve the prediction even though it correlated with instructional styles significantly.

Table 23
Summary of Multiple Linear Regression for Variables Predicting Students' Preference on the Overall Instructional Styles, Method = Enter (N = 578)

Variable	B	Std. Error	β
Academic Status	.068	.051	.055
Duration of Studying at NOU	.007	.008	-.038
Age	-.007	.004	-.108
Gender	.100	.044	.090*
Declaration of a Major	.031	.049	.026
Full-time Work Experience	.017	.022	.043
Internal Motivation	.189	.033	.239**
External-Payoff Motivation	.077	.020	.149**
Insight about Self	.022	.038	.032
Self-Directed Learning Readiness	.157	.037	.221**

*$p < .05$, **$p < .001$.

Results Related to Research Question 6: Are there relationships between student background characteristics and their preference for interpersonal interactions within learning situations that are conducive to self-directed learning? Also, is there a combination of these independent variables that predicts NOU student's preferences for interpersonal interactions better than any one variable alone?

The correlation coefficients between student background characteristics (i.e., academic status, duration of studying at NOU, age, gender, declaration of a major, work experience, internal motivation, external-payoff motivation, insight about self, and self-directed learning readiness) and students self-directed learning facilitating preferences for the overall interpersonal interactions scale are presented in Table 24. Of the ten variables, five (i.e., gender, internal motivation, external-payoff motivation, insight about self, and self-directed learning readiness) were statistically significant in relation to students' preferences for interpersonal interactions. However, the correlation coefficients were relatively low. Of the five significant predictors, gender had the least correlation ($r = .083, p < .05$) with students' preferences for higher interpersonal interactions. Internal motivation had the highest correlation coefficient ($r = .259, p < .001$) with this criterion variable, followed by students' external-payoff motivation scale ($r = .214, p < .001$). These indicate that the higher the students' internal and external-payoff motivation scores the more interpersonal interactions opportunities they wanted.

Table 24
Correlations of Student Background Characteristics and Overall Interpersonal Interactions Scale (N = 578)

Variables	Correlation
Academic Status	-.003
Duration of Studying at NOU	-.043
Age	.021
Gender	.083*
Declaration of a Major	-.057
Work Experience	-.001
Internal Motivation	.259**
External-Payoff Motivation	.214**
Insight About Self	.196**
Self-Directed Learning Readiness	.199**

*$p < .05$, **$p < .001$.

The coefficients of the multiple linear regression using the simultaneous/enter method were calculated to test whether there is a combination of the ten background characteristics that predicts students' preferences for interpersonal interactions (see Table 25). The results showed that four of these ten variables (i.e., low duration of studying at NOU, internal motivation, external-payoff motivation, and self-directed learning readiness) were significant predictors. These four variables combined to predict students' preferences for interpersonal interactions better than any one variable alone. The multiple regression coefficient for the combination was .376. Knowing students' gender, internal motivation, external-payoff motivation, and self-directed learning readiness explained 13 percent of the variability in students' self-directed learning preference for Interpersonal Interactions. As compared with Table 24, the variable of insight about self was no longer making significant partial contribution to improve the prediction even though it correlated with the criterion variable initially.

Table 25
Summary of Multiple Linear Regression for Variables Predicting Students' Preference on the Overall Interpersonal Interactions, Method = Enter (N = 578)

Variable	B	Std. Error	β
Academic Status	.077	.073	.044
Duration of Studying at NOU	.022	.011	-.082*
Age	.005	.005	.060
Gender	.115	.063	.074
Declaration of a Major	.003	.071	-.019
Full-time Work Experience	.028	.031	-.052
Internal Motivation	.227	.047	.205**
External-Payoff Motivation	.145	.029	.200**
Insight about Self	.043	.055	.045
Self-Directed Learning Readiness	.125	.053	.126*

*$p < .05$, **$p < .001$.

Results Related to Research Question 7: Are there relationships between student background characteristics and their preference for how an instructor *designs a course to meet their concerns* that are conducive to self-directed learning? Also, is there a combination of these independent variables that predicts NOU student's preferences for course design better than any one variable alone?

The correlation coefficients between students' background characteristics (i.e., academic status, duration of studying at NOU, age, gender, declaration of a major, work experience, internal motivation, external-payoff motivation, insight about self, and self-directed learning readiness) and students self-directed learning facilitating preferences for the overall course design adaptations scale were analyzed and are presented in Table 26. Of the ten variables, four (i.e., internal motivation, external-payoff motivation, insight about self, and self-directed learning readiness) were statistically significant in relation to students' preferences about course design adaptations. Of the four significant predictors, students' self-directed learning readiness scale had the highest correlation ($r = .279, p < .001$) with this criterion variable. It indicates that the higher the students perceived their self-directed learning readiness the more course design adaptations they preferred. This

was followed by internal motivation ($r = .230, p < .001$), external motivation ($r = .197, p < .001$), and insight about self ($r = .192, p < .001$).

Table 26
Correlation of Student Background Characteristics and Overall Course Design Adaptations Scale (N = 576)

Variables	Correlation
Academic Status	-.057
Duration of Studying at NOU	-.007
Age	.019
Gender	.040
Declaration of a Major	-.010
Work Experience	.016
Internal Motivation	.230**
External-Payoff Motivation	.197**
Insight About Self	.192**
Self-Directed Learning Readiness	.279**

*$p < .05$, **$p < .001$.

The coefficients of the multiple linear regression using the simultaneous/enter method to test whether there is a combination of the ten student background characteristics that predicts students' preferences for course design adaptations was analyzed as Table 27. The result of this analysis showed that internal motivation, external-payoff motivation, and self-directed learning readiness were significant predictors of those ten variables. They combined to predict students' preferences for course design adaptations better than any one variable alone. The multiple regression coefficient for the combination was .384. Knowing students' internal motivation, external-payoff motivation, and self-directed learning readiness explained 13 percent of the variability of students' self-directed learning preference on Course Design Adaptations. As compared with Table 26, the variable of insight about self was no longer

making significant partial contributions to improve the prediction even though it correlated with the criterion variable significantly.

Table 27
Summary of Multiple Linear Regression for Variables Predicting Students' Preference on the Overall Course Design Adaptations scale, Method = Enter (N = 578)

Variable	B	Std. Error	β
Academic Status	-.037	.069	-.023
Duration of Studying at NOU	-.009	.011	-.035
Age	.000	.005	.000
Gender	.053	.060	.036
Declaration of a Major	.090	.068	.057
Full-time Work Experience	-.003	.030	-.006
Internal Motivation	.181	.045	.171**
External-Payoff Motivation	.131	.027	.189**
Insight about Self	-.045	.052	-.049
Self-Directed Learning Readiness	.266	.051	.280**

*$p < .05$, **$p < .001$.

Results related to Research Question 8: Are there differences among each of the five sets of dependent variables (Institution Support Services, Institution-Provided Orientation Programs, Instructional Styles, Interpersonal Interactions, and Course Design Adaptations) of students' preferences for self-directed learning facilitation? (i.e., do the scales different in importance?)

The means and standard deviations for current and inactive NOU students' preference across the five scales of institution support services, institution-provided orientation programs, instructional styles, interpersonal interactions, and course design adaptations were tabulated and are reported in Table 28. Based on descriptive statistics, the scale of instructional styles had a highest mean score (5.16), followed by institution support services (4.87), interpersonal interactions (4.87), institution-provided orientation programs (4.74), and course design adaptations (4.65).

Table 28
Means and Standard Deviations of the Five Self-Directed Learning Preference Scales

Scale	N	*Mean*	*SD*
Instructional Styles	592	5.16	.53
Institution Support Services	592	4.87	.67
Interpersonal Interactions	590	4.87	.74
Institution-Provided Orientation Programs	591	4.74	.88
Course Design Adaptations	590	4.65	.70

One-way repeated measure ANOVA was conducted to verify if the preference scores differed significantly across the five scales. The Greenhouse-Geisser (epsilon = .849) procedure was applied to adjust the degrees of freedom for the univariate F test because the Mauchley Sphericity test was significant, which means the homogeneity of variance assumption for the five scales was violated. Thus, rather than using 4, 2348 degree of freedom, the researcher used 3.396 (4 x .849), 1993.474 (2348 x .849) degree of freedom. According to Table 29, after the adjustment, the overall F was still significant ($F = 83.341$, $df = 3.369, 1993.474$, $p < .001$), which means that at least one difference among the five self-directed learning preference scales was significant. However, this overall F did not reveal which pairs of the five scales were significantly different.

Table 29
One-way Repeated Measure ANOVA by Five Self-Directed Learning Preference Scales

Source of Variation	*SS*	*DF*	*MS*	*F*
Preference	85.749	3.396	25.250	83.341**
Within + Residual	603.962	1993.474	.303	

SS: Type III Sum of Square.
**$p < .001$.

Therefore, follow-up multiple comparisons were applied to test all possible combinations of any two scales. Based on the results, all except two of the pairs were significantly different. The institution support services scale and interpersonal interactions scale and the pair course design adaptations and institution-provided orientation programs were not significantly different at the .001 level.

Results related to Research Question 9: Which student preference items combine to predict whether or not a student will drop out of NOU?

The discriminant analysis for significant variables using the stepwise method to test if the 33 preference items in the questionnaire were different in importance to current and inactive students are presented in Table 30 and 31. Based on the results of the discriminant analysis using all 33 items as independent variables, the initial tests of equality of group means (see Table 30) showed that there were significant differences found between the five predictor items: IS2, IS5, IS3, CDA9, and CDA10 between students who dropped out versus stayed.

Item IS3 (believes learners have the potential to be self-directed) had the relatively highest initial F equal to 14.794 ($df = 1, 544, p < .001$); followed by item CDA10 (evaluation criteria are based on learning contracts which allow validation through option other than exams) with $F(1, 544) = 6.721, p < .05$; item CDA9 (the evaluation focuses on assets, contribution, appreciation, and personal responsibility) with $F(1, 544) = 5.991, p < .05$; and item IS2 (believes the main goal of education is the development of life skills not just the result of academic achievement) with $F(1, 544) = 5.653, p < .05$. In addition, item IS5 (corrects assignments with explanatory and individualized comments and further suggestions rather than factual statement) was also significant with $F(1, 544) = 5.383, p$

< .05. The results indicate that these items were significant predictors by themselves in relation to students' academic status.

According to Table 30, current students rated the attitude that instructor believes learners have the potential to be self-directed more important than inactive students did. Similarly, course design issue related to evaluation, current students also thought it more important if the criteria were based on learning contracts and evaluation philosophy focus on assets, contribution, appreciation, and personal responsibility than inactive students did. As for their attitudes related to instructor's instructional styles, current students also rated more important if the instructor believes the main goal of education was to develop life skills not just focuses on the result of academic achievement. On the other hand, inactive students thought that instructor corrects assignments with explanatory and individualized comments with further suggestions rather than factual statement was more important than current students did.

Table 30
Mean, Standard Deviation, and Initial *F* for Students' Academic Status by All 33 Items

Code	Item	Status	*Mean*	*SD*	Initial *F*
ISS1	Ensuring that students have open access to school representatives for advice and counsel	Current	5.05	.88	3.185
		Inactive	4.88	1.09	
ISS2	Ensuring that information services from various sources can be easily accessed by students	Current	5.25	.76	.123
		Inactive	5.22	.93	
ISS3	Ensuring that each faculty and on-site facilitator has office hours available for students	Current	4.82	.99	3.499
		Inactive	5.01	1.00	
ISS4	Assisting with forming geographical or local study groups	Current	4.63	.99	.008
		Inactive	4.64	1.09	
ISS5	Networking students with mentors at learning centers	Current	5.01	.82	1.247
		Inactive	4.92	.89	
ISS6	Ensuring the availability of various technologies which allows interaction among students and between students and faculty	Current	5.05	.84	.242
		Inactive	5.01	.92	
ISS7	Providing opportunities for social interaction with peers and faculty	Current	4.40	.98	.886
		Inactive	4.31	1.12	
ISS8	Providing time-management programs as part of orientations	Current	4.60	1.08	.002
		Inactive	4.61	1.02	
ISS9	Providing stress-management programs as part of orientations	Current	4.56	1.09	.000
		Inactive	4.56	1.07	
ISS10	Ensuring that orientations help students in gaining knowledge and skills necessary to use the delivery systems	Current	5.01	.95	.097
		Inactive	4.98	.95	
ISS11	Ensuring that orientations include instruction of directing one's own learning and study strategies	Current	4.86	1.00	.288
		Inactive	4.91	.91	
IS2	Believes the main goal of education is the development of life skills not just the result of academic achievement	Current	5.45	.64	5.653*
		Inactive	5.29	.83	
IS3	Believes learners have the potential to be self-directed	Current	4.93	.78	14.794**
		Inactive	4.61	.99	
IS4	Understand the student population profile, including their prior knowledge and educational experiences, and context for undertaking the program	Current	4.80	.94	.218
		Inactive	4.75	1.09	
IS5	Correct assignments with explanatory and individualized comments and further suggestions rather than factual statements only	Current	5.11	.95	5.383*
		Inactive	5.32	.89	
IS6	Believe teaching is the support and facilitation of learning	Current	5.27	.72	.539
		Inactive	5.32	.73	
IS7	Accepts imperfect; but gives credit for willingness to try	Current	5.23	.74	.152
		Inactive	5.26	.69	
IS8	Encourage connection between learning and personal life experiences	Current	5.40	.68	.611
		Inactive	5.34	.71	
IS9	Provides stimuli for question-asking to improve critical thinking ability	Current	5.11	.85	2.443
		Inactive	5.24	.70	

II1	The institution and faculty ensure open access for two-way communication	Current Inactive	5.06 4.96	.82 .97	1.593
II2	Faculty (tutors and counselors) communicate with students frequently	Current Inactive	4.91 4.77	.84 1.06	2.501
II3	The institution and faculty arrange face-to-face meetings among students and between students and faculty	Current Inactive	4.73 4.64	.99 1.09	.922
II4	The media for communication are readily available and are familiar to instructors and students	Current Inactive	4.92 4.88	.88 .95	.239
II5	Faculty motivate learning by providing consistent and timely feedback	Current Inactive	4.92 4.91	.86 .99	.018
II6	Instructor/facilitator encourages discussion among students and leads to group problem solving	Current Inactive	4.78 4.81	.91 1.05	.073
CDA4	The course design including delivery systems, sequencing, and course presentation are adapted to students' personal experiences and needs	Current Inactive	5.05 5.01	.82 .86	.177
CDA5	The course material is written as question or problem-discussion style to invite students to contribute their ideas	Current Inactive	4.56 4.50	1.00 1.06	.374
CDA6	The course material provides feedback on learning activities to help students assess learning outcomes	Current Inactive	4.91 4.89	.83 .86	.040
CDA7	The content of curriculum requires students to develop their own learning plan as contract	Current Inactive	4.54 4.39	.99 1.15	2.275
CDA8	The content is designed as easily internalized by self-monitoring methods such as journals, checklists, project-based, and time-management charts	Current Inactive	4.56 4.50	.95 .98	.418
CDA9	The evaluation focuses on assets, contribution, appreciation, and personal responsibility	Current Inactive	4.82 4.59	.88 1.11	5.991*
CDA10	Evaluation criteria are based on learning contracts which allow validation through options other than exams	Current Inactive	4.58 4.32	.94 1.15	6.721*
CDA11	Evaluation standards are anchored in specific competencies and achievements	Current Inactive	4.50 4.36	1.14 1.17	1.440

*$p < .05$, **$p < .001$.

Using the stepwise method for the canonical discriminant function, there were five steps extracted (see Table 31). The variable of IS3, IS5, CDA10, ISS3, and ISS1 were qualified and entered each step to discriminate current and inactive NOU students. Although significant in the initial test of equality of group means analysis, items IS2 and CDA9 did not provide significant contribution to clarify the groups when used in

combination with other variables. Comparing the results from Table 31 with the results listed in Table 30, it is noteworthy that none of the items in institution support services scale were significant in the initial analysis. However, items of ISS3 and ISS1 were entered into the combination because they refined the classification even though they were not significant as a single predictor in the initial analysis.

The six variables (IS3, IS5, CDA10, ISS3, and ISS1) combined correctly classified 61.6 percent of the original grouped cases and it did better at predicting who would keep taking classes from NOU (63.3%) rather than predicting whom would drop out (56.1%). The Eigenvalue for this function is .077, which means knowing students' perceptions on these variables explained approximately 8 percent of current and inactive students' variation.

Table 31
Summary of Canonical Discriminant Functions of Significance by All 33 Items, Method = Stepwise

Step	Code	Item/variable	Initial *F*	Exact *F*	*r*	Canonic. Lambda
1	IS3	believes learners have the potential to be self-directed	14.794**	14.794[a]**	.645	.974**
2	IS5	correct assignments with explanatory and individualized comments and further suggestions rather than factual statement only	5.383*	12.989[b]**	-.526	.954**
3	CDA10	evaluation criteria are based on learning contracts which allow validation through options other than exams	6.721*	10.343[c]**	.419	.946**
4	ISS3	ensuring that each faculty and on-site facilitator has office hours available for students	3.499	9.245[d]**	-.543	.936**
5	ISS1	ensuring that students have open access to school representatives for advice and counsel	1.593	8.350[e]**	.382	.928**

*$p < .05$, **$p < .001$. *df* indicates the degree of freedom for the initial $F = 1,544$; [a]: $df = 1,544$; [b] $df = 1,543$; [c] $df = 1,542$; [d] $df = 1,541$; [e] $df = 1,540$.
Eigenvalue for this discriminant function is .077.
Value of Canonical Lambda is counted for each step.

In summary, the significant predictors in terms of students' background characteristics as well as each single preference item in relation to their academic status as research Question 2 and Question 9 are summarized in Table 32. The relationships between students' background characteristics including academic status and their preferences for the five self-directed learning facilitating scales are summarized in Table 33.

Table 32
Summary of Results of Research Question 2 and 9 for Significant Predictors Related to Academic Status

Variable	As Single Predictor	Combination
Age	+**	NA
Gender (1 = Male, 2 = Female)	NS	NA
Duration of Studying at NOU	+**	NA
Declaration of a Major (1 = Yes; 2 = No)	+**	NA
Full-time Work Experience	+*	NA
External-Payoff Motivation	NS	NA
Internal Motivation	+*	NA
Insight about Self	+**	NA
Self-Directed Learning Readiness	+**	NA
Institution Support Services	NS	NA
Institution-Provided Orientation Programs	NS	NA
Instructional Styles	NS	NA
Interpersonal Interactions	NS	NA
Course Design Adaptations	NS	NA
ISS1	NS	5
ISS3	NS	4
IS2[a]	+*	NS
IS3[a]	+**	1
IS5[a]	-*	2
CDA10[a]	+*	3
CDA9[a]	+*	NS

+* indicates significant positive statistic at .05 level, +** indicates significant positive statistic at .01 level.
[a] : These items belong to the five preference scales were significant as single predictors of students' academic status. Combination: The step entering into the combination for predicting students' academic status by all 33 items. NS: These items were not statistically significant in relation to students' academic status. NA: These variables were not tested as combination predictors.

Table 33

Summary of Results of Research Question 3 to 7 for Significant Predictors Related to Self-Directed Learning Facilitating Preferences

Variables	*Institution Support Services*		*Institution Provided Orientation Programs*		*Instructional Styles*		*Interpersonal Interactions*		*Course Design Adaptations*	
	Single Predictor	Combination	Single Predictor	Combination	Single Predictor	Combination	Single Predictor	Combination	Single Predictor	Combination
Academic Status										
Age										
Gender	+*		+**	*	+*	*	+*			
Duration of Studying at NOU	-*	*								
Decision on Major										
Full-time Work Experience		*								
External-Payoff Motivation	+**	**	+**	**	+**	**	+**	**	+**	**
Internal Motivation	+**	**	+**	**	+**					
Insight about Self	+**				+**		+**		+**	
Self-Directed Learning Readiness	+**	**	+*		+**	**	+**		+**	**

*$p < .05$, **$p < .001$.

"+" : Correlation is positive; "-": Correlation is negative.

"Blank": No significance found.

Results related to open-ended Question 1: Why did you stop taking classes at NOU if you are not a current student?

Of the 140 inactive respondents, approximately three-fourths of them answered the question. The reasons for them to drop out of NOU were grouped into four categories: course, study environment, motivational, and others; each of them contained various factors and reasons. These reasons and their frequency are summarized in Table 34.

The most general reasons that the inactive NOU students pointed out were participating at other schools or training program, taking care of the family, work related issues, and time constraints. It is understandable that the background variables relating to individual situations and family life issues appeared to be more important to the decision of either persistence or stop-out. It is also noteworthy that many of them dropped out because of other educational opportunities. This might be due to students' preference for attending traditional schools. Reasons related to administration, attraction of the courses, course difficulty, and availability of social interaction were also reported by many of the inactive students.

In addition, for the inactive students in this study, many of them noted that they would come back later to finish their study at NOU once their difficulties of attending school were eliminated. Generally, this group of students is identified as stop-outs. Since the students' residency status at NOU is kept forever, students can come back whenever they are ready. However, the result of the research does not provide the information to identify the possibility of whether they will return in the future.

Table 34
Summary of Reasons for Students Dropping Out of NOU

Category	Factor	Reasons	Frequency
Motivational			
	Goal Met Better Elsewhere	Attend in another schools or training programs	24
	Content	Lost interest in the program	14
	Poor Grades	Low academic achievement	5
		Too old to bear the frustration from taking classes	2
		Being in-persistent	6
	Lack of Impetus	Need rest and time with family	4
Study Environment			
	Personal/Domestic	Necessity of taking care of families	39
		Increasing in working hours or responsibilities, changed job, irregular working hours	28
		Health concerns	12
		Regions of residence were inconvenient for face-to-face session	5
		Getting Married	2
	Institution	Insufficient social integration with faculty and peers	8
Course			
	Content	Courses were not attractive, content not as expected from the course description	10
	Level	Course was found to be too difficult	8
	Time Constraints	Unable to participate in face-to-face sessions	5
		Time consuming to finish a program	4
		Unable to watch the television or listen to the radio programs	3
	Design	Course material was designed inefficiently	4
Others			
	Administration Problems	Wrong mailing address, late registration information, the flaws of access to communicate with school administrators	10
	Other	Learning could be self-directed	2

Research related to open-ended Question 2: If you are a current student, have you ever thought about dropping out? If yes, what stops you? If not, why?

Of the 452 current students, approximately 60 percent (N = 270) of the respondents answered the question. Of the 270 students, 45 percent (N = 122) of them had thought about dropping out because of marriage, family and work related issues, loss of interest in the courses, health concerns, low grade in academic performance, late registration, and necessity of taking a break. The specific reasons that stopped them from dropping out are categorized into three categories: motivational, inspiration, and course factors. Each contains various specific reasons (see Table 35)

Table 35
Summary of Reasons for Keeping Students from Dropping Out

Category	Reasons	Frequency
Motivational		
	Became a role model as a persister for children	12
	Afraid of becoming an idle and lazy person if drop out	12
	Filled in spare time	9
	In order to graduate as soon as possible	6
	Engaged in advanced study	5
	Helped to get through the "empty-nest" period	3
	Afraid that memory will become worse along aging process	3
	Social-culture pressure of necessity of being a college graduate	2
Inspiration		
	Encouragement from families, peers, and instructors	19
	NOU provided them a chance to increase self-enrichment	12
	Unwilling to give up the earned credits	11
	Extended prospects by interacting with instructors and peer students	5
Course		
	Work schedule had been changed	16
	Courses met their personal interest	9
	Loosened stress by taking less credits each semester	3

Furthermore, there were 148 respondents who never thought about dropping out. The reasons are grouped as motivational, personal characteristic, satisfaction, and course factors. And each of them includes various specific reasons (see Table 36).

Table 36
Summary of Reasons for Students that never Thought about Dropping Out

Category	Reasons	Frequency
Motivational		
	Obtained knowledge	21
	Pursuit a higher degree	9
	Upgraded work required knowledge	8
	Instructors' attitudes were appreciable	5
	Intended to be a role model for their children	4
	Intended to of make new friends	2
	Compliments and encouragement from others	2
	Didn't want to "lost face".	1
Personal Characteristic		
	Characteristics of Persistent	41
Satisfaction		
	Satisfied with the learning environment	34
	Courses were attractive	29
	NOU provided them a chance to increase self-enrichment, self-confidence, and expending prospects	25
Course		
	Work schedule had been changed	16
	Courses met their personal interest	9
	Loosen stress by taking less credits each semester	3

CHAPTER V

DISCUSSION

The purposes of the study were, first, to investigate the characteristic differences between the current and inactive NOU students and, further, to identify the relationships between students' characteristics and their preferences for the facilitating strategies provided by the institution and instructors to increase their self-directed learning ability. A self-report questionnaire was mailed to randomly selected NOU students. Using the *t* test, chi-square (χ^2), correlation, multiple regression, one-way repeated measure ANOVA, and discriminant analysis, the research questions were answered. Although a 42 percent response rate was established, the conclusions should be generalized to other settings with care. The following sections are organized around the research questions and provide an overview of the significant findings with appropriate discussion in light of the current literature.

Summary of Findings and Discussion

Research Question 1: General Characteristics of NOU Students

The background characteristics of NOU students were obtained from Section I: Student Background Information of the questionnaire (see Appendix D). The results revealed that most NOU students were between 26-45 years of age, had declared their majors before the 1998 academic year or before dropout. The number of female

respondents was approximately double the number of male respondents. This finding not only confirms Wu's (1997) report regarding the NOU student profile but also supports the current literature that there is a higher percentage of females participating in distance education (Anderson, 1993). Most of the participants had been studying at NOU from one half to three years and over one-fifth of them had been studying at NOU for three and one-half to six years. Approximately one-half of the respondents had full-time work experience of six to fifteen years.

Regarding the characteristics of motivation for studying at NOU, internal motivators, such as increasing self-growth and for the joy of learning, appeared to be important motivators for over 95 percent of students, although the importance were rated in varying degrees. Also, over 85 percent of the respondents reported themselves as persistent and independent learners and preferred to shape their own educational programs. However, when they were asked whether they were confident and self-disciplined learners and their attitude of seeing problems as challenges rather than obstacles, the percentages dropped slightly. The reason behind this phenomenon might be the educational-achievement-related nature of the three items. And, often in the Chinese culture, one person's achievement or performance is confirmed or judged by another. The respondents' attitudes about these three items, thus, became more conservative.

Based on the results found in the analysis of NOU students' self-directed learning readiness, approximately four-fifths of the respondents agreed in varying degrees that they were able to get assistance from various sources to discover new approaches to deal with learning problems. On the other hand, the percentage dropped slightly when they

were asked whether they had knowledge of a variety of potential learning resources. They seemed to hold back more on their knowledge of knowing human and material resources. Accordingly, students might have insufficient ability in identifying resources, but once the resource person or material had been located, they were able to solve the problems themselves. Similarly, only three-fourths of respondents agreed they had the ability to set appropriate criteria to assess their learning outcome. The results might suggest that students need more support in diagnosing one's competency between the present level and desired level required for a course. It also indicated that students might need assistance in gaining ability to collect the evidence of accomplishment on learning objectives and have it validated through performance. A comprehensive syllabus, including specific competency and desired achievement, might help.

According to the results performed by supplemental analysis, female students tended to have higher internal motivation score than males did. The finding supports Darmayanti's (1994) conclusion that females attending school are more likely motivated by intrinsic orientations such as self-enrichment and interests. Furthermore, students who had declared their majors also had higher scores on external-payoff motivation and insight about self. The results are understandable because students, who realize their personal interests and goals, are more able to decide their focus accordingly.

In addition, the older the students the higher they rated their scores on internal motivation, insight about self, and self-directed learning readiness scales. On the other hand, the older students attending NOU were less likely motivated by extrinsic motivators, such as career related factors.

Research Question 2: Differences between Current and Inactive NOU Students

The current NOU students were older in age, had been studying at NOU longer, had longer full-time work experiences, had declared their majors, and had higher overall scores on internal motivation, insight about self, and self-directed learning readiness. However, there was no relationship found between students' academic status and students' self-directed learning facilitating preferences.

According to the summary made by Sweet (1986), demographic and individual difference variables were found to be less important in explaining attrition behavior than measures of academic and social integration. However, with the findings of the present study, the demographic variables such as age, duration of study at NOU, duration of full-time work experience, and decisions on majors, significantly influenced students' persistence-dropout status.

Specifically, the age-related finding of the study was different from the earlier literature reported by Underwood (1974) that British adult distance learners, aged 45-59 were more likely to drop out than younger students. It also rejects the finding reported by Horton (1976) of no age difference existed between dropouts and persisters in New Zealand adult university extension program.

The results from open-ended questions showed that the important reasons for students to drop out of NOU were marriage, taking care of family, participating in regular universities, too much workload, and other work related issues. Based on the theory of adult life-span development, the tasks for young adulthood (e.g., age between 20 and 40), generally, are making career choices and forming lifelong intimate relationships. Most people are married, and most of them become parents. They are searching for stability

and security for themselves and their families, as well as striving for success and personal values. In responding to their persistence in school education, their outside school obligations are more important. Students belonging to this age group are more likely to drop out.

Furthermore, young adults tend to have more opportunities to participate in college entrance exams and attend regular colleges than older adults do. The reason behind this is that formal educational experiences for younger adults are fresher and participating at a traditional college is expected/or not violated regarding their chronological age under the social culture in Taiwan. Although the current research didn't provide empirical data to support the phenomenon that those who dropout because of attending other schools belonged to this age span.

On the other hand, middle aged and older adults (40 years old and over) might experience the period of launching children, typically, leaves an empty nest and searching for meaning in life. For most people, having new interests and hobbies, or participating in education programs, are appropriate shifts from their original selves and life structures. Therefore, it is understandable that students, who were older in age, tend to be more persistent in taking classes from NOU.

There is a significant difference between current and inactive students' duration of studying at NOU. The reasons are two fold. First of all, the longer the students had been studying at NOU the more credits they had earned and the closer they came to finishing their program of study. Second. students' who had been studying at NOU longer, might take fewer classes each semester; they, hence, had less workload and confronted less academic stress, which made study more enjoyable. Thus, they were more persistent.

Similarly, students who had longer full-time work experience were more likely to be persistent at school, which might be explained by the fact that full-time work experience can help the students to develop the abilities of independence in learning and have better balance between work and school. Of the findings related to students' declaration of a major, current students were those who had declared their majors. The finding might be explained by the fact that major decision making was a personal commitment motivated by personal interest and educational goals. Once the decision had been made, it became an important determinant of persistence.

Also, students who had higher scores on internal motivation, insight about self, and self-directed learning readinesses were more persistent. In general, internal motivation is the motivation within one person and often results in fulfilling an inner need or interest in the subject matter, which often stimulates the desires to learn and strengthen personal commitment to learning. The relationship between insight about self and academic status might take root from the aspect that students with higher scores had higher self-acceptance and were, particularly, more effective in managing learning situations.

Using Guglielmino's (1977) Self-Directed Learning Readiness Scale, Anderson (1993) reported that there was no significant difference in self-directed learning readiness between the distance education students who successfully complete the courses and traditional classroom students. However, the finding of this study for the relationship between students' self-directed learning readiness and academic status suggests that self-directed learning readiness was a predictor of either students' persistence or dropping out. The differences between the existing literature and current studies were situational

because students' readiness for self-direction were assessed by different scales for each study. In addition, in contrast with Donehower's (1968) findings that males were more likely to drop out, the current study found no significant difference for male and female students' decisions on either persistence or dropout from a program.

Research Question 3 to Question 7: The Influence of Students' Background Characteristics on the Five Self-Directed Learning Facilitating Preferences

The relationships between students' background characteristics and their preferences for the five self-directed learning facilitation preference scales (i.e., institution support services, institution-provided orientation programs, instructional styles, interpersonal interactions, and course design adaptations) were tested by simple correlation and multiple regression. Both the correlation and multiple regression analysis revealed that, of the ten students characteristics, the individual demographic characteristics of gender and duration of studying at NOU were correlated with some of the five self-directed learning facilitating preference scales. In addition, students' declaration of a major and full-time work experience might be extracted and combined with other factors to reach a better prediction in some cases. The following sections will discuss each significant relationship between predictors and the criterion variables.

Institution Support Services

Institution support services was defined as the availability of the resources that the learner can access to carry out the learning process (Garrison & Baynton, 1987). In the current study, it refers to the availability and accessibility of information, communication technologies, and administrative personnel/faculty. As Redding (1991) and Tallman (1994) suggested, once students are satisfied with these services, they will continue to

participate in the study program or increase the degree of self-direction. According to the results of this study, both current and inactive students rated these as being important. However, differences were found between gender, among different duration of study, internal and external motivation, insight about self, and self-directed learning readiness scores.

Generally, female students preferred more assistance from the institution regarding the perspectives that were summated in this scale. The level of students' preferences for institution support services would increase when students' internal and external motivation, insight about self, and self-directed learning readiness scores increased. One exception was that students, who had studied at NOU longer needed less assistance from institution support services. It is reasonable to assume that students with more experiences at NOU will require less assistance.

Internal motivation is referred to as learning that was motivated by inner needs such as self-enrichment or perceiving learning as pleasurable. Institution support services mainly were ensuring the availability and accessibility of information, communication technologies, and administrative personnel/faculty to increase social integration and academic achievement. Students interacting with both humans and course materials would ensure more pleasurable and extensive educational experience than only interacting with course materials. Reflecting on answers found in open-ended questions, many respondents indicated that interactions between instructors and peer students were the reasons keeping them from dropping out of NOU. The conclusion was supported.

It is noteworthy that students with higher scores on insight and self-direction readiness also had stronger needs from institution support services. This might be due to

students' social integration preference and academic achievement intention. They, therefore, would cherish any opportunities available to them no matter how well prepared they were. When searching for a combination of predictors, students' duration of studying at NOU, full-time work experience, internal and external motivation, and self-directed learning readiness were combined to better predict students' facilitation preference for institution support services.

Institution-Provided Orientation Programs

Distance education places considerable responsibility in the hands of learners with its separation of teacher and learner, and often learner from peers. Also, because the variability among students in their willingness to assume control and responsibility in part as a result of negative assessments for their abilities as learners, a student orientation should be offered. Many authors (Guglielmino, 1977; Rogers, 1969) indicate that the provision of orientation is the key to effective facilitation of self-direction in learning. The scale of institution-provided orientation programs in this study includes orientations related to the perspectives of time-management, stress-management, skills of using delivery technologies, and tactics of self-directed learning and learning how to learn.

Regarding the relationship between students' background characteristics and institution-provided orientation programs, statistically significant relationships existed among gender, internal and external-payoff motivation, and self-directed learning readiness. According to the results, female students rated institution-provided orientation programs more important than males. Students who had higher scores on internal and external-payoff motivation, and self-directed learning readiness also indicated more desire for these orientations. When students were more strongly motivated by either

intrinsic or extrinsic motivators, they are more motivated to learn and probably like to attend facilitation programs as opportunities, which will help them to reach their goal or advancement. The relationship between students' self-directed learning readiness with the criterion variable seems reversible. That is, students with higher readiness on self-direction rated the availability of orientation more important, but on the other hand, orientation also helps students to achieve better preparation or advanced levels of self-directedness. When searching for a combination of predictors, students' gender, internal motivation, and external-payoff motivation were combined to better predict students' facilitation preference for institution-provided orientation programs.

Although not statistically significant, one thing to note is that inactive students rated the provision of orientation programs more important than current students did. This result was the only exception for all the five preference scales in relation to academic status.

Instructional Styles

The involvement of the faculty is key to the success of any distance-education based programs. Within instructional practice, andragogical practice has been centralized to the issue of distance education. As suggested by Brockett (1983), the successful teacher in self-directed learning situations needs to act as a manager of the teaching-learning transaction, as well as an information provider. Besides the concept of information provider, the scale of instructional styles in this study also involved the perspectives of instructional strategies and instructional attitude.

In discussing the relationship between students' background characteristics and instructional styles, statistically significant relationships existed among gender, internal

and external-payoff motivation, insight about self, and self-directed learning readiness. Similar to the relationships between female students and their preferences for institution support services and institution-provided orientation programs, female students also rated instructional styles as being more important than their male counterparts. Besides, the extent of students' preference for the instructional styles would increase when students' internal motivation, external-payoff motivation, insight about self, and self-directed learning readiness scores increased. That is, students who were highly motivated, had more positive insight, and held higher perspectives about themselves, preferred a more andragogical instructional style as listed in this scale. One thing to note is that these significant correlations seem to be reversible too. On the one hand, students who held higher perspectives for themselves preferred this facilitating style instruction. On the other hand, instructors' positive reinforcements, suggestions for improvement, and indications of students' strengths and weakness collaborated to positively affect students' perceptions about themselves. The results confirm Pierre and Olsen's (1991) report. When looking for a combination of predictors, gender, internal and external motivation, and self-directed learning readiness were the better predictors for students' facilitating preference on instructional styles.

Interpersonal Interactions

Regarding the relationship between students' background characteristics and interpersonal interactions, relationships of statistical significance existed among gender, internal and external-payoff motivations, insight about self, and self-directed learning readiness. The result suggested that female students tended to need faculty and the institution to arrange or ensure interactions with instructors and peers. The degree of

students' preference for interpersonal interactions increased consistently with students' internal motivation, external-payoff motivations, insight about self, and self-directed learning readiness. As discussed previously, internal motivation refers to learning that was motivated by inner needs such as self-enrichment, self-esteem, interests, or perceiving learning as pleasurable. Students interacting with both humans and course materials will ensure more pleasurable and extensive educational experience than when they only interacting with course materials.

Reflecting on answers found in open-ended questions, many respondents indicated that interactions between instructors and peer students were the reasons keeping them from dropping out of NOU. Even though interpersonal interactions was not a significant predictor of students' persistence or withdrawal status, reflecting on the results found in research Question 2, current students were those who were strongly intrinsic motivated, and intrinsic motivation could be ensured by social integration, their reason for not dropping out was support, inferentially. Besides, students' duration of studying at NOU, internal and external motivation, and self-directed learning readiness could be combined to form a better prediction for students' facilitating preferences for interpersonal interactions.

Course Design Adaptations

Several statistically significant relationships were found among internal and external-payoff motivation, insight about self, and self-directed learning readiness regarding the relationship between students' background characteristics and course design adaptations. There is no significant relationship found between students' demographic variables (i.e., academic status, gender, age, work experience, and decision on major) and

course design adaptations. The level of students' preference for course design adaptations would increase consistently with students' internal and external-payoff motivation, insight about self, and self-directed learning readiness scores. When looking for a combination of predictors, students' internal and external motivation and self-directed learning readiness were the better predictors for students' facilitating preference for course design adaptations.

In discussing the nature of the andragogical approach to education, Knowles (1970) suggested the main characteristics of adult learners are (a) the increase of self-directedness, (b) the rich life experiences that can become resources for learning, (c) a readiness to learn, and (d) a problem-centered learning orientation. The items summated on course design adaptation scales were designed reflecting these aspects. As a relatively non-directive philosophy of these course design strategies, the results support Taylor and Kaye's (1986) suggestion that a highly structured and predetermined course may be inappropriate to many learners. As found in the study, those highly motivated learners and those who hold higher perspective/insight about themselves preferred a more non-directive course design.

In general, while demographic variables (i.e., age, academic status, full-time work experience, decision on major) seemed to have no impact on students' self-directed learning facilitating preferences, gender and duration of studying at NOU have influence on some of the facilitation preference scales. It is important to emphasize that students' internal motivation, external-payoff motivation, insight about self, and self-directed learning readiness are found, generally, to positively correlate with students' self-directed learning facilitating preferences as well as students' academic status. An explanation

might be that students, who were motivated to learn and had a higher perspective relation to readiness for self-direction and themselves, tended to cherish any opportunities available to them in order to achieve an advanced level. On the other hand, because they had a more positive attitude and/or cherished the assistance more, they achieved higher levels on these variables. The significant predictors of students' academic status and their preferences for the five self-directed learning facilitating scales are summarized in Table 32 and 33 in Chapter 4.

Research Question 8: Comparisons of Importance among the Five Self-Directed Learning Facilitating Preference Scales

Some interesting information regarding the students' perceptions about these scales, in terms of importance, were found. Among the five scales, the instructional styles scale was rated the most important. This finding might result from the fact that instructional style was the most direct factor affecting students' achievement and satisfaction. If an educator believes in self-directed learning and practices instruction accordingly, it is believed that students will be more self-directed in learning, or at least more willing to learn to be more self-directed (Candy, 1991; Pittman, 1976). Also, the importance between the pair of institution support services and interpersonal interactions and the pair of course design adaptations and institution-provided orientation programs were not significantly different. But both the institution support services and interpersonal interactions scales were viewed as the factors that were with more importance than course design and institution-provided orientation programs.

Research Question 9: Single Item Predictor of Students' Academic Status

Regarding the difference among the 33 items, the aspects of believing that learners have the potential to be self-directed (IS3), evaluation criteria being based on learning contracts (CDA10), focusing on assets and personal responsibility (CDA9), believing that the goal of education is to develop life skills (IS2), and correcting assignments with explanatory comments (IS5) were significantly different between current and inactive students. Current students rated these items more important than inactive students did except for correcting assignments with explanatory comments (IS5). Inactive students rated this more important than current students did. When looking for a combination of predictors within these items, the aspects of believing learners have the potential to be self-directed (IS3), correcting assignments with explanatory comments (IS5), evaluation criteria based on learning contracts (CDA10), availability of office hours (ISS3) and open access for communication (ISS1) were found to predict students' academic status. Of this combination of factors, the perspective of availability of office hours and instructor corrects assignment with explanatory comments were seen as more important by inactive students than by current students, although the perspective of availability of office hours was not significant as a single predictor.

The aspect of believing that learners have the potential to be self-directed was the most important indicator of students' academic status, followed by ideas of correcting assignments with explanatory comments and evaluation criteria based on learning contracts. The fourth important indicator was the perspective of ensuring faculty and staff have office hours available to students. The last indicator was the strategy of

ensuring availability of open access for communication. The findings are summarized in Table 33 in Chapter 4.

Conclusions

Based on the findings described previously, the following conclusions can be drawn.

1. Current and inactive students can be identified by the tendency of students characteristics of age, duration of studying at NOU, duration of full-time work experience, declaration of a major, internal motivation, insight about self, and self-directed learning readiness.

Generally, current students were those who were older in age, had longer study time at NOU and full-time work experiences, had declared their majors, had higher perspective about themselves as being learners and self-directedness, and were highly motivated by intrinsic motivators. Therefore, institutions that want to perform distance education should take these variables into consideration for reducing the dropout rate.

In addition, for the inactive students in this study, many of them noted that they would come back later to finish their study at NOU once their difficulties of attending school were eliminated. Generally, this group of students is identified as stop-outs. Since the students' residency status at NOU will be kept forever, students can come back whenever they are ready, and the results of the research do not provide the information to identify the possibility of their return. Thus, the term of "stop-out" was preferred and applied interchangeably with dropout or inactive. This implies an optimistic attitude about their coming back.

2. There was no significant difference between current and inactive students' preference for the five self-directed learning facilitating preference models (institution support services, institution-provided orientation programs, instructional styles, interpersonal interactions, and course design adaptations). But significant differences did exist among a few individual items.

Little empirical evidence discussion was found in current literature on how different facilitation methods might change students' decisions on persistence or withdrawal from a distance learning program. But since the perspectives listed on each scale are positive strategies of facilitation on students' self-directed learning ability drawn from current literature, the result might indicate they were important to both current and inactive students.

3. Considering the importance of the five self-directed learning facilitating preference scales, the instructional style scale was perceived by students to be the most important factor to enhance students' self-directed learning ability.

4. The strategies of ensuring availability of office hours and open access for communication; believing learners have self-directed potential, correcting assignments with explanatory comments, believing the main goal of education is the development of life skills, using learning contracts as evaluation criteria, and evaluation standards are anchored in specific competencies. Achievements were perceived different in importance related to the facilitation of self-directed learning between different students' academic status. Of these, inactive students thought availability of office hours and correcting assignments with explanatory comments were more important than persistent students did.

5. When looking for the combination to improve the prediction of students' academic status, the aspects of believing that learners have the potential to be self-directed, correcting assignments with explanatory comments, evaluation criteria based on learning contracts, availability of office hours, and availability of open access for communication were combined.

Generally, current students tend to rate these strategies as being more important, except the perspectives of availability of office hours and correcting assignments with explanatory comments. Educational philosophy possessed by the instructor often influences his/her teaching style and strategies. The finding suggests that if the institute and instructor want students to be more self-directed, they have to believe in this concept and develop the teaching system accordingly.

6. The degree of students' preferences for institution support services can be better identified by the combination of duration of study, full-time work experience, internal and external-payoff motivation, and self-directed learning readiness than by any one of these. Students' who were motivated by internal motivators had the strongest preference for institution services. Those who had the longest full-time work experiences preferred the least amount of institutional services.

7. The degree of students' preferences for institution-provided orientation programs can be better classified by the combination of gender, internal and external-payoff motivation than by any one of these. Similarly, students' who were motivated most by internal motivators, had the strongest preference for institution-provided orientation programs. Male students rated the least important for institution-provided orientation programs.

8. Students' preferences for instructional styles were better classified by the combination of gender, internal and external-payoff motivation, and self-directed learning readiness than by any one of these. As above, students' who were most motivated by internal motivators had the strongest preference for institution provided orientation programs. Male students preferred it the least.

9. The degree of students' preferences about interpersonal interactions were better identified by the combination of duration of study, duration of full-time work experience, internal and external-payoff motivation than by any one of these. Students motivated by internal motivation still had the strongest preference for this scale. Those who had been studying at NOU the longest preferred it the least.

10. The level of students' preferences for course design adaptations can be identified by the combination of internal and external-payoff motivation and self-directed learning readiness. The variable of self-directed learning readiness had the highest positive correlation with the scale, while insight about self had the lowest.

In summary, regarding students' preferences on the five self-directed learning preference scales, the variable of internal motivation presented itself as the most important indicator. The other summated personal characteristics (insight about self, external-payoff motivation, and self-directed learning readiness) also interact as important factors. It is interesting that the correlation with these scales was positive, which means the higher the scores on these variables students had, the more assistance they preferred on the five preference scales. Based on the results, the conclusion that independent and autonomous students preferred an andragogical-centered approach for facilitation might be drawn since the items developed on the five scales were developed on this basis.

When the student studied in an environment away from the institution, background variables relating to the individual situation, family, and life issues, assumed importance in deciding either students' persistence or withdrawal. Based on the answers from open-ended questions, the reasons for dropping out are highly weighted by participation at other schools or programs, work and family demands, followed by academic reasons, such as late registration information, and lack of interests on courses. Reasons for not dropping out are interactions between instructors and peers, availability of time, becoming a role model for children, encouragement from others, perceiving that learning is pleasurable. These factors match the findings in the current literature except that the reason of trying to be a role model for children was significant from the others.

Implication for Practitioners

Need for Information on Student Characteristics

The characteristics of age, duration of studying, duration of full-time work experience, declaration of a major, internal motivation, insight about self, and self-directed learning readiness are important indicators affecting students' academic status. The institution, course designers, and instructors should take these characteristics into account when developing and delivering distance education instruction. A questionnaire could be developed to assess students' backgrounds and self-concept in regard to their internal motivation, insight about self, and self-directed learning readiness upon their enrollment. These data should be taken into practice when trying to promote students' persistence and self-directedness in learning.

Belief about Students' Self-Directed Learning Potential

In order to enhance students' ability in self-directed learning, the preliminary requirement is that faculty and the institute must believe in students' potential for being self-directed even though their self-directed learning ability can be situational. The faculty and the institute must also develop the appropriate educational environment and teaching strategies based on that philosophy. The skills of self-directed learning might not be taught and learned as regular curricular content, but they may be developed through the opportunity of practice.

Indeed, it is hard to consider personal and psychological attributes of each learner within a predetermined structured education environment. Also, the courses are rarely organized in such a way that the students are encouraged and practiced in making personal choices based on, for example, their qualifications, interests, or their own milieu. However, if the faculty believe in the possibility of self-directed learning, flexible-teaching strategies, such as providing optional material in addition to compulsory study material, using contract learning, experiential learning, and journal writing are available and can be practiced. With these opportunities, students may be able to exercise freedom or obtain experiences in directed learning. The institution has the responsibility to introduce its concept and application strategies to faculty and students, and encourage faculty to interact as facilitators and teach in a more developmental manner rather than a prescriptive fashion.

Ensuring Interactions

Generally, self-directed learning readiness can be related to students' motivation and competencies and interactions with instructors and peers. However, many

institutions that deliver distance education programs recognize that the distance learners want to be autonomous, so their strategies are to have the learners become as independent as possible. It is believed that learners are more motivated, benefited, and satisfied if they frequently interact with peer students and instructors (Burge & Howard, 1990; CDLP, 1998). By frequently interacting with learners through various means such as e-mail, telephone, postcards, assignment grading, and instructional attitudes, faculty can promote students' perspectives about themselves and their self-directedness, as well as enhance their motivation to learn.

The institution must ensure that interaction opportunities exist and make technologies available to faculty and students on a regular basis and keep open access for social and academic integration. Interactions that facilitate the learning process may include face-to-face tutorials, telephone tutorials, out-reach visits, on-campus study, as well as written correspondence. In order to improve the quantity of interaction, Thompson (1984) suggested several approaches to improve interaction within traditional correspondence learning environment. The methods include systematic telephone tutoring, letters and postcards of encouragement, learning contract, and varied levels of teacher feedback and encouragement.

Availability of Orientation Programs

The provision of orientation programs is the key to effective facilitation of self-direction in learning. Students attending orientation programs often influences their perspectives on internal and external-payoff motivation, and self-directed learning readiness. That is, orientation programs can be useful in determining students' self-awareness of their attribute/ability in learning. Internal and external motivation and the

level of self-directedness often affect students' satisfaction and academic achievement, and further their decisions on continuing or stopping-out. One thing to note is that, although not a statistically significant difference, inactive students rated the availability of orientations more important than current students did. The finding might imply that orientation could help to reduce dropout rate. Thus, in addition to offering orientation programs, the institution should also encourage students to participate in these activities when they initially enroll.

Concerns of Course Design

Effective course material can draw upon learners' inner interests and learning pleasure, which influence students' motivation, insight about self, and self-directed learning readiness, and alter their decisions on continuing or dropping out. Comprehensive course design must be developed based on student's current competency situations. With regard to competency, prior knowledge related to the content to be learned and a diagnosis in finding the gap between current and required levels are necessary. The instructor and tutor must assist to find the gap. Once the gap had been identified, the staff and faculty must play the roles as resource persons or facilitation to find other resources. Also, within a correspondence learning environment, assignments constitute an important basis for student performance and means for interaction. If the instructor corrects assignments with explanatory and individualized comments and further suggestions, which not only help the students to understand their current competency level but also provide directions for them to explore.

Furthermore, many students drop out because of late registration information, a wrong mailing address, and lack of interest about courses. A more flexible registration

regulation and comprehensive correspondence system should be established. Besides, a thorough course description can be distributed before registration and a syllabus listing the requirements of competency, course content, and prospect achievement should be written in detail.

Recommendations for Future Research

The following recommendations are made to those who plan on pursuing research related to students' self-directed learning in the distance education field.

Enhancing the Current Study

1. A research agenda could initially be explored by having focus groups of faculty, staff, and students identify issues that are of concern that will impact the facilitation of self-directed learning.
2. If survey research is undertaken, refine items to obtain more variability to provide stronger statistical results.
3. Isolate the significant variables identified from this preliminary study and the literature and develop a research design that uses in-depth interviews with respondents.

Research beyond the Scope of This Study

1. Include students' prior educational experience, current educational achievement, and marital status as variables to test the relationships between students' academic status and self-directed learning facilitating preference.
2. Expand the population to distance learners in regular universities.
3. Survey faculty to identify strategies that they have found effective when working with NOU students.

4. Survey students who dropped out of NOU during different period of time to identify the reasons of their continuous registration.

5. Involve pre-educational experiences, educational achievement and reasons for dropping out as background characteristics.

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APPENDICES

Appendix A: Questionnaire

Colorado State University

Appendix A-1

School of Education
Fort Collins, Colorado 80523-1588

Dear Friend,

The purpose of this survey, Students' Preferences for Strategies to Facilitate Self-Directed Learning in Distance Education in Taiwan, is to determine what are the self-directed facilitation strategies preferred by distance learners in Taiwan. The research project is in partial fulfillment of the requirements for the doctoral degree in Education and Human Resource Studies at Colorado State University. The questionnaire includes two sections: Student Background Information and Student Preferences for Strategies to Facilitate Self-Directed Learning. Simply, you can answer the questions by following the instructions preceding each section.

Your assistance is purely voluntary. It will help us obtain an accurate picture of Taiwanese distance learners' perceptions. Your participation will be of great value to us and to other distance learners. The results of the study should help instructors and the National Open University provide better assistance to you.

In order to protect your confidentiality, the questionnaire is anonymous. Reports generated from the research will not reveal the identification of individuals and only aggregate results will be used. There are no known risks for your participation in this study.

You will need about 20 minutes to complete this questionnaire. After you have completed the questionnaire, please insert it into the stamped envelope and return it by November 30th. If you have any question or concern, please feel free to contact us. You can reach Ms. Mei-Huei Tsay at (04) 451-0824 in Taiwan.

Thank you for your participation in this research.

Sincerely,

Dr. George A. Morgan
Principal Investigator, Professor

Mei-Huei Tsay
CO-Investigator, Ph. D. Candidate
School of Education

Appendix A-2

Section I: Student Background Information

This section is designed to identify your personal information, which will help us understand your preferences for self-directed facilitation strategies at NOU. Please indicate your answer in the space provided.

__ 1. Are you currently a student at NOU? 1. Yes; 2. No.

__ 2. When did you start taking class at NOU?

__ 3. How many years have you been studying at NOU before academic year 1998?

__ 4. Have you decided your major (Or, have you decided your major before you stop taking classes from NOU?)? 1. Yes; 2. No.

__ 5. What is your age?

__ 6. What is your gender? 1. Male; 2. Female.

__ 7. How long is your full-time work experiences? 1. Haven't started working yet; 2. Less than 6 years; 3. 6-10 years; 4. 11-15 years; 5. 16-20 years; 6. 21 years and longer; 7. I am a homemaker.

The following list of questions are designed to identify your motivation, insight about self, and self-directed readiness. Please identify the appropriate answer using the following choices:

1 = Strongly Disagree **2 = Moderately Disagree** **3 = Mildly Disagree**

4 = Mildly Agree **5 = Moderately Agree** **6 = Strongly Agree**

My motivation when I first enrolled at NOU was	SD					SA
8. To prepare for a future career.	1	2	3	4	5	6
9. To meet social-cultural expectations as being a college graduate.	1	2	3	4	5	6
10. To update professional knowledge to my current career.	1	2	3	4	5	6
11. To achieve self-actualization.	1	2	3	4	5	6
12. To enhance personal growth/self-confidence.	1	2	3	4	5	6
13. For the joy of learning.	1	2	3	4	5	6
Insight about Self						
14. Overall, I am a person with persistence in learning.	1	2	3	4	5	6
15. Overall, I am a person with self-confidence about learning.	1	2	3	4	5	6
16. Overall, I am a self-disciplined learner.	1	2	3	4	5	6
17. Overall, I tend to see problems as challenges rather than obstacle in learning.	1	2	3	4	5	6
18. Overall, I see myself as an independent learner.	1	2	3	4	5	6

19. Overall, I like to share the responsibility with teachers for learning outcomes.	1	2	3	4	5	6
20. I prefer to be a student who is active in shaping my educational program to meet personal desires and interests.	1	2	3	4	5	6

Self-Directed Learning Readiness

21. Overall, I have the ability to set an appropriate pace for learning.	1	2	3	4	5	6
22. Overall, I have the ability to develop a plan for completing course work.	1	2	3	4	5	6
23. Overall, I have knowledge of a variety of potential learning resources.	1	2	3	4	5	6
24. Overall, I have the ability to get assistance from various resources to discover new approaches to deal with learning problems.	1	2	3	4	5	6
25. Overall, I have the ability to set appropriate criteria to assess my own learning.	1	2	3	4	5	6
26. Overall, I have the ability to accept and use criticism.	1	2	3	4	5	6

Section II: Student Preferences for Strategies to Facilitate Self-Directed Learning

The following list of activities is designed to identify strategies you think would facilitate your self-directed learning ability. Please identify the appropriate answer based on " **How important the activity will be helping to promote my self-directed learning competency ?**" using the following choices:

1 = Very Unimportant **2 = Moderately Unimportant** **3 = Mildly Unimportant**

4 = Mildly Important **5 = Moderately Important** **6 = Very Important**

Institutional Support Services

The institution can help me become more self-directed by.....	VU					VI
1. ensuring students have open access to school representatives for advice and counsel.	1	2	3	4	5	6
2. ensuring that information services from various sources(libraries & database) can be easily accessed by students.	1	2	3	4	5	6
3. ensuring each faculty/on-site facilitator has office hour available for students.	1	2	3	4	5	6
4. assisting with forming geographical or local study group.	1	2	3	4	5	6
5. networking students with mentors at learning centers.	1	2	3	4	5	6
6. ensuring the availability of various technology which allows interaction among students and between students and faculty.	1	2	3	4	5	6
7. providing opportunities for social interaction with peers and faculty.	1	2	3	4	5	6
8. providing time-management programs as part of orientations.	1	2	3	4	5	6

9.	providing stress-management programs as part of orientations.	1	2	3	4	5	6
10.	ensuring that orientations help students in gaining knowledge and skills necessary to use the delivery systems.	1	2	3	4	5	6
11.	ensuring that orientations include instruction in the process of directing one's own learning and study strategies.	1	2	3	4	5	6

Instructional Styles

The instructor can help me become more self-directed if he/she .....

1.	provides systematic assistance course material and learning instruction.	1	2	3	4	5	6
2.	believes the main goal of education is the development of life skills not just the results of academic achievement.	1	2	3	4	5	6
3.	believes learners have the potential to be self-directed.	1	2	3	4	5	6
4.	understands the student population profile, including their prior knowledge, educational experiences, and context for undertaking the program.	1	2	3	4	5	6
5.	corrects assignments with explanatory and individualized comments and further suggestions rather than factual statement only.	1	2	3	4	5	6
6.	believes teaching is support and facilitation of learning not control.	1	2	3	4	5	6
7.	accepts imperfect; but gives credit for willingness to try.	1	2	3	4	5	6
8.	encourages connection between learning and personal life experiences .	1	2	3	4	5	6
9.	provides stimuli for question-asking to improve critical thinking ability during face-to-face session.	1	2	3	4	5	6
10.	is willing to provide additional content resources through fax, mail, or e-mail if needed.	1	2	3	4	5	6

Interpersonal Interactions

Interaction among students and between students and faculty will help me become more self-directed, if.....

1.	the institution and faculty ensure open access for two-way communication.	1	2	3	4	5	6
2.	faculty (tutors and counselors) communicate with students frequently.	1	2	3	4	5	6
3.	the institution and faculty arrange face-to-face meetings among students and between students and faculty.	1	2	3	4	5	6
4.	the media for communication are readily available and are familiar to instructors and students.	1	2	3	4	5	6
5.	motivate learning by providing consistent and timely feedback.	1	2	3	4	5	6

6. instructor/facilitator encourages discussions among students and leads to group problem solving. 1 2 3 4 5 6

7. instructor/facilitator encourages students to work alone and learn independently. 1 2 3 4 5 6

Course Design Adaptations

Course design will help me become more self-directed, if.....

1. the course material includes a kit to teach the skills of learning how to learn. 1 2 3 4 5 6

2. the content of the curriculum is self-contained, allowing students to proceed without other assistance. 1 2 3 4 5 6

3. the content is designed according to the logic of subject content not students' needs. 1 2 3 4 5 6

4. the course design including delivery systems, sequencing, and course presentation are adapted to students' personal experiences and needs. 1 2 3 4 5 6

5. the course material is written as question or problem-discussion style to invite students to contribute their ideas. 1 2 3 4 5 6

6. the course material provides feedback on learning activities to help students assess learning outcome themselves. 1 2 3 4 5 6

7. the content of curriculum requires students to develop their own learning plan as a contract. 1 2 3 4 5 6

8. the content is designed as easily internalized by self-monitoring methods such as journals, checklists, project-based, and time-management charts. 1 2 3 4 5 6

9. the evaluation focuses on assets, contribution, appreciation, and personal responsibility. 1 2 3 4 5 6

10. evaluation criteria are decided based on learning contracts which allow validation through options other than exams. 1 2 3 4 5 6

11. evaluation standards are anchored in individual student's specific competencies and achievements. 1 2 3 4 5 6

Open-Ended Question:

1. Why did you stop taking classes at NOU if you are not a current student?

2. If you are a current student, have you ever thought about dropout? If not, why? If yes, what stops you?

Appendix B: Establishing Content Validity

Colorado State University

Appendix B-1

Dear ,

School of Education
Fort Collins. Colorado 80523-1588

This letter follows-up on our telephone conversation regarding content validity testing of the students' perceptions on self-directed learning facilitating strategies questionnaire. The validation test procedure involves a jury of five people who are knowledgeable with the issues of self-directed learning facilitating skills in distance education. Thank you for helping me with this part of research.

The questionnaire is developed into two parts: Section I, Student Background Information is designed to identify the National Open University [NOU] students' personal information, which may help us understand their profile. Section II, Student Preferences for Strategies to Facilitate Self-Directed Learning, is designed to identify students' self-directed learning facilitating preferences. Basically, the questionnaire is developed according to various areas covered in the literature. Specific areas of self-directed learning issues related to distance learning, such as institutional support services, instructional attitude, interactions, and course design adaptation are included in Section II. Personal information regarding age, gender, academic status, perception about self-directed learning, motivation for studying at NOU, insight about self, self-directed learning readiness may help us understand this population.

The questionnaire has been revised after suggestions by a panel of NOU students. They provided feedback to the researcher regarding clarity of instructions, wording, categorizing headings, and accuracy of each item.

The task of the expert jury is to validate the appropriateness/relevance of each item regarding to the issue of self-directed learning in distance education. Please indicate your answers on the Validity Test Response Sheet.

Thank you for your participation in this research.

Sincerely,

Dr. George A. Morgan
Principal Investigator, Professor

Mei-Huei Tsay
School of Education, Ph. D. Candidate
Colorado State University

Appendix B-2

Students' Preferences for Strategies to Facilitate Self-Directed Learning in Distance Education in Taiwan

Validity Test Response Sheet

Name of Respondent: _____ **Title/Position:** _____

Mailing Address: _____

Telephone: _____ **Date of Response:** _____

Thank you for agreeing to assist with establishing the content validity for the questionnaire of Students' preferences for Strategies to Facilitate Self-Directed Learning in distance education. The purpose of this study is to determine distance learners' preferences on self-directed learning facilitation in terms of institutional support services, instruction manner, interpersonal interaction, and course design adaptation in relation to students' background characteristics.

Instruction:

Please review the questionnaire and rate the questions using the following choices: Inappropriate and Appropriate. Please explain the reasons or modify the item for which is rated Inappropriate. Your suggestions are of great value for us.

Section I: Student Background Information

Item	Inapt	Apt	Suggestions/Modification
1. Are you currently a student at NOU? 1. Yes; 2. NO.			
2. When did you start taking class at NOU?			
3. How many years have you been studying at NOU before academic year 1998?			
4. Have you decided your major (Or, have you decided your major before you stop taking classes from NOU?)? 1. Yes; 2. No.			
5. What is your age?			
6. What is your gender? 1. Male; 2. Female.			
7. How long is your full-time work experiences? 1. Haven't started working yet; 2. Less than 6 years; 3. 6-10 years; 4. 11-15 years; 5. 16-20 years; 6. 21 years and longer; 7. I am a homemaker.			
My motivation when I first enrolled at NOU was			
8. To prepare for a future career.			
9. To meet social-cultural expectations as being a college graduate.			
10. To update professional knowledge to my current career.			
11. To achieve self-actualization.			
12. To enhance personal growth/self-confidence.			
13. For the joy of learning.			
Insight about Self			
14. Overall, I am a person with persistence in learning.			
15. Overall, I am a person with self-confidence about learning.			
16. Overall, I am a self-disciplined learner.			
17. Overall, I tend to see problems as challenges rather than obstacle in learning.			
18. Overall, I see myself as an independent learner.			
19. Overall, I like to share the responsibility with teachers for learning outcomes.			
20. I prefer to be a student who is active in shaping my educational program to meet personal desires and interests.			
Self-Directed Learning Readiness			
21. Overall, I have the ability to set an appropriate pace for learning.			
22. Overall, I have the ability to develop a plan for completing course work.			
23. Overall, I have knowledge of a variety of potential learning resources.			
24. Overall, I have the ability to get assistance from various resources to discover new approaches to deal with learning problems.			
25. Overall, I have the ability to set appropriate criteria to assess my own learning.			
26. Overall, I have the ability to accept and use criticism.			

Section II: Student Preferences for Strategies to Facilitate Self-Directed Learning
(ISS = Institutional Support Services, IS = Instructional Styles, II = Interpersonal Interactions, CDA = Course Design Adaptations.)

Item	Inapt	Apt	Suggestions/ Modifications
Institutional Support Services **The institution can help me become more self-directed by.....**			
1. ensuring students have open access to school representatives for advice and counsel.			
2. ensuring that information services from various sources (libraries & database) can be easily accessed by students.			
3. ensuring each faculty/on-site facilitator has office hour available for students.			
4. assisting with forming geographical or local study group.			
5. networking students with mentors at learning centers.			
6. ensuring the availability of various technology which allows interaction among students and between students and faculty.			
7. providing opportunities for social interaction with peers and faculty.			
8. providing time-management programs as part of orientations.			
9. providing stress-management programs as part of orientations.			
10. ensuring that orientations help students in gaining knowledge and skills necessary to use the delivery systems.			
11. ensuring that orientations include instruction in the process of directing one's own learning and study strategies.			
Instructional Styles **The instructor can help me become more self-directed if he/she .....**			
1. provides systematic assistance course material and learning instruction.			
2. believes the main goal of education is the development of life skills not just the results of academic achievement.			
3. believes learners have the potential to be self-directed.			
4. understands the student population profile, including their prior knowledge, educational experiences, and context for undertaking the program.			
5. corrects assignments with explanatory and individualized comments and further suggestions rather than factual statement only.			
6. believes teaching is support and facilitation of learning not control.			
7. accepts imperfect; but gives credit for willingness to try.			
8. encourages connection between learning and personal life experiences .			
9. provides stimuli for question-asking to improve critical thinking ability during face-to-face session.			
10. is willing to provide additional content resources through fax, mail, or e-mail if needed.			

Interpersonal Interactions **Interaction among students and between students and faculty will help me become more self-directed, if.....**			
1. the institution and faculty ensure open access for two-way communication.			
2. faculty (tutors and counselors) communicate with students frequently.			
3. the institution and faculty arrange face-to-face meetings among students and between students and faculty.			
4. the media for communication are readily available and are familiar to instructors and students.			
5. motivate learning by providing consistent and timely feedback.			
6. instructor/facilitator encourages discussions among students and leads to group problem solving.			
7. instructor/facilitator encourages students to work alone and learn independently.			
Course Design Adaptations **Course design will help me become more self-directed, if.....**			
1. the course material includes a kit to teach the skills of learning how to learn.			
2. the content of the curriculum is self-contained, allowing students to proceed without other assistance.			
3. the content is designed according to the logic of subject content not students' needs.			
4. the course design including delivery systems, sequencing, and course presentation are adapted to students' personal experiences and needs.			
5. the course material is written as question or problem-discussion style to invite students to contribute their ideas.			
6. the course material provides feedback on learning activities to help students assess learning outcome themselves.			
7. the content of curriculum requires students to develop their own learning plan as a contract.			
8. the content is designed as easily internalized by self-monitoring methods such as journals, checklists, project-based, and time-management charts.			
9. the evaluation focuses on assets, contribution, appreciation, and personal responsibility.			
10. evaluation criteria are decided based on learning contracts which allow validation through options other than exams.			
11. evaluation standards are anchored in individual student's specific competencies and achievements.			

Is there any other question, which should be included in the questionnaire?

Section I:_____

_____

_____

_____

_____

_____

_____

Section II: _____

_____

_____

_____

_____

_____

_____

Other Comments: _____

_____

_____

Appendix C: Content Validity Test—Chinese Version

Colorado State University

School of Education
Fort Collins, Colorado 80523-1588

這封信是接續我們前次的電話對話--有關遠距學生自我導向學習增進策略喜好向度問卷的內容效度測試。我們總共邀請五位國內成人及遠距教學領域的專家學者參與此份問卷的效度測試，期望您能提供寶貴的意見，幫助我們改進這份問卷的品質以增強它的有效度。

「台灣遠距教育學生自我導向學習能力增進策略之偏好」問卷包括兩部分：第一部分是學生背景資料，第二部分是學生自我導向學習能力增進策略之偏好。學生背景資料的部分是用來確認國立空中大學學生的特性及探討它們與自我導向學習能力增進策略喜好向度之間的關係。學生背景資料的部分包括問卷對象的年齡、性別、學籍(在學或未繼續註冊)、學習動機、自我洞察、及自我導向學習成熟度。第二部分是學生自我導向學習能力增進策略之偏好；基本上，這份問卷的問題涵蓋了多項文獻上曾經探討過有關自我導向學習的課題，例如學校支援服務系統、教學風格、互動性、及課程設計考量。本研究的主要目的在探討國立空中大學學生對學校所可能提供"自我導向學習能力增進策略"的偏好，此研究的結果將作為協同計畫主持人蔡美輝在美國科羅拉多州立大學教育學院教育及人力資源研究所博士學位的畢業論文。您對這份問卷效度的評估和建議將幫助我們建立這套問卷的可行性

經由初期測試，一組國立空中大學的學生已針對各類項前的說明、文字、歸類的標題、及各問題的真確性提出建議。寄給您的這份問卷已經根據他們的建議經過校訂和修正。

煩請您依據各問題與自我導向學習在遠距教學課題的相關／適當性進行評量。

再次謝謝您的參與和幫忙，並祝

事事如意

Dr. George A. Morgan
計畫主持人，教授

蔡美輝 (Mei-Huei Tsay)
協同計畫主持人，博士候選人

效度分析回應卷

答卷者姓名：_____ 答卷日期：_____

服務單位：_____ 職　　稱：_____

說明：
請您在閱讀每個問題之後，根據它們的適當性予以評估，如果這個問題對此研究而言是適合的，請您在“適當”的欄位打勾；若否，則請於“不適當”的欄位打勾並解釋其原因或修改的建議。(原問卷格式請參考附件)

第一部分：學生背景資料

問　題	適當	不適當	建　議
1. 您目前是不是國立空中大學在學的學生？1. 是；2. 否。			
2. 您從民國幾年起開始在國立空中大學修課？			
3. 在八十七學年度之前，您總共在空中大學修了幾年的課？			
4. 您已經決定您的主修了嗎？（或在您未繼續註冊前，您已經決定主修了嗎？）1. 是；2. 否。			
5. 您的年紀多大？			
6. 您的性別是1. 男；2. 女。			
7. 您有多久的全職工作經驗？1. 還沒開始工作；2. 不到5年；3. 6-10年；4. 11-15年；5. 16-20年；6. 多於21年；7. 從事家庭管理的工作。			

我開始在空中大學修課時的學習動機是.....

問　題	適當	不適當	建　議
8. 為將來的求職作準備			
9. 成為一個大學生以符合社會文化的期望			
10. 增進專業知識以配合目前工作的需求			
11. 為了實踐自我			
12. 為了增進自我成長			
13. 為了享受學習的樂趣			

對於學習，我覺得自己總括來說.....

問　題	適當	不適當	建　議
14. 是一個有毅力的學習者			
15. 是一個有自信的學習者			
16. 是一個能自我規範的學習者			
17. 在學習的過程中，傾向於視難題為挑戰而非阻礙			
18. 是一個獨立自主的學習者			
19. 我喜歡與老師共同分擔學習的責任			
20. 我喜歡依照自己的興趣及需要主動的規劃自己的課程			

就自我導向學習的成熟度而言，總括來說，我.....

問　題	適當	不適當	建　議
21. 有能力為自己訂定適當的學習進度			
22. 有能力訂定學習計畫以求完成課業			
23. 知道許多可能的學習資源			
24. 有能力從不同的學習資源中尋求幫助發現新的途徑以解決功課上的難題			
25. 有能力訂定適當的學習評量以評斷自己的學習成果			
26. 能虛心接受批評並且採納它們			

第二部分：自我導向學習增進策略之偏好

學校支援服務系統

國立空中大學能幫助我成為更好的自我導向學習者，如果它能.....

問　題	適當	不適當	建　議
1. 確保學生有開放的溝通管道與學校人員接觸以尋求建議或諮商			
2. 確保不同管道的資料查詢系統(如圖書館、查詢資料庫等)能輕易取得並操作			
3. 確保每一位老師及學習指導中心的輔導教師都有固定的辦公室請益時間以供學生諮詢之用			
4. 協助學生組成區域性的讀書團體			
5. 聯結學生與各學習指導中心授課教師間的溝通網路			
6. 提供多樣化的溝通媒體以增進教師及學生間的互動			
7. 舉辦社交活動，以增進教師及同學間的互動			
8. 在新生訓練時提供學生時間管理的課程			
9. 在新生訓練時提供學生壓力管理的課程			
10. 在新生訓練時提供學生相關的知識及技能訓練以能順利使用授課系統（如電視、廣播、錄影帶、網路、電傳視訊）			
11. 在新生訓練時提供學生自我導向學習的過程及策略介紹			

教學風格

國立空中大學的教師能幫助我成為更好的自我導向學習者，如果他們能.....

問　題	適當	不適當	建　議
1. 提供有系統的輔助教材及學習指南			
2. 相信教育的目的是學生生活知能的全方位發展，而非只是課業成就的評量			
3. 相信學生有自我導向學習的能力			
4. 了解學生族群的特性，包括學生先前的學識經歷及選修課程的動機			
5. 批改作業時能提供解釋說明及針對學生個人作業特質的評語和建議，而不只是訂正學生的錯誤			
6. 相信教書是支持及幫助學生學習而非控制主導			
7. 接受不完美而且對學生的勇於嘗試給予肯定			
8. 鼓勵學生將所學與個人生活經驗結合			
9. 面授時，刺激學生發問以增進批判思考的能力			
10. 如果學生需要，樂於經由傳真、郵件、或電子郵件提供額外的課程訊息			

人際溝通互動

師生之間及學生之間的互動往來可以幫助我成為更好的自我導向學習者，如果.....

問　題	適當	不適當	建　議
1. 空中大學和空大的老師能確保開放的雙向溝通管道			
2. 教師能經常的與學生溝通			
3. 空中大學和空大的老師們能安排師生之間及學生之間的面對面溝通			
4. 具有現成方便的溝通傳輸媒體，而且學生及老師都很熟悉他們的用法			
5. 教師藉由即時和經常性的回饋刺激學生的學習動力			
6. 教師鼓勵並引導小組討論以小組問題解決的學習模式進行			
7. 教師鼓勵學生獨立運作學習			

課程設計考量

課程的設計能幫助我成為更好的自我導向學習者，如果.....

問　題	適當	不適當	建　議
1. 課程的教材包含學習技巧及入門方法的建議			
2. 教材設計容許學生在沒有幫助的情況下也能自行研修			
3. 課程目標根據該科內容邏輯訂定，而非根據學生個人需求			
4. 課程設計(包括課程傳輸媒體的選擇、順序、及其它課程呈現的原則)能結合學生個人的經驗及需要			
5. 教材的內容採問答方式或問題探討方式編寫，廣邀學生交換意見			
6. 教材能提供學生學習與活動之回饋，使學生能自行判斷學習成果			
7. 課程的內容設計要求學生發展該科的學習計畫以作為學生與老師間的學習契約			
8. 課程教材的設計容許讀者以內省的方式(如日記、事項核對表、專題研究、及時間規劃表等) 強調自我評量			
9. 教師的評量準則是以欣賞的角度為出發點，側重於學生個人意見的貢獻及學習過程中所盡的責任			
10. 課程評鑑的要點是以師生之間學習契約的內容為依歸			
11. 評鑑標準是以學生個別的才能及成就為準則			

是否有其它的問題應包含於此問卷內或其它建議？

第一部分:

第二部分:

其它建議:

Appendix D: Questionnaire after Validity Test

Colorado State University

Appendix D-1

School of Education
Fort Collins, Colorado 80523-1588

Dear Friend,

The purpose of this survey, Students' Preferences for Strategies to Facilitate Self-Directed Learning in Distance Education in Taiwan, is to determine what are the self-directed facilitation strategies preferred by distance learners in Taiwan. The research project is in partial fulfillment of the requirements for the doctoral degree in Education and Human Resource Studies at Colorado State University. The questionnaire includes two sections: Student Background Information and Student Preferences for Strategies to Facilitate Self-Directed Learning. Simply, you can answer the questions by following the instructions preceding each section.

Your assistance is purely voluntary. It will help us obtain an accurate picture of Taiwanese distance learners' perceptions. Your participation will be of great value to us and to other distance learners. The results of the study should help instructors and the National Open University provides better assistance to you.

In order to protect your confidentiality, the questionnaire is anonymous. Reports generated from the research will not reveal the identification of individuals and only aggregate results will be used. There are no known risks for your participation in this study.

You will need about 20 minutes to complete this questionnaire. After you have completed the questionnaire, please insert it into the stamped envelope and return it by November 30th. If you have any question or concern, please feel free to contact us. You can reach Ms. Mei-Huei Tsay at (04) 451-0824 in Taiwan.

Thank you for your participation in this research.

Sincerely,

Dr. George A. Morgan
Principal Investigator, Professor

Mei-Huei Tsay
CO-Investigator, Ph. D. Candidate
School of Education

Appendix D-2

Section I: Student Background Information

This section is designed to identify your personal information, which will help us understand your preferences for self-directed facilitation strategies at NOU. Please indicate your answer in the space provided.

__ 1. Are you currently taking any class at NOU? 1. Yes; 2. No.

__ 2. How many years have you been studying at NOU before academic year 1998?

__ 3. What is your age?

__ 4. What is your gender? 1. Male; 2. Female.

__ 5. Have you decided your major? (Or, have you decided your major before you stop taking classes from NOU?) 1. Yes; 2. No.

__ 6. How long is your full-time work experiences? 1. Haven't started working yet; 2. Less than 6 years; 3. 6-10 years; 4. 11-15 years; 5. 16-20 years; 6. 21 years and longer; 7. I am a homemaker.

The following list of questions are designed to identify your motivation, insight about self, and self-directed readiness. Please identify the appropriate answer using the following choices:

1 = Strongly Disagree **2 = Moderately Disagree** **3 = Mildly Disagree**

4 = Mildly Agree **5 = Moderately Agree** **6 = Strongly Agree**

My motivation when I first enrolled at NOU was	SD					SA
7. To prepare for a future career.	1	2	3	4	5	6
8. To meet social-cultural expectations as being a college graduate.	1	2	3	4	5	6
9. To update professional knowledge to my current career.	1	2	3	4	5	6
10. To enhance personal growth.	1	2	3	4	5	6
11. For the joy of learning.	1	2	3	4	5	6
Insight about Self						
12. Overall, I am a person with persistence in learning.	1	2	3	4	5	6
13. Overall, I am a person with self-confidence about learning.	1	2	3	4	5	6
14. Overall, I am a self-disciplined learner.	1	2	3	4	5	6
15. Overall, I tend to see problems as challenges rather than obstacle in learning.	1	2	3	4	5	6
16. Overall, I see myself as an independent learner.	1	2	3	4	5	6
17. Overall, I think I have to take the whole responsibility for learning outcomes.	1	2	3	4	5	6

18. I prefer to be a student who is active in shaping my educational program to meet personal desires and interests.	1	2	3	4	5	6

Self-Directed Learning Readiness

19. Overall, I have the ability to set an appropriate pace for learning.	1	2	3	4	5	6
20. Overall, I have the ability to develop a plan for completing course work.	1	2	3	4	5	6
21. Overall, I have knowledge of a variety of potential learning resources.	1	2	3	4	5	6
22. Overall, I have the ability to get assistance from various resources to discover new approaches to deal with learning problems.	1	2	3	4	5	6
23. Overall, I have the ability to set appropriate criteria to assess my own learning.	1	2	3	4	5	6
24. Overall, I have the ability to accept and use criticism.	1	2	3	4	5	6

Section II: Student Preferences for Strategies to Facilitate Self-Directed Learning

The following list of activities is designed to identify strategies you think would facilitate your self-directed learning ability. Please identify the appropriate answer based on " **How important the activity will be helping to promote my self-directed learning competency ?**" using the following choices:

1 = Very Unimportant **2 = Moderately Unimportant** **3 = Mildly Unimportant**

4 = Mildly Important **5 = Moderately Important** **6 = Very Important**

Institutional Support Services

The institution can help me become more self-directed by.....	VU					VI
1. ensuring students have open access to school representatives for advice and counsel.	1	2	3	4	5	6
2. ensuring that information services from various sources(libraries & database) can be easily accessed by students.	1	2	3	4	5	6
3. ensuring each faculty/on-site facilitator has office hour available for students.	1	2	3	4	5	6
4. assisting with forming geographical or local study group.	1	2	3	4	5	6
5. networking students with mentors at learning centers.	1	2	3	4	5	6
6. ensuring the availability of various technology which allows interaction among students and between students and faculty.	1	2	3	4	5	6
7. providing opportunities for social interaction with peers and faculty.	1	2	3	4	5	6
8. providing time-management programs as part of orientations.	1	2	3	4	5	6
9. providing stress-management programs as part of orientations.	1	2	3	4	5	6

10. ensuring that orientations help students in gaining knowledge and skills necessary to use the delivery systems (such as television, broadcast, video, video tape, internet, etc.) 1 2 3 4 5 6

11. ensuring that orientations include instruction in the process of directing one's own learning and study strategies. 1 2 3 4 5 6

Instructional Styles

The instructor can help me become more self-directed if he/she .....

1. provides systematic assistance course material and learning instruction. 1 2 3 4 5 6
2. believes the main goal of the education is the development of life skills not just the results of academic achievement. 1 2 3 4 5 6
3. believes learners have the potential to be self-directed. 1 2 3 4 5 6
4. understand the student population profile, including their prior knowledge, educational experiences, and context for undertaking the program. 1 2 3 4 5 6
5. corrects assignments with explanatory and individualized comments and further suggestions rather than factual statement only. 1 2 3 4 5 6
6. believes teaching is support and facilitation of learning not control. 1 2 3 4 5 6
7. accepts imperfect; but gives credit for willingness to try. 1 2 3 4 5 6
8. encourages connection between learning and personal life experiences . 1 2 3 4 5 6
9. provides stimuli for question-asking to improve critical thinking ability. 1 2 3 4 5 6
10. is willing to provide additional content resources through fax, mail, or e-mail if needed. 1 2 3 4 5 6

Interpersonal Interactions

Interaction among students and between students and faculty will help me become more self-directed, if.....

1. the institution and faculty ensure open access for two-way communication. 1 2 3 4 5 6
2. faculty (tutors and counselors) communicate with students frequently. 1 2 3 4 5 6
3. the institution and faculty arrange face-to-face meetings among students and between students and faculty. 1 2 3 4 5 6
4. the media for communication are readily available and are familiar to instructors and students. 1 2 3 4 5 6
5. motivate learning by providing consistent and timely feedback. 1 2 3 4 5 6

6. instructor/facilitator encourages discussions among students and leads to group problem solving. 1 2 3 4 5 6

7. instructor/facilitator encourages students to work alone and learn independently. 1 2 3 4 5 6

Course Design Adaptations

Course design will help me become more self-directed, if.....

1. the course material includes a kit to teach the skills of learning how to learn. 1 2 3 4 5 6

2. the content of the curriculum is self-contained, allowing students to proceed without other assistance. 1 2 3 4 5 6

3. the content is designed according to the logic of subject content not students' needs. 1 2 3 4 5 6

4. the course design including delivery systems, sequencing, and course presentation are adapted to students' personal experiences and needs. 1 2 3 4 5 6

5. the course material is written as question or problem-discussion style to invite students to contribute their ideas. 1 2 3 4 5 6

6. the course material provides feedback on learning activities to help students assess learning outcome themselves. 1 2 3 4 5 6

7. the content of curriculum requires students to develop their own learning plan as a contract. 1 2 3 4 5 6

8. the content is designed as easily internalized by self-monitoring methods such as journals, checklists, project-based, and time-management charts. 1 2 3 4 5 6

9. the evaluation focuses on assets, contribution, appreciation, and personal responsibility. 1 2 3 4 5 6

10. evaluation criteria are decided based on learning contracts which allow validation through options other than exams. 1 2 3 4 5 6

11. evaluation standards are anchored in individual student's specific competencies and achievements. 1 2 3 4 5 6

Open-Ended Question:

1. Why did you stop taking classes at NOU if you are not a current student?

2. If you are a current student, have you ever thought about dropout? If not, why? If yes, what stops you?

Appendix E: Questionnaire after Content Validity Test—Chinese Version

Colorado State University

School of Education
Fort Collins, Colorado 80523-1588

親愛的朋友：

感謝您在百忙之中參予「台灣遠距教育學生自我導向學習能力增進策略之偏好」的研究回答此份問卷。本研究的主要目的在探討國立空中大學學生對學校所可能提供〝自我導向學習能力增進策略〞的偏好，此研究的結果將作為協同計畫主持人蔡美輝在美國科羅拉多州立大學教育學院教育及人力資源研究所博士學位的畢業論文。

這份問卷函括兩個部分，第一部分是學生背景資料，第二部分是學生自我導向學習能力增進策略之偏好。煩請您依據說明，仔細回答每個問題。藉著您的答案，我們希望能對台灣遠距教育體系學生自我導向學習促進策略的喜好向度有一番明確的了解。透過問卷內容，期望您能對自己的學習模式有所省視，並期待研究的結果在提供空大及其教職員實施學生自我導向學習策略的參考之餘，亦能對台灣當前成人及遠距教育理念有所呼應與釐清。雖然您的幫忙是純粹自願性質的，但是有您的參與，不論對我們或其他的遠距教育學生而言都有極大的價值。

為了保護您的個人隱私，此份問卷以不記名方式實施；回答問卷所需時間約為二十分鐘；問卷完成之後，請您放入回郵信封內並在十一月三十日前寄回給我們。如果您有任何問題或建議，請打電話(04)4510824或(04)5320032與蔡美輝聯絡。

再次謝謝您的參與和幫忙，並祝

事事如意

Dr. George A. Morgan
計畫主持人，教授

蔡美輝 (Mei-Huei Tsay)
協同計畫主持人，博士候選人

第一部分：學生背景資料

此部分的問卷內容是用來確認您的個人資料；這份資料可以用來幫助我們建立學生背景及學生自我導向學習增進策略偏好間的關係。請將您的答案填於空格中。

_____ 1. 您目前是不是國立空中大學在學的學生？1. 是；2. 否。
_____ 2. 在八十七學年度之前，您總共在空中大學修了幾年的課？
_____ 3. 您的年紀多大？
_____ 4. 您的性別是1. 男；2. 女。
_____ 5. 您已經決定您的主修了嗎？（或在您未繼續註冊前，您已經決定主修了嗎？）1. 是；2. 否。
_____ 6. 您有多久的全職工作經驗？1. 還沒開始工作；2. 不到5年；3. 6-10年；4. 11-15年；5. 16-20年；6. 多於21年；7. 從事家庭管理的工作。

下列的問題是設計來確認您的學習動機，自我洞察，及自我導向學習成熟度。請依據下列的選擇，圈選符合您狀況的答案。

我開始在空中大學修課時的學習動機是.....	非常不同意	不同意	有些不同意	有些同意	同意	非常同意
7. 為將來的職業作準備	1	2	3	4	5	6
8. 成為一個大學生以符合社會文化的期望	1	2	3	4	5	6
9. 增進專業知識以配合目前工作的需求	1	2	3	4	5	6
10. 為了增進自我成長	1	2	3	4	5	6
11. 為了享受學習的樂趣	1	2	3	4	5	6
對於學習，我覺得自己總括來說.....						
12. 是一個有毅力的學習者	1	2	3	4	5	6
13. 是一個有自信的學習者	1	2	3	4	5	6
14. 是一個能自我規範的學習者	1	2	3	4	5	6
15. 在學習的過程中，傾向於視難題為挑戰而非阻礙	1	2	3	4	5	6
16. 是一個獨立自主的學習者	1	2	3	4	5	6
17. 必須承擔大部分學習效果良窳的責任	1	2	3	4	5	6
18. 喜歡依照自己的興趣及需要主動規劃自己的課程	1	2	3	4	5	6
就自我導向學習的成熟度而言，總括來說，我.....						
19. 有能力為自己訂定適當的學習進度	1	2	3	4	5	6
20. 有能力訂定學習計畫以求完成課業	1	2	3	4	5	6
21. 知道許多可能的學習資源	1	2	3	4	5	6
22. 有能力從不同的學習資源中尋求幫助發現新的途徑以解決功課上的難題	1	2	3	4	5	6
23. 有能力訂定適當的學習評量以評斷自己的學習成果	1	2	3	4	5	6
24. 能虛心接受批評並且採納它們	1	2	3	4	5	6

第二部分：自我導向學習增進策略之偏好

以下問題的主要目的在確認它們是否能增進您的自我導向學習能力。請以〝這個活動在提升我的自我導向學習能力上的重要性〞爲前題考慮下，圈選符合您想法的答案。

學校支援服務系統 國立空中大學能幫助我成為更好的自我導向學習者，如果它能……	非常不重要	不重要	有些不重要	有些重要	重要	非常重要
1. 確保學生有開放的溝通管道與學校人員接觸以尋求建議或諮商	1	2	3	4	5	6
2. 確保不同管道的資料查詢系統(如圖書館、查詢資料庫等)能輕易取得並操作	1	2	3	4	5	6
3. 確保每一位老師及學習指導中心的輔導教師都有固定的辦公室請益時間以供學生諮詢之用	1	2	3	4	5	6
4. 協助學生組成區域性的讀書團體	1	2	3	4	5	6
5. 聯結學生與各學習指導中心授課教師間的溝通網路	1	2	3	4	5	6
6. 提供多樣化的溝通媒體以增進教師及學生間的互動	1	2	3	4	5	6
7. 舉辦社交活動，以增進教師及同學間的互動	1	2	3	4	5	6
8. 在新生訓練時提供學生時間管理的課程	1	2	3	4	5	6
9. 在新生訓練時提供學生壓力管理的課程	1	2	3	4	5	6
10. 在新生訓練時提供學生相關的知識及技能訓練以能順利使用授課系統（如電視、廣播、錄影帶、網路、電傳視訊）	1	2	3	4	5	6
11. 在新生訓練時提供學生自我導向學習的要義及策略介紹	1	2	3	4	5	6
教學風格 **國立空中大學的教師能幫助我成為更好的自我導向學習者，如果他們能……**						
1. 提供有系統的輔助教材及學習指南	1	2	3	4	5	6
2. 相信教育的目的是學生生活知能的全方位發展，而非只是課業成就的評量	1	2	3	4	5	6
3. 相信學生有自我導向學習的能力	1	2	3	4	5	6
4. 了解學生族群的特性，包括學生先前的學識經歷及選修課程的動機	1	2	3	4	5	6
5. 批改作業時能提供解釋說明及針對學生個人作業特質的評語和建議，而不只是訂正學生的錯誤	1	2	3	4	5	6
6. 相信教書是支持及幫助學生學習而非控制主導	1	2	3	4	5	6
7. 接受不完美而且對學生的勇於嘗試給予肯定	1	2	3	4	5	6
8. 鼓勵學生將所學與個人生活經驗結合	1	2	3	4	5	6
9. 面授時，刺激學生發問以增進批判思考的能力	1	2	3	4	5	6
10. 如果學生需要，樂於經由傳真、郵件、或電子郵件提供額外的課程訊息	1	2	3	4	5	6

人際溝通互動

師生之間及學生之間的互動往來可以幫助我成為更好的自我導向學習者，如果.....

1. 空中大學和空大的老師能確保開放的雙向溝通管道	1	2	3	4	5	6
2. 教師能經常的與學生溝通	1	2	3	4	5	6
3. 空中大學和空大的老師們能安排師生之間及學生之間的面對面溝通	1	2	3	4	5	6
4. 具有現成方便的溝通傳輸媒體，而且學生及老師都很熟悉他們的用法	1	2	3	4	5	6
5. 教師藉由即時和經常性的回饋刺激學生的學習動力	1	2	3	4	5	6
6. 教師鼓勵並引導小組討論以小組問題解決的學習模式進行	1	2	3	4	5	6
7. 教師鼓勵學生獨立運作學習	1	2	3	4	5	6

課程設計考量

課程的設計能幫助我成為更好的自我導向學習者，如果.....

1. 課程的教材包含學習技巧及入門方法的建議	1	2	3	4	5	6
2. 教材設計容許學生在沒有教師幫助的情況下也能自行研修	1	2	3	4	5	6
3. 課程目標根據該科內容邏輯訂定，而非根據學生個人需求	1	2	3	4	5	6
4. 課程設計(包括課程傳輸媒體的選擇、順序、及其它課程呈現的原則)能結合學生個人的經驗及需要	1	2	3	4	5	6
5. 教材的內容採問答方式或問題探討方式編寫，廣邀學生交換意見	1	2	3	4	5	6
6. 教材能提供學生學習與活動之回饋，使學生能自行判斷學習成果	1	2	3	4	5	6
7. 課程的內容設計要求學生發展該科的學習計畫以作為學生與老師間的學習契約	1	2	3	4	5	6
8. 課程教材的設計容許讀者以內省的方式(如日記、事項核對表、專題研究、及時間規劃表等)強調自我評量	1	2	3	4	5	6
9. 教師的評量準則是以欣賞的角度為出發點，側重學生個人意見的貢獻及學習過程中所盡的責任	1	2	3	4	5	6
10. 課程評鑑的要點是以師生之間學習契約的內容為依歸	1	2	3	4	5	6
11. 評鑑標準是以學生個別的才能及成就為準則	1	2	3	4	5	6

開放型問題

1. 如果您目前沒有繼續在空中大學註冊，請問您的原因是什麼？

2. 如果您目前是空中大學在學的學生，請問您是否想過停止繼續註冊？如果不曾，原因為何？如果曾經想過，那麼什麼原因讓您回心轉意？