DEVELOPING A DECISION MODEL TO DESCRIBE LEVELS OF SELF-DIRECTEDNESS BASED UPON THE KEY ASSUMPTIONS OF ANDRAGOGY

A Thesis

by

LANCE JONATHAN RICHARDS

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

August 2005

Major Subject: Agricultural Education

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ABSTRACT

Developing a Decision Model to Describe Levels of Self-Directedness Based Upon the Key Assumptions of Andragogy. (August 2005)

Lance Jonathan Richards, B.S., Texas A&M University

Co-Chairs of Advisory Committee: Dr. James R. Lindner
Dr. Kim E. Dooley

As workplace demands change, a need has developed for alternatives to traditional education. With advancements in electronic telecommunication technologies, distance education has become a viable alternative to traditional classrooms for working professionals. Efficiency and cost effectiveness are driving many programs to place on-campus students and distance students in the same courses at the same time. This phenomenon has resulted in the placement of students with vastly different backgrounds, levels of expertise, and levels of motivation in the same classrooms. Often a professor will teach to one learning style, leaving some students in the dust, never to get on track. Without face-to-face contact with an instructor, this can leave distance education students feeling isolated and alone.

There is a continuing need for the development of alternative instruments to assess self-directed learning (Brockett & Himestra, 1991). We must develop a means of determining an individual's readiness for self-directed learning, as well as a device for measuring the efficiency of programs designed to foster the attitudes and skills which are involved in increased self-directedness in learning (Guglielmino, 1977). Self-directed learning readiness is important to a learner's success in distance education programs. In

order for an educator to tailor instruction to the unique attributes of each student, there is a need for an instrument that will identify the learner's stage of self-directedness or degree of dependency and for an instrument that will determine the educator's default teaching style at the beginning of a course. Such an instrument will help instructors increase their learners' level of self-direction and will improve the overall quality, student satisfaction, and student retention in distance learning courses.

The purpose of this study is to develop and pilot test two instruments based upon the Staged Self Directed Learning Model (Grow, 1991) and the key assumptions of andragogy: one measuring the self-directed learning readiness of a student in the context of an individual course and the other measuring the teaching style of the instructor in the context of the same course. The data will be analyzed and given to the instructor to give him/her an idea of the self-directed learning readiness level of students enrolled in the course. A report will be generated to show matches and mismatches between the instructor's teaching style and the self-directed learning readiness level of the students. A decision model will be developed to suggest teaching strategies that minimize mismatches and facilitate the growth of students from dependent to self-directed through the course.

DEDICATION

I dedicate this thesis to all who endeavor to teach, research, and learn. May the information contained herein make a difference in the lives of everyone who is touched and impacted by the field of education.

ACKNOWLEDGEMENTS

I would like to thank the following people, without whom this thesis would not have been possible:

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TABLE OF CONTENTS

Page

CHAPTER Page

Page

LIST OF TABLES

TABLE Page

LIST OF FIGURES

FIGURE Page

CHAPTER I

INTRODUCTION

> Distance education offers many benefits for learners and educators. One of the touted benefits for educators is the opportunity to develop individualized instructional sequences for learners based on learners' unique competencies (Dooley & Lindner, 2002). Such instruction affords learners a greater opportunity to draw upon a variety of academic fields and knowledge bases to achieve personal and professional goals (Lindner & Dooley, 2002). However, learning outcomes are not the same for all students engaged in distance education. Research attempting to find ways to maximize learning for all distance education students must begin by identifying the factors that affect performance (Lindner, Dooley, and Murphy, 2001).
>
> Dooley, Lindner, & Dooley, 2005

Web-supported instruction is becoming more commonplace in today's colleges and universities (Lindner, Dooley, & Murphy 2001). Distance education continues to expand because of growth of the Internet, increased capability and flexibility of web-based tools, increased proficiency in basic Internet skills, and shrinking barriers with respect to accessing and using the Internet (Lindner, 1999). The National Center for Education Statistics (2002) reports that 56% of degree-granting higher education institutions in the United States offered distance education courses in 2000-2001 (for an estimated enrollment of 3,077,000 seats), that an additional 12% plan to offer distance education courses in the next 3 years, and that 31% do not plan to offer distance education courses in the next three years. In 1997-1998, 34% of higher education

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This thesis follows the style and format of the *Journal of Agricultural Education*.

institutions offered distance education courses (for an estimated enrollment of 1,661,100 seats), 20% planned to offer distance education courses within the next 3 years, and 47% did not plan to offer distance education courses within the next 3 years (National Center for Education Statistics, 1999).

Distance education continues to gain in popularity while educational technologies are becoming more powerful and affordable. As a result, teaching styles are evolving and adapting to emerging technologies, creating new benefits and efficiencies for teaching and learning. New technologies such as the World Wide Web and multimedia have the potential to widen access to new learners, increase flexibility for "traditional" students, and improve the quality of teaching by achieving higher levels of learning, such as analysis, synthesis, problem solving, and decision making (Bates, 2000).

Distance education has been successful at providing access to individuals in various situations, but increasingly educators realize the need to focus on learner success and are concerned about ways to maximize their learning (Gibson, 1998; Lindner, Dooley, & Murphy, 2001). Before strategies can be developed that create efficiencies, maximize learning, and ensure learner success while maintaining academic rigor, educators must understand the unique challenges faced by distance learners and issues faced in the distance education course environment.

Miller and Pilcher (2002) identify the following challenges faced by distance education students:

a) They are often older and are coordinating various job and family commitments with their learning opportunities (Miller, 1995; Willis, 1995b);

b) They usually experience limited interaction because of geographic isolation from the instructor and other students (Miller, 1995; Willis, 1995a); and

c) They must rely on the technology to provide the information for learning (Willis, 1995a).

Lindner, Hynes, Murphy, Dooley, and Buford (2003) and Dooley, Lindner, and Dooley (2005) identify several factors that can affect student success in distance education courses: a) learner temperament and personality; b) gender; c) attrition rate; d) learner responsibilities; e) interaction and engagement, f) academic rigor; g) student satisfaction h) course quality; i) course delivery methods; and j) the instructor's ability to foster deep and meaningful learning (focusing on the learners' motivation to learn, learner-centered instruction, and a setting that promotes engagement and interaction).

Learners enter into any educational experience with a set of assumptions and expectations about the upcoming experience and about learning in general; with unique backgrounds and experiences; with differing knowledge, skills, and abilities based on their past experiences; and with diverse personality types, social skills, and values (Cranton, 1992; Dooley, Lindner, & Dooley, 2005). These learner attributes are at the heart of the theory of andragogy developed by Malcolm Knowles, a theory that is central to the discipline and framework of adult education.

Theoretical Framework

The theoretical framework is grounded by Knowles theory of andragogy, which is based on the following key assumptions:

a) *the learner's need to know* why they need to learn something before undertaking to learn it;

b) *the learner's self-concept* of being responsible for their own decisions;

c) *the role of the learner's experiences* in the educational experience;

d) *the learner's readiness to learn* those things they need to know and be able to do in order to cope effectively with their real-life situations.

e) *The learner's orientation to learning* new knowledge, understandings skills, values, and attitudes that can be applied to real-life situations; and

f) *The learner's motivation* by some external motivators (better jobs, promotions, higher salaries) and internal pressures (the desire for increased job satisfaction, self-esteem, and quality of life)

(Knowles, Holton, & Swanson, 1998).

Andragogy suggests that adults have a self-concept of being responsible for their own lives and expect others to treat them as being capable of self-direction (Knowles, Holton, & Swanson, 1998, p. 123). Adult education suggests that the purpose of learning should be to develop self-directed learning capacity in adults (Brookfield, 1986). Schott, Chernish, Dooley, & Lindner (2003) recognizes that distance education relies on the student's abilities to be self-directed and internally motivated.

Self-directed learning is an extensively researched area in the field of adult education (Owen, 2002). Despite its popularity over the years, scholars still cannot come to a consensus on a formal definition. Though researchers have not been able to define

self-directed learning with precision, Grow (1991) asserts that it is an "immensely useful concept for orienting oneself to education at all levels."

The first priority of the instructor should be to reduce dependence and encourage students to become self-directed (Moore, 1986; Grow, 1991). To develop a framework in which to facilitate this process, Grow (1991) developed a model called the Staged Self-Directed Learning (SSDL) Model to give instructors the tools they need to "actively equip students to become self-directed in their learning." In this model, Grow identifies four levels of self-directed learning readiness: dependent, interested, involved, and self-directed. He then suggests that the role of the educator should be based on the learners' identified stage of self-directedness or degree of dependency…situational teaching (Dooley, Lindner, & Dooley, 2005).

Grow's model "borrows several key concepts from the Situational Leadership Model of Paul Hersey and Kenneth Blanchard." Using this model, Grow formulated the idea that a students' ability to be self-directed is situational and that the teaching style should be matched to the students' level of readiness. He further observes that few learners are equally motivated in all subjects.

Statement of the Problem

As workplace demands change, a need has developed for alternatives to traditional education. With advancements in electronic telecommunication technologies, distance education has become a viable alternative to traditional classrooms for working professionals. Efficiency and cost effectiveness are driving many programs to place on-campus students and distance students in the same courses at the same time. This

phenomenon has resulted in the placement of students with vastly different backgrounds, levels of expertise, and levels of motivation in the same classrooms. Often a professor will teach to one learning style, leaving some students in the dust, never to get on track. Without face-to-face contact with an instructor, this can leave distance education students feeling isolated and alone.

Many researchers have recognized the need to identify and assess a learner's readiness for self-directed learning and several have developed instruments for that purpose.

Guglielmino (1977) conducted a delphi study to obtain consensus from a panel of experts on the most important personality characteristics of highly self-directed learners, and to develop an instrument for assessing an individual's readiness for self-direction in learning. Her instrument, the Self-Directed Learning Readiness Scale (SDLRS), determined the readiness of students for self-directed learning based on the following eight areas: a) openness to learning opportunities, b) self-concept as an effective learner, c) initiative and independence in learning, d) informed acceptance of responsibility for one's own learning, e) love of learning, f) creativity, g) positive orientation to the future, h) ability to use basic study and problem-solving skills.

Oddi (1986) developed the Oddi Continuing Learning Inventory (OCLI) to assess personality characteristics of individuals whose learning behavior is characterized by initiative and persistence in learning over time through a variety of learning modes, such as inquiry, instruction, and performance. The OCLI looks at the following three dimensions of self-directed learners: a) proactive drive versus reactive drive, b) cognitive

openness versus defensiveness, and c) commitment to learning versus apathy or aversion to learning.

There is a continuing need for the development of alternative instruments to assess self-directed learning (Brockett & Himestra, 1991). We must develop a means of determining an individual's readiness for self-directed learning, as well as a device for measuring the efficiency of programs designed to foster the attitudes and skills which are involved in increased self-directedness in learning (Guglielmino, 1977). Self-directed learning readiness is important to a learner's success in distance education programs. In order for an educator to tailor instruction to the unique attributes of each student, there is a need for an instrument that will identify the learner's stage of self-directedness or degree of dependency and for an instrument that will determine the educator's default teaching style at the beginning of a course. Such an instrument will help instructors increase their learners' level of self-direction and will improve the overall quality, student satisfaction, and student retention in distance learning courses.

This study may add stability to the research base in self-directed learning and will apply the concepts of self-directed learning and the key assumptions of andragogy to the improvement of instruction. The resulting instrument may be used to:

1) Aid educators in adapting instruction to the self-directed learning readiness and unique attributes of each learner at the beginning of a course;

2) Aid educators in decreasing the learners' level of dependence through a course;

3) Aid educators in improving the overall quality, student satisfaction, student engagement, and academic rigor of courses;

4) Enable students to assess their own level of self-directed learning readiness and skills in the context of a particular course; and

5) Influence teacher preparation programs.

Purpose of the Study

The purpose of this study is to develop and pilot test two instruments based upon the Staged Self Directed Learning Model (Grow, 1991) and the key assumptions of andragogy: one measuring the self-directed learning readiness of a student in the context of an individual course and the other measuring the teaching style of the instructor in the context of the same course. The data will be analyzed and given to the instructor to give him/her an idea of the self-directed learning readiness level of students enrolled in the course. A report will be generated to show matches and mismatches between the instructor's teaching style and the self-directed learning readiness level of the students. A decision model will be developed to suggest teaching strategies that minimize mismatches and facilitate the growth of students from dependent to self-directed through the course.

Objectives of the Study

1. Describe students' level of self-directedness within a course.
2. Describe instructor's teaching stage within a course.
3. Describe students' level of agreement with the key assumptions of andragogy.

4. Describe instructor's level of agreement with the key assumptions of andragogy.
5. Compare students' level of self-directedness in a course with students' level of agreement with andragogy.
6. Describe whether instructors with a high level of agreement with the application of the key assumptions of andragogy to teaching will be more likely to foster self-directedness in students.
7. Describe whether students with a high level of agreement with the key assumptions of andragogy will be more likely to be self-directed than students with a low level of agreement.
8. Develop a decision model to help instructors minimize mismatches between the students' level of self-directedness and the instructor's teaching stage within the context of a course.

Research Methods

The student and instructor questionnaires will be administered in several undergraduate and graduate courses in the Department of Agricultural Education. Both questionnaires will be administered at the end of each class session, giving the students the choice of whether or not to participate. The investigator will not be present during the questionnaire administration. No demographic information will be gathered from participants and the results will be kept anonymous for the students and confidential for the instructors by the investigator. The questionnaire will take approximately 10 minutes to complete. The data will then be grouped and analyzed by the investigator.

Significance of the Study

The literature has pointed to the need to develop instruments that identify students' readiness for self-directed learning (Guglielmino, 1977). With knowledge of the learning styles and self-directed learning readiness level of students in a course, instructors will be able to better apply teaching strategies that maximize learning and move students from dependence to self-directedness within the course. Once fully developed, these instruments will provide a basis for additional study at other levels in courses using a variety of delivery strategies.

Definition of Terms

Readiness: the combination of ability and motivation; ranges from "not able" and "not willing or motivated" to accomplish the specific task at hand, to "able and willing" to accomplish the task at hand (Oddi, 1986; Grow, 1991).

Limitations of the Study

1. Generalizability of the results will be within the context of the courses in which the instruments are administered.
2. Student and instructor responses will be self-perceptions.

CHAPTER II

REVIEW OF LITERATURE

> Educators and trainers should attempt to design and deliver individualized instructional sequences to provide the greatest opportunity for the learner. To achieve this lofty goal, educators and trainers will have to teach, coach, mentor, facilitate, motivate, and direct learners based on the educators' assessment of learners' unique backgrounds, experiences, knowledge, skill, abilities, personality type, social type, and/or personal styles and values.
>
> Lindner, Dooley, Williams, 2003

Self-Directed Learning

Self-directed learning is a complex concept, yet it has remained the north star of adult education (Grow, 1991). Despite the favorable conditions suggested by the popularity of the topic, adult self-directed learning remains weakly conceptualized, ill-defined, inadequately studied and tentatively comprehended (Long, 1988). Questions remain as to whether self-directed learning is a characteristic of adult learners, and whether it should be a goal of adult educators to help all adult learners be self-directed (Knowles, Holton, & Swanson, 1998).

Few people have ever defined self-directed learning with much accuracy; nonetheless, self-directed learning is an immensely useful concept for orienting oneself to education at all levels (Grow, 1991). Despite how it is coined, self-direction in adult learning is more than just a misunderstood concept, it is a way of life (Brockett & Himestra, 1991). The development of self-directed individuals, "that is, people who

exhibit the qualities of moral, emotional, and intellectual autonomy – is the long term goal of most, if not all, education endeavors" (Candy, 1991). When considering definitions of self-directed learning, "it is not only necessary to understand who has offered a particular definition, but when it was offered" (Brockett and Himestra, 1991,). The most commonly accepted definitions of self-directed learning come from the research of Malcom Knowles (1975), Lucy Guglielmino (1977), Stephen D. Brookfield (1984, 1986, 1993), Ralph G. Brockett and Roger Hiemstra (1991), and Philip C. Candy (1991).

Malcom Knowles

Knowles (1975, p. 12) defined the self-directed learning process as one in which "individuals take the initiative, with or without the help of others, in diagnosing their learning need, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes." Knowles's notion of self-directed learning fits into the framework of andragogy, the art and science of helping adults learn. He believes that a facilitator who follows andragogical principles empowers learners to share dual responsibility for teaching and learning. He contrasts this notion with pedagogy, the art and science of teaching children. He believes that an instructor who follows pedagogical principles takes full responsibility for the teaching and learning. This construct is illustrated in Figure 1 below.

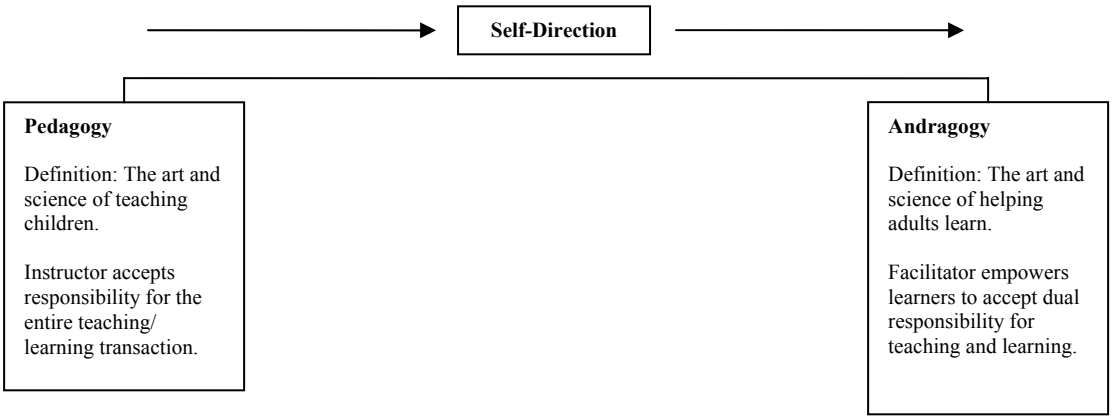

Figure 1. Knowles's (1975) Definition of Self-Directed Learning

Lucy Guglielmino

Guglielmino (1977, p. 34) theorized that "self-direction in learning can occur in a wide variety of situations, ranging from a teacher-directed classroom to self-planned and self-conducted learning projects." She further stated that it is the personal characteristics of the learner (i.e., attitudes, values, beliefs, and abilities) "that ultimately determine whether self-directed learning will take place in a given learning situation. The self-directed learner more often chooses or influences the learning objectives, activities, resources, priorities and levels of energy expenditure than does the other-directed learner."

Gugliemino recognized that self-direction can occur in a variety of contexts and settings. She found self-directed learning to be situational, with some learning situations promoting self-directed learning better than others. She notes that readiness for self-directed learning determines whether self-directed learning will take place in a given learning situation and that the components of readiness include attitudes, values, beliefs, and abilities. She recognizes that self-direction is rarely neat, orderly, continuous, or sequential and that problems may arise along the way. Finally, she notes that the

effectiveness and value of self-directed learning can be enhanced by focused planning and reflection. Gugliemino's context for self-directed learning is illustrated in Figure 2 below.

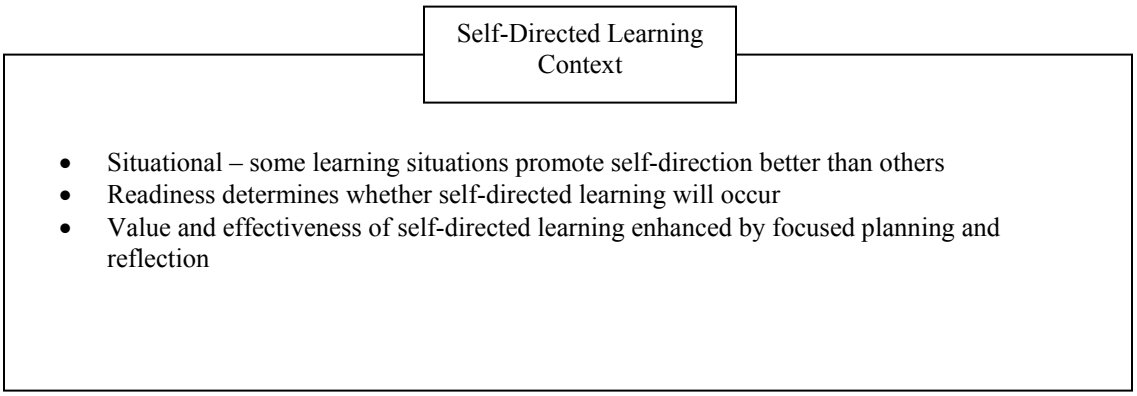

Figure 2. Gugliemino's (1977) Self-Directed Learning Context

Stephen Brookfield

Brookfield (1984) highlighted the differences between learning, an internal change in consciousness, and education, the act of learning. Later, Brookfield (1986) examined self-directed learning from both the cognitive and behavioral perspectives. Within that framework, Brookfield defined self-directed learning as a cognitive process grounded in reflection and action "whereby we learn how to change our perspectives, shift our paradigms, and replace one way of interpreting the world by another" (1986, p. 19).

Brookfield (1986) then looked at self-directed learning in association with field dependence vs. field independence. Field dependent learners tend to be more autonomous in relation to the development of interpersonal skills, are extrinsically motivated, respond to external reinforcement, are aware of the effects that their learning

has on others, view things holistically, and enjoy cooperative learning (Liu & Ginther, 1999; Witkin, Moore, Goodenough, & Cox, 1977; Witkin, 1949, 1950). Field independent learners tend to be more autonomous in relation to the development of cognitive restructuring skills, are intrinsically motivated, individualistic, analytical, socially independent, possess a strong sense of self-identity, and enjoy individualized learning (Liu and Ginther, 1999; Witkin, Moore, Goodenough, & Cox, 1977; Witkin, 1949, 1950). Though field independence is typically regarded as the preferred adult learning style, successful self-directed learners value social networks, skills modeling, oral consultation, peer evaluation, and learning accidentally – the capacities said to be possessed by field dependent learners (Owen, 2002). Brookfield's definition of self-directed learning is illustrated in Figure 3.

Brookfield (1993) proposed that self-directedness also has political aspects and bases his hypothesis on two points: the issue of control over what learning activities and processed are considered politically correct and exercising self-direction requires that certain political conditions be in place regarding access to resources. He further concludes that we must consider the self within the context of our culture or it "is all too easy to equate self-direction with separateness and even selfishness" (Brookfield, 1993, p. 239).

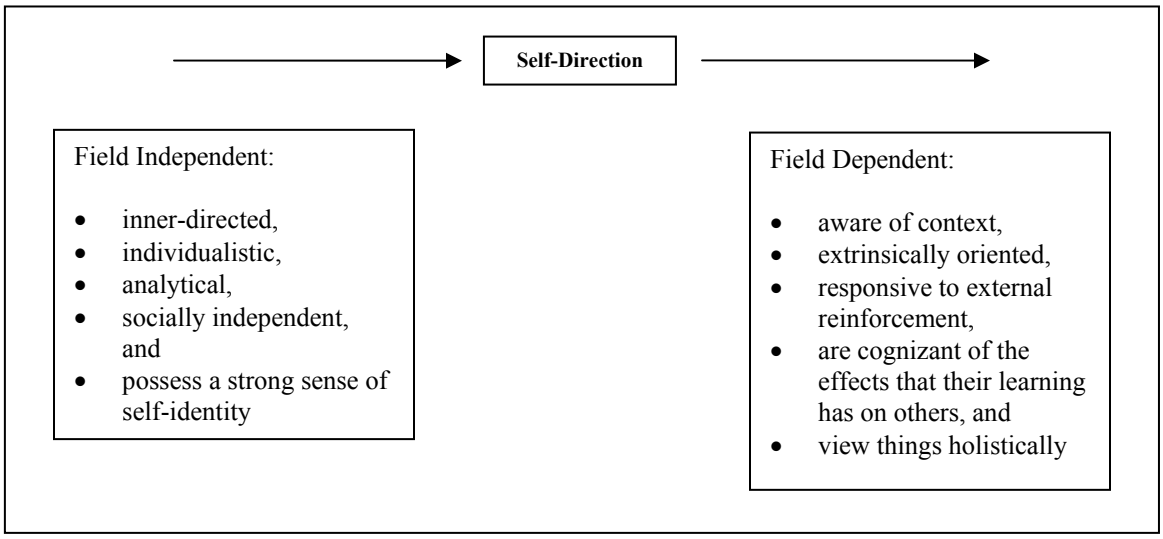

Figure 3. Brookfield's (1993) Definition of Self-Directed Learning

Ralph Brockett and Roger Hiemstra

Brockett and Hiemstra (1991) separate the broader concept of self-direction in adult learning from the term self-directed learning. The broader concept of self-direction in learning "can provide the breadth needed to reflect more fully the current understanding of the concept." They state that self-directed learning refers to the "process in which a learner assumes primary responsibility for planning, implementing, and evaluating the learning process." Thus, self direction in learning refers to "both the external characteristics and an instruction process and the internal characteristics of the learner where the individual assumes primary responsibility for a learning experience."

Brockett and Hiemstra (1991) present and dispel ten myths associated with self-direction in learning:

a) *Myth 1: Self-directedness is an all or nothing concept.*

Learning styles and approaches will vary with particular individuals and

learning situations. As people face new learning challenges, they will find differing needs for outside assistance, personal initiative, and individual reflection. Self-directedness is best viewed as a continuum rather than a dichotomous model.

b) *Myth 2: Self-direction implies learning in isolation.*

Self-directed learning is not equated to learning that is independent of a facilitator or of some outside resource. The learner assumes primary responsibility for and control over decision about planning, implementing, and evaluating the learning experience.

c) *Myth 3: Self-direction is just another adult education fad.*

The notion of individuals taking personal responsibility for their learning and the idea of a facilitator providing guidance for self-directed efforts has been around for some time. The history of self-direction in adult learning is long and endearing.

d) *Myth 4: Self-direction is not worth the time required to make it work.*

There appears to be a greater transfer of learning from one situation or course to another of both knowledge obtained and self-direction skills. These skills enable learners to diagnose needs, secure resources, and carry out learning activities.

e) *Myth 5: Self-directed learning activities are limited primarily to reading and writing.*

A wide variety of learning activities and approaches are generally used to encourage learners to take personal responsibility for their own learning

including, but not limited to: personal investigation of a topic using interviews as a basic information source, self-guided reading, participation in a study group, involvement in an agency visitation or study tour; completion of a practicum or internship in an agency with an expert; studying a topic through correspondence with an instructor or some expert; studying a topic through correspondence with an instructor or expert; and engaging in a debate via on-line computer conferencing software.

f) *Myth 6: Facilitating self-direction is an easy way out for teachers*.

The successful facilitator of self-directed learning assumes a very active role that involves negotiation, exchange of views, securing needed resources, and validation of outcomes. In order for a "learning partnership" to develop between participants in the teaching-learning transaction, it is necessary for the instructor to move beyond the view of facilitator as a passive observer to one who actively works to ensure a high quality learning experience and the promotion of critical thinking by learners.

g) *Myth 7: Self-directed learning is limited primarily to those settings where freedom and democracy prevail.*

Learners that experience external pressures to learn will approach learning much differently than a learner voluntarily taking an evening class or participating in a graduate program. Learners that are accustomed to

teacher-directed settings may need much more time than others accepting that they can take personal responsibility for much of their learning.

h) *Myth 8: Self-direction in learning is limited primarily to white, middle-class adults.*

Caffarella and O'Donnell (1988) note that various studies confirmed that "the majority of adults, from all walks of life, are actively involved in self-directed learning projects, though the number of projects involved and the amount of time spent on these projects were quite diverse."

i) *Myth 9: Self-directed learning will erode the quality of institutional programs.*

Many institutions do not support self-directed learning because they either have a lack of understanding about the potential of self-direction in learning or because they embrace the traditional notion that teachers are experts and learners should be receivers of that expert knowledge. Brockett (1988) notes that the traditional outlook is safe, but also static.

j) *Myth 10: Self-directed learning is the best approach for adults.*

Self-directed learning approaches may not always be the most appropriate or expedient teaching approach to use in a given learning situation. It is important to ask questions regarding when it may be prudent to utilize an individualizing approach.

Brockett and Hiemstra (1991) then examine and present four different perspectives of self-directed learning:

a. *Lifelong Learning Perspective* – suggests that the outcome of any educational endeavor is to produce "continuing, inner directed, self-operating learners" (Kidd, 1973) then looks at four categories comprising lifelong learning: formal, nonformal, informal, and self-directed (Mocker & Spear, 1982).

b. *Self-Directed Learning and Schooling* – suggests that skills for self-education can be taught and practiced in schools and that teachers can gradually transfer authority and responsibility for self-direction to students (Gibbons & Phillips, 1982).

c. *Learning Process Perspective* – suggests that self-directed learning describes a process in which individuals take the initiative in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes (Knowles, 1975).

d. *Evolving Perspective* – suggests that an individual's view of self-directed learning will evolve over time.

Brockett and Himestra's (1991) Personal Responsibility Orientation (PRO) Model examines self direction in learning in two different dimensions: a) the *process dimension* in which "a learner takes responsibility for planning, implementing, and evaluating the learning process," and b) the *personality dimension* which centers on "the learner's desire or preference for assuming responsibility for learning". The process dimension, referred to as "self-directed learning," deals with the "external characteristics of an instructional process," while the personality dimension, referred to as "learner self-direction," deals

with the "internal characteristics of the learner." The PRO Model (Figure 4) recognizes the similarities, differences, and interrelatedness between self-directed learning and learner self-direction.

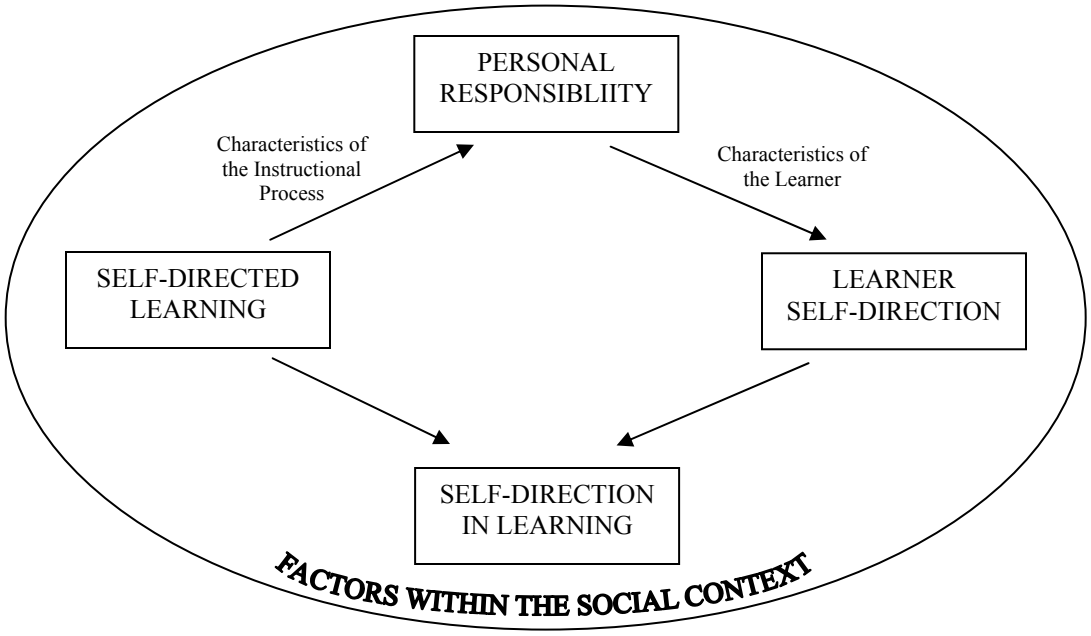

Figure 4. Brocket and Himestra's (1991) "Personal Responsibility Orientation Model" (Source: Adapted from Brockett and Hiemstra, 1991)

The cornerstone of the PRO model is *personal responsibility*, or an individual's potential for self-direction based upon his or her ability and/or willingness to take control of his or her own learning. Personal responsibility encompasses the concept of autonomy, the notion that "one can and does set one's own rules, and can choose for oneself the norms one will respect" or "one's ability to choose what has value…to make choices in harmony with self-realization" (Chene, 1983, p. 39).

The next component of the PRO Model is *self-directed learning*, which focuses on the process of instruction, centering on "the activities of planning, implementing, and

evaluating learning" (Brockett & Hiemstra, 1991). This aspect of self-direction encompasses factors external to the individual, such as "needs assessment, evaluation, learning resources, facilitator roles and skills, and independent study."

The third component of the PRO Model is *learner self-direction*, or the "characteristics of an individual that predispose one toward taking primary responsibility for personal learning endeavors" (Brockett & Hiemstra, 1991). Brockett and Hiemstra (1991) note that personality is "vital to a clearer understanding of self-direction in learning" due to the strong link between self-direction and self-concept and the mention of "goal-oriented, activity-oriented, and learning-oriented" learners.

The final component of the PRO Model is *self-direction in learning*, an umbrella concept that encompasses the connection between "the external factors that facilitate the learner taking primary responsibility for planning, implementing, and evaluating learning, and the internal factors or personality characteristics that predispose one toward accepting responsibility for one's thoughts and actions as a learner" (Brockett & Hiemstra, 1991). Brockett and Hiemstra (1991) state that both the internal and external aspects of self-direction can be viewed on a continuum where a given learning situation will fit somewhere within a range relative to opportunity for self-directed learning and, similarly, an individual's level of self-directedness will fall somewhere within a range of possible levels. Brockett and Hiemstra (1991) suggest that "optimal conditions for learning result when there is a balance or congruence between the learner's level of self-direction and the extent to which opportunity for self-directed learning is possible in a given situation." They also note that difficulties and frustrations often arise "when the

balance between the internal characteristics of the learner is not in harmony with external characteristics of the teaching-learning transaction."

Philip Candy

Candy (1991) bases his definition of self-direction on a continuum where teachers and learners exhibit varying levels of control over the learning process rather than on "simple, mutually exclusive" domains, where teacher and learner responsibilities "can be distinguished from one another on the basis of objective criteria" (p. 9). He then discusses two related domains in which self-directed learning takes place: the *instructional domain*, describing formal self-directed learning that occurs within an institution or other formal setting and the *autodidactic domain*, describing self-directed learning that occurs outside of an educational institution or other formal setting.

Candy (1991) hypothesizes that the two domains can be lined up, making one seamless continuum beginning with a "high degree of teacher control to pure 'autonomous' learning or autodidaxy" (p. 17). The autodidactic domain can be connected with the instructional continuum in the area linking learner control (independent study) to assisted autodidaxy. This "area of overlap represents the apparent intersection of domains where, from the point of view of the outside observer, it is impossible to discern whether the primary orientation is one of 'instruction' or of 'self-instruction'" (Candy, 1991, p. 17).

In the instructional domain, "the instructor maintains some degree of control (and hence ownership) over the instructional transaction." Even independent study, which puts the most control in the hands of the learner, is still considered a "technique of

instruction" (Candy, 1991, p. 18). In the autodidactic domain, "both ownership and control are vested in the learner from the outset," and the continuum illustrates "the amount and type of assistance [that is] obtained" (Candy, 1991, p. 18). Candy's model of self-directed learning is presented in Figure 5 below.

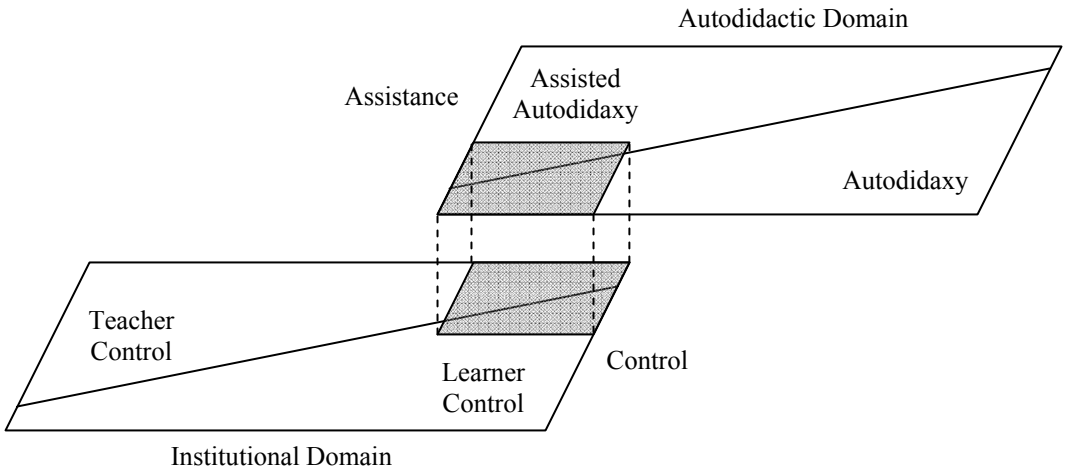

Figure 5. Relationship Between Institutional and Autodidactic Domains (Source: Adapted from Candy, 1991)

Owen (2002) identifies the following basic tenets that comprise Candy's (1991) definition of self-direction:

a) The interaction between a person and his or her environment;

b) Knowledge as tentative, evanescent, and socially constructed;

c) Learning as a qualitative shift in how phenomena are viewed; and

d) Individuals as engaging in complex, mutually interdependent relationship with their environments.

Gerald Grow

Gerald Grow (1991, p. 127) developed the Staged Self Directed Learning (SSDL) Model based upon concepts from Hersey and Blanchard's (1988) Situational Leadership Model. The underlying premise for Grow's SSDL Model is that all teaching is situational and should be matched to the student's readiness. Readiness can be defined as the "combination of ability and motivation" a student applies to each learning situation. The goal of instruction, then, is to provide a "mix of directiveness and personal interaction" that matches a student's readiness to accomplish the task at hand and that moves the student toward being more self-directing. The goal of the SSDL Model is "to propose a way for teachers to be vigorously influential while empowering students toward greater autonomy" (p. 128).

Grow (1991) bases the SSDL Model on the following assumptions:

a) The goal of instruction is to produce self-directed, lifelong learners;

b) "Good teaching is situational" – it varies in response to the learners' readiness;

c) "The ability to be self-directed is situational" (for example, one may be self-directed in one subject, but dependent in another). "Self-direction, however, is not entirely situational," rather a personality trait that is related to maturity. "Once developed, certain aspects of self-direction are transferable to new situations;"

d) Though the SSDL Model is built upon a strong belief in the value of self-directed learning, "there is nothing inherently wrong with being a

dependent learner," whether "temporary or permanent, limited to certain subjects or extending to all;"

e) "Just as dependency and helplessness can be learned, self-direction can be learned" and taught.

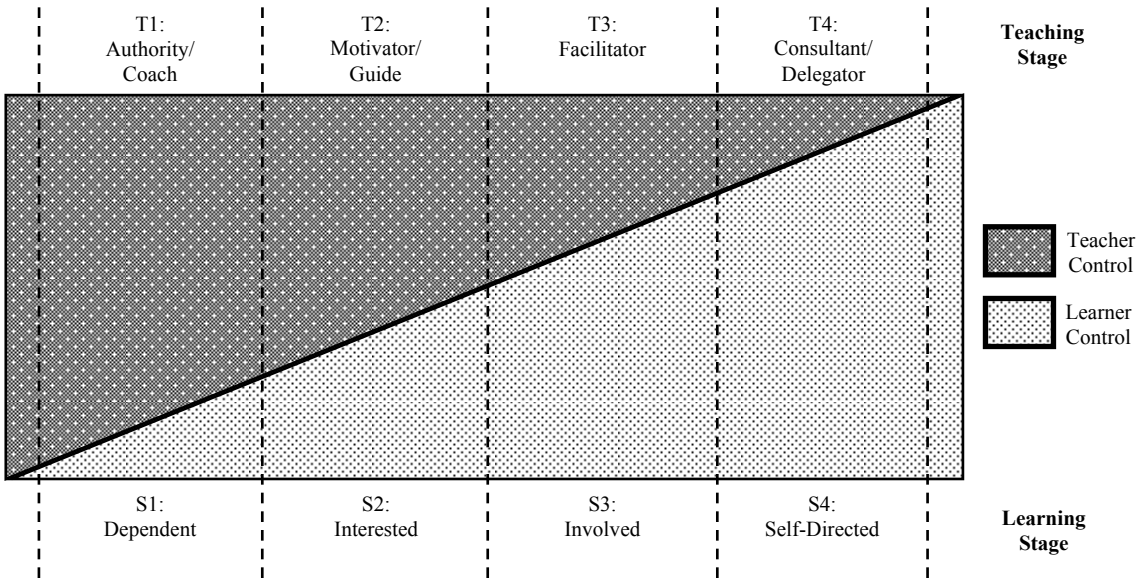

Figure 6. Grow's (1991) Staged Self-Directed Learning (SSDL) Model

Grow (1991) presents the SSDL Model on a continuum showing increasing learner-control and decreasing teacher-control as a student moves from the point of dependence to the point of self-directedness (Figure 6 above). This continuum falls within Candy's (1991) instructional domain. As control is transferred from the instructor to the learner, the instructor progresses through four stages: a) T1: Authority/ Coach; b) T2: Motivator/Guide; c) T3: Facilitator; d) T4: Consultant/Delegator. The learner also progresses through four stages concurrently as control is transferred from the instructor to the learner: a) S1: Dependent; b) S2: Interested; c) S3: Involved; d) S4: Self-Directed.

Stage 1: Learners of Low Self-Direction

Stage 1 learners, or "dependent" learners, need an instructor who is considered to be an expert or authority figure who will give them specific, detailed directions on what to learn, how to learn it, and when to learn it. Some dependent learners will learn very successfully under the guidance of an expert, others will seek to "passively slide through the educational system, responding only to teachers that 'make' them learn" (Grow, 1991, p. 129). Stage 1 is at the left of Grow's (1991) continuum, and is the most teacher-centered. Dependence is situational and therefore varies from subject to subject – some students will be dependent in only one subject, while others will be enduringly dependent.

Stage 1 instructors, dubbed "Authority/Coach," should use coaching or insight methods to equip learners to take an increasing control of their own learning. This can be facilitated through establishing credibility and authority early in a course or program of instruction, providing learners with a clearly-organized, rigorous approach to the subject-matter, providing straightforward objectives and techniques for achieving them, providing direction for learners, providing rigorous assignments with definite deadlines, and involving learners in the design and content of learning. Learning strategies that work most effectively with Stage 1 learners include formal lectures emphasizing subject matter, structured drills, highly specific assignments, and intensive individual tutoring.

Stage 2: Learners of Moderate Self-Direction

Stage 2 learners, or "motivated" learners, are considered to be good students by most instructors. They are open to learning, are generally interested in the subject matter,

and are more confident than Stage 1 learners, even though they may be ignorant in the subject matter being presented. They must be shown the meaning of an assignment before proceeding to see what value it will have in their own lives.

Stage 2 instructors, dubbed "Motivator/Guide," should persuade, explain, and sell, using a highly directive, but highly supportive approach to generate enthusiasm for learning and to reinforce learning willingness to learn. They should give clear explanations of why skills are important, how assignments will help the learners obtain the skills, and what value the assignments will have on the learner's lives. It is important for the Stage 2 instructor to encourage students to set attainable, realistic goals and hold them to the attainment of those goals in order to decrease dependence and increase self-directedness. Teaching strategies that work most effectively with Stage 2 learners include demonstration followed by guided practice; structured projects with predictable outcomes; close supervision with ample encouraging feedback; and highly interactive computerized drill and practice.

Stage 3: Learners of Intermediate Self-Direction

Stage 3 learners, or "Involved" learners, have prior knowledge and skills in the subject area and see themselves as participants, not just spectators in their own education. They are ready to explore the subject under the guidance of the instructor, but are also ready to explore some of it on their own. They have a good self-concept, self-confidence, sense of direction, and ability to work with others, but need to develop it further to further decrease their dependence on the instructor. They benefit greatly from learning how they learn and they can apply the knowledge to their own lives in order to learn more

effectively. They may examine themselves and their culture in order to understand how to separate what they feel, value, and want, from what they should feel, value, and want. They learn to value their own life experiences as well of the personal experiences of others. They develop critical thinking, individual initiative, and a sense of themselves as co-creators of the culture that shapes them.

Stage 3 instructors, dubbed "Facilitators," share decision making with students, letting them take increasing control of their own learning. They concentrate on facilitation and communication and support students in using the skills that they have. They offer additional tools, methods, and techniques for increasing self-direction and meaningful ways of interpreting experiences. They help students transition toward independence by negotiating interim goals and evaluations then giving learners more rope. Teaching strategies that work most effectively with Stage 3 learners include: open-ended, but carefully designed student group projects approved and facilitated (but not directed) by the instructor; providing written criteria, learning contracts, and/or evaluation checklists to help learners monitor their own progress; and seminars with instructor as a participant.

Stage 4: Learners of High Self-Direction

Stage 4 learners, or "Self-Directed" learners, set their own goals and standards for learning – with or without help from experts and use experts, institutions, and other resources to pursue these goals. They are both willing and able to take responsibility for their own learning, direction, and productivity. They exercise skills in time management, project management, goal-setting, self-evaluation, peer critique, information gathering,

and use of educational resources. The most mature learners can learn from any kind of instructor, but most thrive in an atmosphere of autonomy.

Stage 4 instructors, dubbed "Consultant/Delegator," consult with learners to develop written criteria, an evaluation checklist, a timetable, and a management chart for each project they develop. They hold regular meetings so students can chart and discuss progress and problems. The encourage students to cooperate and consult with each other, but not to abandon responsibility. They focus on the process of being productive as well as the product. They emphasize long-term progress in career or life, through stages such as inter, apprentice, journeyman, master, and mentor. They actively monitor progress to ensure success, and step in only to assist students in acquiring the skills to be self-directive and self-monitoring. Teaching strategies that work most effectively with Stage 4 learners include internships; term projects; independent study; theses/dissertations; and creative writing projects.

Dealing with Mismatches between Learning Stage and Teaching Style

"Problems arise when the teaching style is not matched to the learner's level of self-direction" (Grow, 1991, p. 136). There are sixteen possible matches/mismatches, out of which four pairings are perfect matches, six are mismatches, and two are severe mismatches. Each mismatch will be discussed in detail below and are presented holistically in the matrix below (Figure 7).

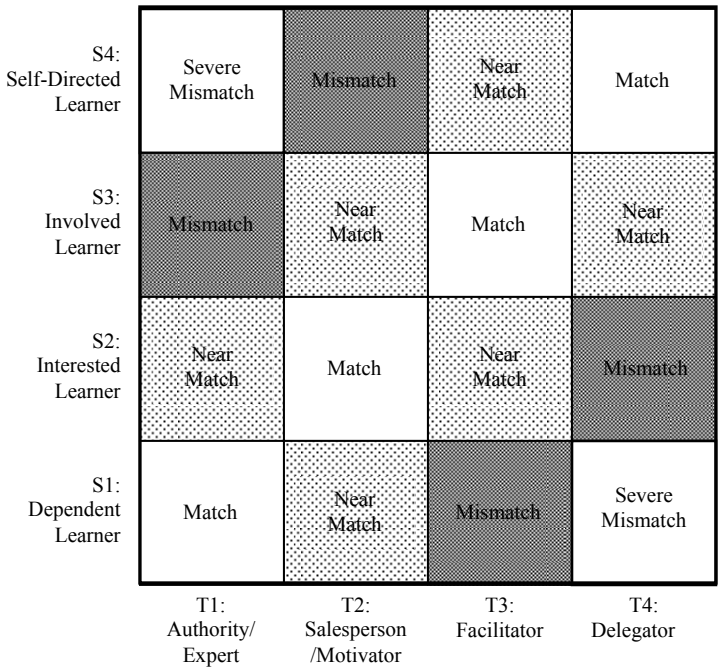

Figure 7. Match/Mismatch Between Learner Stages and Teaching Styles (Source: Grow, 1991)

The T1/S4 Severe Mismatch

Some Stage 4, self-directed students develop the ability to function well and retain overall control of their learning, even under directive teachers. Others, however, will resent the authoritarian teacher and rebel against the barrage of low level demands. "This mismatch may cause the learner to rebel or retreat into boredom." The T1 instructor will probably not interpret such a rebellion as the result of a mismatch, but rather will see the student as "surly, uncooperative, and unprepared to get down to the hard craft of learning basic facts" (Grow, 1991, p. 137).

The T1/S3 Mismatch

This mismatch occurs when students who are capable of more individual involvements in learning are relegated to passive roles in authoritarian classrooms. This

mismatch is common among adults who return to college. Their life experiences and learning skills enable them to learn at the S3 and S4 level in many subjects, but at many colleges, they may find faculty more accustomed to using S1 and S2 methods on adolescents. After many years of responsibility, adults may experience difficulty learning from S1 teachers, because many of them are used to being in authority. They won't just jump through hoops just because somebody says to – even though younger students are ordinarily expected to do so.

The T1/S2 Near Match

The T1/S2 Near Match combines students that are available, interested, and somewhat motivated with an instructor that may be too directive and rigid. Where S2 students are looking for someone to persuade, explain, and motivate and an environment where they can begin to share their life experiences with others and assimilate learning with their experiences to construct new knowledge, the T1 instructor is lecturing and providing assignments that serve to pour knowledge into the learners' heads without taking their needs and interested into account.

The T2/S4 Mismatch

The T2/S4 Mismatch combines students that are ready to set their own goals for what they need to learn and how they want to learn it, with an instructor that is providing too much direction and rigidity. While the instructor may be engaging and inspiring to listen to, the students are looking for the freedom to interact with the people and the resources necessary to construct new meaning out of something that is relevant in their

own lives. These students will be somewhat frustrated with the learning situation, may feel smothered by the instructor, and may seem rebellious as they seek to take more control of their own learning.

The T2/S3 Near Match

The T2/S3 Near Match combines students that have the prior knowledge and skills to begin exploring the subject on their own under the direction of an expert, with an instructor that is providing a little too much direction. These students have an understanding of how their prior life experiences and the experiences of others are relevant and important in constructing new knowledge. They are looking for opportunities to share with and listen to other students, but are learning under an instructor that is doing a little more lecturing and sharing than the students need. This mismatch may result in students feeling babied and unengaged.

The T2/S1 Near Match

The T2/S1 Near Match combines students that are in need of an authority figure that will give specific, detailed instructions on what to learn and how to learn it, with an instructor that is encouraging students to set their own goals for learning. S1 students need rigorous assignments that will help them review basic facts with definite deadlines for completing them, where the T2 instructor may be providing more loosely structured assignments that allow the students to apply new concepts to their prior knowledge, skills, and experiences. The result of this mismatch may be poor performance from the

students due to the lack of direction they are receiving. The advantage will be that students are encouraged to increase their level of self-directedness.

The T3/S4 Near Match

The T3/S4 Near Match combines students who are ready to set their own goals for learning and that understand the importance of their prior experiences and the experiences of others to the learning process with an instructor that is guiding students to reach specific outcomes. The S4 student is ready to undertake his/her own project, using the instructor as a resource, where the T3 instructor will have his/her hands in the development of the goals and objectives for project and will provide more direction and guidance than the student needs. Learning can take place under this near match with little frustration between the student and the instructor, but the danger lies in preventing student growth and perpetuating dependence.

The T3/S2 Near Match

The T3/S2 Near Match combines students who are interested in the subject matter, are motivated to learn, but may lack prior knowledge, skills, and/or self-confidence to be successful on their own with an instructor that gives students more freedom than they are ready for. S2 students need an instructor to guide them through the learning process without leaving decisions on what to learn and how to learn it to them. They need to learn from an instructor's life experiences while being encouraged to find the value and meaning of their own life experiences and the experiences of others. The

result of this mismatch will be that students may feel like they are being left in the dust. They may retreat from the learning experience and may not perform up to their potential.

The T3/S1 Mismatch

The T3/S1 Mismatch combines students who are looking to the instructor to be the expert and authority in the subject are with an instructor that shares responsibility for teaching and learning with the students. The instructor will encourage students to share prior life experiences and relate them to the subject matter, while the students will not see the value of their experiences and will instead rely on the experience of the instructor to construct new knowledge. S1 students are in need of specific learning objectives established by the instructor and rigorous assignments that will assess the learning of those objectives, but are placed instead with an instructor that will allow the students to set objectives for learning and will assign group projects to help students meet the objectives they set. S1 students will not be ready for the freedom that the T3 instructor will give, will feel left behind, and will not perform well.

The T4/S3 Near Match

The T4/S3 Near Match combines a student that is ready for some freedom, who possesses some of the skills needed to be a successful self-directed learner, but who may lack the self-confidence, self-concept, and ability to work with others with an instructor that will give students the freedom to set objectives on their own with the expectation that the student will use the instructor and other students as resources for learning. The S3 student may need close supervision where the T4 instructor will give the students more

space and may only come into the learning experience when invited. This mismatch may result in mild discomfort on the part of the student as they are given freedom that they may be equipped for, but are not yet ready to handle.

The T4/S2 Mismatch

The T4/S2 Mismatch combines students who are interested in the subject matter, are motivated to learn, but lacking in the knowledge, skills, and abilities to know what they need to learn, with an instructor that is going to draw from the student's prior knowledge to help them establish objectives to learn according to their needs. Because S2 students don't know what they need and are not confident in their own ability to learn from their past experiences, this could create a problem. This mismatch will leave most S2 students with the question "now what?" They will feel that the instructor is absent and will feel lost and alone.

The T4/S1 Severe Mismatch

The T4/S1 Severe Mismatch occurs when a T4 instructor delegates responsibility that the learner is not equipped to handle, causing resentment in the learner. With such students, humanistic methods may fail. Many students will not be able to make use of the "freedom to learn," because they lack the skills such as goal-setting, self-evaluation, project management, critical thinking, group participation, learning strategies, information resources, and self-esteem – which make self-directed learning possible. Wanting close supervision, immediate feedback, frequent interaction, constant motivation, and the reassuring presence of an authority figure telling them what to do,

such students are unlikely to respond well to the delegating style of a nice humanistic facilitator, hands-off delegator, or critical theorist who demands that they confront their learning roles. This severe mismatch is illustrated in Figure 8 below.

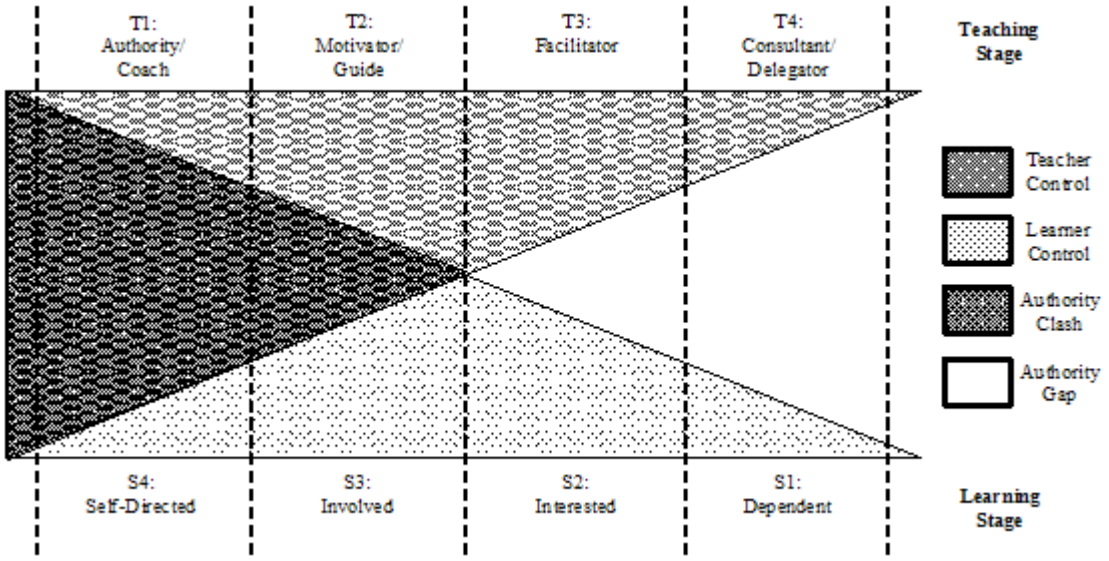

Figure 8. Severe Mismatches in Learning Stage and Teaching Style in Grow (1991)

Applying the SSDL Model to Instruction

Grow (1991) presents the SSDL Model as a guide to instruction and proposes that its goal is to move students from the point of dependence to the point of self-directedness by applying the appropriate teaching method(s) to the appropriate learning stage. As students move through the process, they will attain the "knowledge, skills, motivation, and goal of becoming more autonomous in learning and…in life" (Grow, 1991, p. 142).

Because self-direction is situational and thus may vary from course to course, it is often feasible and necessary for an instructor to use a variety of teaching strategies (even those applicable to other learning stages) that will help orient a student with the course

material, engage them at their current level of self-directedness, and challenge them to grow to the next level of self-directedness. Grow (1991) presents an application of the SSDL Model to this process, which is presented in Figure 9 below.

In Figure 9, the six areas of significant mismatch between learning stage and teaching style are blocked out, highlighting the areas where learning stage and teaching style are matched or nearly matched. "Those ten areas, moving in the diagram from lower left diagonally to upper right, constitute and area of workable match – a 'learning field'…onto which several pedagogical activities can be usefully mapped" (Grow, 1991, p. 143).

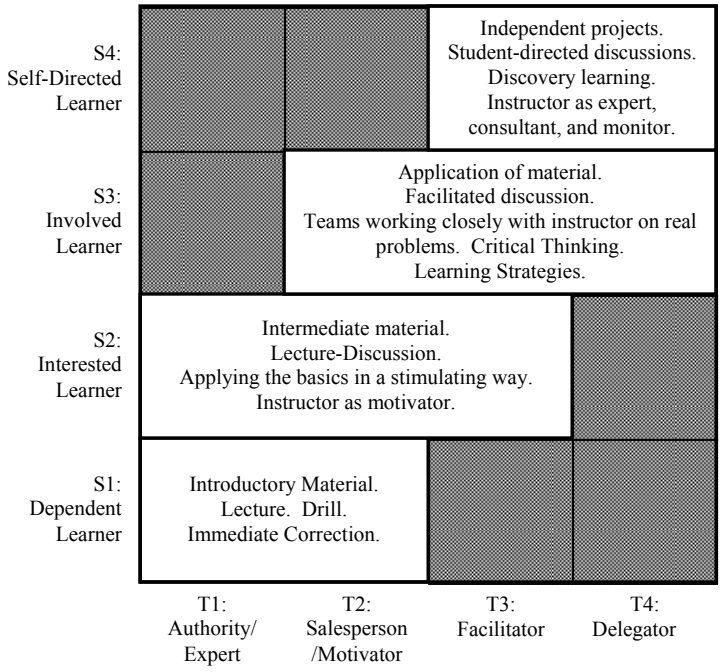

Figure 9. Applying the SSDL Model to Instruction (Source: Grow, 1991)

Grow (1991) contends that the SSDL Model can be applied in such a way where a student will be moved through all four learning stages, from dependence (S1) to self-

directedness, through a course. Grow (1991) describes an experimental course conducted by Hersey and Blanchard (1988), which "began with lectures, moved to directed discussions, then to less-structured discussions, and finally to student-directed discussions" (p. 143). At the same time, the "teacher gradually changed roles from expert, to guide, to facilitating participant, to consultant for student-directed activities" (p. 143-144).

A more realistic application of the model, Grow (1991) contends, is to plan the course around a particular learning stage and use whatever teaching styles may be necessary throughout the course to convey the material by the most effective means possible. For example, a course may be designed where most of the work occurs in the S3 learning stage, where the T2 teaching style may be needed at times to motivate students to continue learning, the T1 teaching style may be needed to drill in the basics when the instructor finds the students to be deficient in basic skills, and the T4 teaching style may be used to challenge the students to become more self-directed by taking more responsibility for learning.

Finally, Grow (1991) proposes that the SSDL Model can be used to plan an overall college curriculum where students are moved from dependence to self-direction as they progress from introductory to upper-level courses using the following construct:

a) S1 students are matched with introductory courses taught using T1 and T2 teaching styles;

b) S2 students are matched with intermediate courses taught using T1, T2, and T3 teaching styles;

c) S3 students are matched with advanced courses taught using T2, T3, and T4 teaching styles;

d) S4 students are matched with graduate courses, internships, and/or independent studies taught using T3 and T4 teaching styles.

Instruments Developed to Measure Self-Directed Learning

The Oddi Continuing Learning Inventory (OCLI)

Oddi (1986) developed the Oddi Continuing Learning Inventory (OCLI) to identify self-directed continuing learners, that is, to determine the propensity of professionals to continue learning throughout life. The OCLI was focused upon and built around "the personality characteristics of individuals whose learning behavior is characterized by initiative and persistence in learning over time through a variety of learning modes" (Oddi, 1986, p. 98). It can be applied in a variety of contexts, including self-planned learning projects, participation in formal or informal group learning activities, or reflection on personal performance and life experiences.

From an analysis of recurring themes and research findings from the literature on self-directed learning, Oddi (1986) compiled a list of common personality characteristics exhibited by self-directed learners. The list was then refined into three interrelated and mutually reinforcing personality dimensions of self-directed continuing learners: a) proactive drive vs. reactive drive; b) cognitive openness versus defensiveness, and commitment to leaning vs. apathy or aversion to learning. Each of the three dimensions was perceived to lie on a separate continuum ranging from high amounts of the

characteristic (self-directing continuing learner) to low amounts of the characteristic (non-self-directing continuing learner).

Proactive Drive vs. Reactive Drive (PD/RD) focused on "the learner's ability to initiate and persist in learning without immediate or obvious external reinforcement" (Oddi, 1986, p. 98). The 'self-directed continuing learner' possesses the following characteristics: self-regulating behavior, high self-esteem, high self-confidence, and "engagement in self-initiated and self-sustained learning activity directed toward higher level goals" (Oddi, 1986, p. 99). The 'non-self-directed continuing learner' possessed the following characteristics: reliance on extrinsic forces to stimulate learning, tendency to discontinue learning on encountering obstacles, engagement in learning to meet lower order needs, and low self-confidence.

Cognitive Openness vs. Defensiveness (CO/D) focused on the "openness to change as an essential attribute of the self-directed learner" (Oddi, 1986, p. 99). The 'self-directed continuing learner' possesses the following characteristics in the CO/D dimension: openness to new ideas and activities, ability to adapt to change and tolerance of ambiguity. The 'non-self-directed continuing learner' possesses the following characteristics in the CO/D dimension: rigidity, fear of failure, and avoidance of new ideas and activities.

Commitment to Learning vs. Apathy or Aversion to Learning (CL/AAL) focuses on "the existence of groups of individual who find learning enjoyable for its own sake, tend to seek learning on a continual basis, and actively participate in learning through a variety of modes" (Oddi, 1986, p. 99). The 'self-directed continuing learner' possesses the following characteristics in the CL/AAL dimension: the expression of positive

attitudes toward engaging in learning activities of varying sorts and a preference for more thought-provoking leisure pursuits. The 'non-self-directed continuing learner' posseses the following characteristics in the CL/AAL dimension: indifference or hostile attitudes toward engaging in learning activities and less engagement in activities commonly regarded as promoting learning.

The OCLI was found to be reliable and valid when used in its entirety.

The Self-Directed Learning Readiness Scale (SDLRS)

Guglielmino (1977) developed the Self-Directed Learning Readiness Scale (SDLRS) out of a need identified in the literature and in practice to: a) "learn more about the highly self-directing learner" and b) "develop a means of determining an individual's readiness for self-directed learning, as well as a device for measuring the efficacy of programs designed to foster the attitudes and skills which are involved in increased self-direction in learning" (Guglielmino, 1977, p. 3). A Delphi study was conducted to obtain a consensus from a panel of experts on "the most important personality characteristics of self-directed learners, especially behavioral and attitudinal characteristics" (p. 4).

The Delphi study revealed the following eight factors and corresponding attributes:

a) *Openness to Learning Opportunities*, involving: "interest in learning perceived to be greater than that of others, a satisfaction with one's initiative, a love of learning and expectation of continual learning, an attraction to sources of knowledge, tolerance of ambiguity, ability to

accept and use criticism, intellectual responsibility, and a sense of responsibility for one's own learning" (p. 61);

b) *Self-Concept as an Effective Learner*, involving: "confidence in self-learning, ability to organize one's time for learning, self-discipline, knowledge of learning needs and resources, and self-view as a curious individual" (p. 62);

c) *Initiative and Independence in Learning*, involving: "the active pursuit of baffling questions, recognition of desires for learning, preference for active participation in the shaping of learning experiences, confidence in the ability to work well on one's own, love of learning, satisfaction with reading comprehension skills, knowledge of learning resources, ability to develop a plan for one's work, and initiative in beginning new projects" (p. 64);

d) *Informed Acceptance of Responsibility for One's Own Learning*, involving: "a view of oneself as average or above average in intelligence, willingness for difficult study in areas of interest, belief in an exploratory function of education, preference for an active role in shaping one's own learning experiences, willingness to accept responsibility for one's own learning (or lack of it), and ability to judge one's own learning programs" (p. 65).

e) *Love of Learning*, involving: "admiration of 'people who are always learning new things," a strong desire to learn, and an enjoyment of inquiry" (p. 66);

f) *Creativity*, involving: "risk-taking, the ability to think of unusual solutions, the ability to think of numerous approaches to a topic, a tolerance for ambiguity, preference for open learning situations, and curiosity" (p. 66);

g) *Positive Orientation to the Future*, involving: "a self-view as a lifelong learner, enjoyment of thinking about the future, and a tendency to view problems as challenges rather than stop signs" (p. 67);

h) *Ability to Use Basic Study Skills and Problem-Solving Skills*, involving: "the ability to use study skills and problem solving skills" (p. 68).

The SDLRS was found to be reliable and useful as a tool for furthering research in Self-Directed Learning.

Pedagogy

Knowles, Holton, and Swanson (1998) define pedagogy as "the art and science of teaching children" (p. 61). The pedagogical model is teacher-centered, assigning the teacher the full responsibility of "making all decisions about what will be learned, how it will be learned, when it will be learned, and if it has been learned" (p. 62). Pedagogy is based on these assumptions about learners:

a) *The need to know*. "Learners only need to know that they must learn what the teacher teaches if they want to pass and get promoted; they do not need to know how want they learn will apply to their lives" (p. 62).

b) *The learner's self-concept*. "The teacher's concept of the learner is that of a dependent personality; therefore, the learner's self-concept eventually becomes that of a dependent personality" (p. 62).

c) *The role of experience*. "The learner's experience is of little worth as a resource for learning; the experience that counts is that of the teacher, the textbook writer, and the audio-visual aids producer. Therefore, transmittal techniques are the backbone of pedagogical methodology" (p. 63).

d) *Readiness to learn*. "Learners become ready to learn what the teacher tells them they must learn if they want to pass and get promoted" (p. 63).

e) *Orientation to learning*. "Learners have a subject-centered orientation to learning; they see learning as acquiring subject-matter content. Therefore, learning experiences are organized according to the logic of the subject-matter content" (p. 63).

f) *Motivation*. "Learners are motivated to learn by external motivators (such as grades, the teacher's approval or disapproval, parental pressures)" (p. 63).

Andragogy

Knowles, Holton, and Swanson (1998) define andragogy as "the art and science of helping adults learn" (p. 60). The andragogical model is based on several key assumptions:

a) *The need to know*. "Adults need to know why they need to learn something before undertaking to learn it. Tough (1979) found that when

adults undertake to learn something on their own, they will invest considerable energy in probing into the benefits they will gain from learning it and the negative consequences of not learning it. Instructors should make the intellectual case for the value of the learning in improving the effectiveness of the learners' performance or the quality of their lives." The most effective means of accomplishing this goal is to provide tools that will allow the learners to discover for themselves "the gaps between where they are now and where they want to be. Personnel appraisal systems, job rotation, exposure to role models, and diagnostic performance assessments are examples of such tools" (p.65). Researchers have found three dimensions to the need to know: "the need to know how learning will be conducted, what learning will occur, and why learning is important" (p. 133).

b) *The learners' self-concept.* "Adults have a self-concept of being responsible for their own decisions, for their own lives. Once they have arrived at that self-concept they develop a deep psychological need to be seen by others and treated by others as being capable of self-direction. They resent and resist situations where others impose their wills on them" (p. 65).

c) *The role of the learners' experiences*. Adults come into an educational activity with both a greater volume and a different quality of experience than youth. By virtue of having lived longer, they have accumulated more experience than they had as youth. But they also have had a different kind

of experience…in any group of adults, there will be a wider range of individual differences than is the case with youths. Any group of adults will be more heterogeneous in terms of background, learning style, motivation, needs, interests, and goals than is true of a group of youths. Hence, greater emphasis in adult education is placed on individualism of teaching and learning strategies" (p. 66). There are four means by which an adult's experiences impact learning: "1) Create a wider range of personal experiences; 2) Provide a rich resource for learning; 3) Create biases that can inhibit or shape new learning; 4) Provide grounding for adults' self-identity" (p. 139).

d) *Readiness to learn*. "Adults become ready to learn those things they need to know and be able to do in order to cope effectively with their real-life situations. An especially rich source of readiness to learn is the developmental tasks associated with moving from one developmental stage to the next…It is not necessary to sit by passively and wait for readiness to develop naturally, however. There are ways to induce readiness through exposure to models of superior performance, career counseling, simulation exercises, and other techniques" (p. 67).

e) *Orientation to learning*. "In contrast to children's and youths' subject-centered orientation to learning, adults are life-centered (task-centered or problem centered) in their orientation to learning. Adults are motivated to learn to the extent that they perceive that learning will help them perform tasks or deal with problems that they confront in their life situations. Furthermore, they learn new knowledge, understandings, skills, values, and attitudes most effectively when they are presented in the context of application to real-life situations" (p. 67).

f) *Motivation*. While adults are responsive to some external motivators (better jobs, promotions, higher salaries, and the like), the most potent motivators are internal pressures (the desire to increased job satisfaction, self-esteem, quality of life, and the like)" (p. 68).

For a comparison of pedagogy and andragogy, see Table 1.

Table 1
A Comparison of the Key Assumptions of Pedagogy and Andragogy. (Adapted from Knowles, Holton, & Swanson, 1998)

	Pedagogy	Andragogy
1) The need to know	• Learners only need to know that they must learn what the teacher teaches if they want to pass and get promoted; • Learners do not need to know how what they learn will apply to their lives.	• Adults need to know why they need to learn something before undertaking to learn it. • Instructors should make the intellectual case for the value of the learning in improving the effectiveness of the learners' performance or the quality of their lives.
2) The learners' self-concept	• The teacher's concept of the learner is that of a dependent personality; therefore, the learner's self-concept eventually becomes that of a dependent personality.	• Adults have a self-concept of being responsible for their own decisions, for their own lives. • They resent and resist situations where others impose their wills on them.
3) The role of the learners' experiences	• The learner's experience is of little worth as a resource for learning; • The experience that counts is that of the teacher, the textbook writer, and the audio-visual aids producer.	• Adults come into an educational activity with both a greater volume and a different quality of experience than youths • Greater emphasis in adult education is placed on individualism of teaching and learning strategies.
4) Readiness to learn	• Learners become ready to learn what the teacher tells them they must learn if they want to pass and get promoted	• Adults become ready to learn those things they need to know and be able to do in order to cope effectively with their real-life situations.
5) Orientation to learning	• Learners have a subject-centered orientation to learning. • Learning experiences are organized according to the logic of the subject-matter content.	• Adults have a life-centered (task-centered or problem centered) orientation to learning. • Adults are motivated to learn to the extent that they perceive that learning will help them perform tasks or deal with problems that they confront in their life situations.
6) Motivation	• Learners are motivated to learn by external motivators (such as grades, the teacher's approval or disapproval, parental pressures).	• Adults are motivated to learn by internal pressures (the desire to increased job satisfaction, self-esteem, quality of life, and the like.

Andragogy and Self-Directed Learning

"Andragogy suggests that adults have a self-concept of being responsible for their own lives and expect others to treat them as being capable of self-direction. Adult education suggests that the purpose of learning should be to develop self-directing learning capacity in adults (Brookfield, 1986)," as cited in Knowles, Holton, and Swanson, 1998. The continuum between pedagogy and andragogy provides an effective framework upon which to organize thinking about increasing self-directedness. As an instructor seeks to decrease dependence within a course, he/she should shift from using pedagogical teaching methods to andragogical teaching methods. Figure 10 below demonstrates where each teaching strategy should be applied.

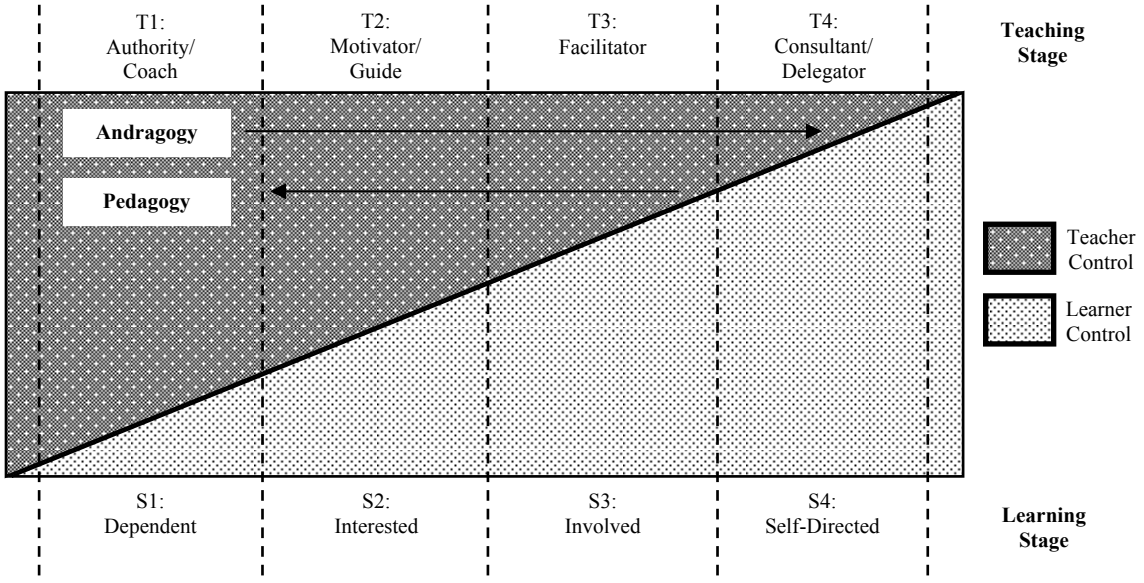

Figure 10. Teaching Strategies Appropriately applied to the Grow's (1991) Staged Self-Directed Learning Model

Developing a Decision Model to Measure Self-Directedness

For the purpose of this study, self-direction in adult learning is operationally defined as both a personality trait and a process that a learner uses to take control of the learning process. A personality trait is an endearing characteristic of the learner that remains constant over time is unlikely to change. A process is a construct that can be taught and learned.

CHAPTER III

METHODOLOGY

This chapter will describe the research design, pilot test, final instrumentation, reliability and validity, data collection, and statistical procedures that were used in this research.

Research Design

The research design was descriptive and correlational in nature. This study was designed to describe the students' and instructors' level of self-directedness in a course; describe the students' and instructors' level of agreement with the key assumptions of andragogy; compare the students' level of self-directedness in a course with the students' level of agreement with the key assumptions of andragogy; describe whether instructors with a high level of agreement with the application of the key assumptions of andragogy to teaching will be more likely to foster self-directedness in students; describe whether students with a high level of agreement with the key assumptions of andragogy will be more likely to be self-directed than students with a low level of agreement; develop a decision model to help instructors minimize mismatches between the instructor's teaching style within the context of a course; and to validate and pilot two instruments. The conceptual framework was developed around Knowles, Holton, and Swanson's (1998) key assumptions of andragogy and Grow's (1991) Staged Self-Directed Learning

(SSDL) Model. The decision model was developed from the researcher's understanding of self-directedness at each level for students and instructors. The review of literature provides the basis for this understanding.

This study includes four variables that describe self-directedness and six variables that describe the level of agreement with the key assumptions of andragogy. The variables selected to describe the students' level of self-directedness or learning stage include: a) S1: Dependent, b) S2: Interested, S3) Involved, and S4) Self-Directed. The variables selected to describe the instructors' level of self-directedness or teaching stage include: a) T1: Authority/Coach, b) T2: Motivator/Guide, c) T3: Facilitator, and d) T4: Consultant/Delegator. The variables associated with the key assumptions of andragogy and include: a) the need to know, b) the learners' self-concept, c) the role of the learners' experiences, d) readiness to learn, e) orientation to learning, and f) motivation.

Because of the sensitivity of research on human subjects, Institutional Review Board (IRB) approval was needed before collecting the data. IRB Approval was requested for the instruments (2004-0518) and was approved on October 1, 2004 (see Appendix A).

Pilot Test

The pilot test was conducted in three phases. The first phase was performed using three sections of an undergraduate course in the Department of Poultry Science at Texas A&M University. The first phase tested the first iteration of the instruments (see Appendix B and Appendix C), which included twenty-four (24) statements in the first category (Attributes Contributing to the Level of Self-Directedness) and twenty-four (24)

statements in the second category (Attributes Associated With the Key Assumptions of Andragogy). Participants were asked to indicate their level of agreement with the statements in each of the categories using a four-point Likert scale including the following choices: Strongly Disagree, Disagree, Agree, and Strongly Agree. Data were collected during the Fall 2004 semester. In Course Section A, one (1) instructor and thirty-five (35) students responded. In Course Section B, one (1) instructor and forty-four (44) students responded. In Course Section C, one (1) instructor and forty (40) students responded. The total number of respondents was 122. Reliability for the instruments was estimated by calculating a Cronbachs alpha. Instrument reliability for Part 1: Attributes Contributing to Level of Self-Directedness was r=.89 and for Part 2: Attributes Associated with the Key Assumptions of Andragogy was r=.94.

The second phase was performed using an undergraduate course in the Department of Agricultural Education at Texas A&M University. The second phase tested the second iteration of the instruments (see Appendix D), which broke the twenty-four (24) statements from the first category into six (6) item sets containing four statements each. The item sets contained a statement describing each of the four dependent variables and forced participants to choose only one of the four. Data collection occurred during the Fall 2004 semester with twenty-five (25) students participating. Reliability for section one of the modified instrument was determined using pretest/posttest methods and was calculated using a paired samples t-test, $t(24)$=.93, p=.00.

The third phase was performed using four undergraduate courses in the Department of Agricultural Education and one undergraduate course in the Department

of Military Science (which have been coded for purposes of reporting). The purpose of the third phase was to test the third and final iteration of the instruments (see Appendix E and Appendix F), which measured the dependent variables in six (6) item sets containing four (4) statements each and the independent variables in six (6) item sets containing two (2) statements each – forcing participants to choose their level of agreement with pedagogy or andragogy. Data collection occurred during the Fall 2004 semester. In Course A, one (1) instructor and nineteen (19) students responded. In Course B, one (1) instructor and twenty-two (22) students responded. In Course C, one (1) instructor and seventeen (17) students responded. In Course D, one (1) instructor and seventy-seven (77) students responded. In Course E, one (1) instructor and (49) students responded. The total number of respondents was 189. Reliability for the instruments was estimated by calculating a Cronbachs alpha. Instrument reliability for Part 1: Attributes Contributing to Level of Self-Directedness was calculated at r=.47 and instrument reliability for Part 2: Attributes Associated with the Key Assumptions of Andragogy was calculated at r=.58.

Recommendations for increasing instrument reliability are provided in Chapter V. The use of pretest/posttest for estimating reliability resulted in more reliable data than did the use of a Cronbach's alpha. Because of the design and implementation of the final phase of testing (one-shot case study), it was not possible to use pretest/posttest procedures for estimating reliability. The use of a Cronbach's alpha to estimate reliability may have resulted in artificially low reliability results.

Final Instrumentation

The research instruments were designed based upon the review of literature and were divided into two sections.

The first section, composed of six (6) item sets containing four (4) statements each, was designed to measure the students'/instructors' level of self-directedness (Grow, 1991). Each of the four (4) statements in each item set represents a different teaching or learning stage. In each of the item set, the participants were asked to choose the statement that they had the highest level of agreement with. The level of measurement for this variable was nominal.

The second section, composed of six (6) item sets containing (2) statements each, was designed to measure the students'/instructors' level of agreement with the key assumptions of andragogy (Knowles, Holton, & Swanson, 1998). One statement in each item set represents a pedagogical approach, the other represents an andragogical approach. In each item set, the participants were asked to choose the statement that they had the highest level of agreement with. The level of measurement of this variable was nominal.

Reliability and Validity

The instruments were evaluated initially for content and face validity by faculty in the Department of Agricultural Education at Texas A&M University. Revisions to wording and structure were made after each pilot test to increase reliability and validity of the instrument.

Responses from the instructors and students in the Agricultural Education and Military Science courses were tested for reliability using Cronbach's Alpha. Reliability for "Part 1: Attributes Contributing to Level of Self-Directedness" was estimated to be r=.47 with six reliability coefficients and realibility for "Part 2: Attributes Associated with the Key Assumptions of Andragogy" was estimated to be r=.58 with six reliability coefficients.

Data Collection

Data for the pilot test were collected using printed questionnaires that were distributed to the instructors selected to participate in the study (n=5). The questionnaires included a letter that described the study. Participants were assured that their responses would be kept confidential, combined with the responses of others, and reported as grouped data.

The questionnaires were distributed and were returned to the researcher during the Fall 2004 semester. A total of 189 questionnaires were returned from the five (5) courses selected to participate in the study.

Data Analysis

The data collected from the questionnaires were analyzed using the Statistical Package for Social Sciences (SPSS, Inc., 12.0.2, 2004). A summary of the statistical procedures used to analyze the data is provided below, reported by objective.

Objective 1

The first objective was to describe students' level of self-directedness within a course.

The variables associated with "Part 1: Attributes Contributing to Level of Self-Directedness" were analyzed and described by summing and averaging the responses on each of the six item sets contained in Part 1 of the instrument for each respondent in each course. The overall level of student self-directedness in a course was determined by summing and averaging the means of individual participants' responses. Level of self-directedness was analyzed and described using frequencies and percentages.

Objective 2

The second objective was to describe the instructors' teaching stage within a course.

The variables associated with "Part 1: Attributes Contributing to Level of Self-Directedness" were analyzed and described by summing and averaging the responses on each of the six item sets contained in Part 1 of the instrument for each respondent in each course. The instructor's teaching stage was determined by summing and averaging the means of individual participants' responses. The instructor's teaching stage was analyzed and described using frequencies and percentages.

Objective 3

The third objective was to describe the students' level of agreement with the key assumptions of andragogy.

Each of the variables in "Part 2: Attributes Associated with the Key Assumptions of Andragogy" were analyzed and described by summing and averaging the responses on each of the six item sets contained in Part 2 of the instrument for each respondent. The overall level of agreement with the key assumptions of andragogy was determined by summing and averaging the means of individual participants' responses in each course. Level of agreement with the key assumptions of andragogy in each course was analyzed and described using frequencies and percentages.

Objective 4

The fourth objective was to describe the instructors' level of agreement with the key assumptions of andragogy.

Each of the variables in "Part 2: Attributes Associated with the Key Assumptions of Andragogy" were analyzed and described by summing and averaging the responses on each of the six item sets contained in Part 2 of the instrument for each respondent. The overall level of agreement with the key assumptions of andragogy was determined by summing and averaging the means of individual participants' responses in each course. Level of agreement with the key assumptions of andragogy in each course was analyzed and described using frequencies and percentages.

Objective 5

The fifth objective was to compare the students' level of self-directedness in a course with the students' level of agreement with andragogy.

Each of the variables in "Part 1: Attributes Associated with the Level of Self-Directedness" and in "Part 2: Attributes Associated with the Key Assumptions of Andragogy" were analyzed and described by summing and averaging the responses on each of the six item sets contained in Part 1 and Part 2 of the instrument for each respondent. The overall level of self-directedness and the overall level of agreement with the key assumptions of andragogy was determined by summing and averaging the means of individual participants' responses. For each of the five (5) courses, a compare means was conducted to determine whether a higher level of agreement with the key assumptions of andragogy led to a higher level of student self-directedness.

Objective 6

The sixth objective is to describe whether instructors with a high level of agreement with the application of the key assumptions of andragogy to teaching will be more likely to foster self-directedness in students.

Responses for each of the item sets in "Part 1: Attributes Associated with the Level of Self-Directedness" and "Part 2: Attributes Associated with the Key Assumptions of Andragogy" were summed and averaged to obtain an overall level of self-directedness and an overall level of agreement with the key assumptions of andragogy. A table was generated by the researcher to compare the instructor's mean score for "Agreement with the Key Assumptions of Andragogy" and the instructor's mean score for "Factors Associated with Level of Self-Directedness."

Objective 7

The seventh objective is to describe whether students with a high level of agreement with the key assumptions of andragogy will be more likely to be self-directed than students with a low level of agreement.

Each of the variables in "Part 1: Attributes Associated with the Level of Self-Directedness" and in "Part 2: Attributes Associated with the Key Assumptions of Andragogy" were analyzed and described by summing and averaging the responses on each of the six item sets contained in Part 1 and Part 2 of the instrument for each participant in each course. The overall level of self-directedness and the overall level of agreement with the key assumptions of andragogy were determined by summing and averaging the means of individual participants' responses. A two-tailed, Pearson correlation was then conducted for each course using the mean score for "Level of Self-Directedness" and the mean score for "Level of Agreement with the Key Assumptions of Andragogy."

Objective 8

The eighth objective was to develop a decision model to help instructors minimize mismatches between the students' level of self-directedness and the instructor's teaching stage within the context of a course.

The decision models were developed using Grow's (1991) Staged Self-Directed Learning Model, the review of literature, and the results obtained in the pilot study. The decision models were used to assign students to the appropriate level of self-directedness

and instructors to the appropriate teaching stage. The student decision model is presented in Figure 11 below. The instructor decision model is presented in Figure 12 below.

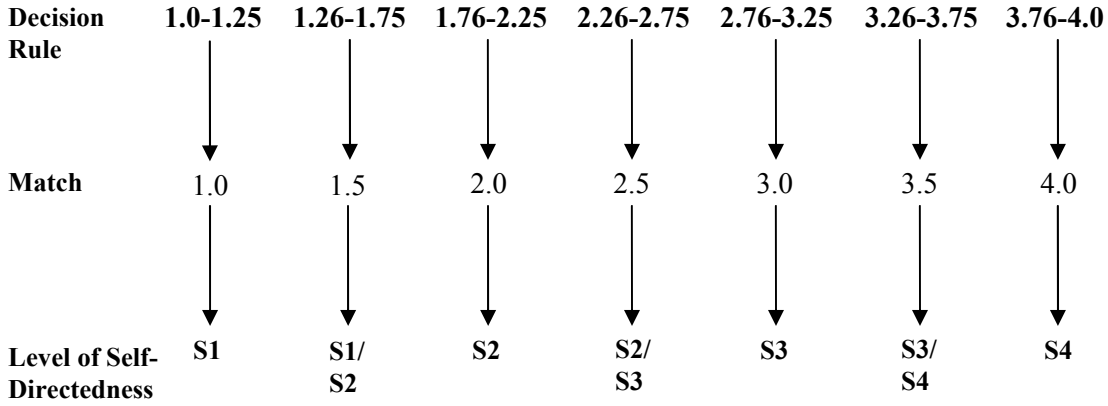

Figure 11. Decision Rule for Interpreting Data from Student Instrument

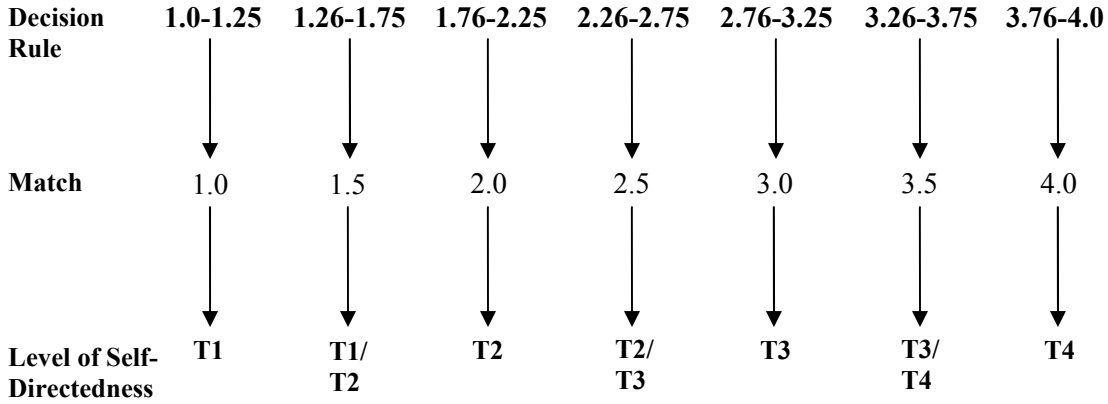

Figure 12. Decision Rule for Interpreting Data from Instructor Instrument

CHAPTER IV

FINDINGS, DISCUSSION, AND CASE STUDIES

This chapter includes a presentation and discussion of the findings of the study by objective and case studies applying the decision model and decision rules to each of the five courses participating in the pilot test.

Findings Associated with Objective 1

The first objective was to describe students' level of self-directedness within a course.

The variable "Attributes Contributing to Level of Self-Directedness" on the Student Questionnaire was composed of twenty-four (24) statements based on Grow's (1991) Staged Self Directed Learning (SSDL) Model and the review of literature. Each learning stage (S1, S2, S3, and S4) was represented by six (6) statements. Frequencies, percentages, means, and standard deviations were calculated to determine the students' overall level of self-directedness in each of the five (5) courses participating in the pilot test. The findings from each of the courses are discussed below.

Course A

As shown in Table 2, nineteen (19) students participated in the study in Course A, and their overall level of self-directedness was found to be S2/S3 (*M*=2.32).

Table 2
Responses for "Attributes Contributing to Level of Self-Directedness" for Course A

		S1		S2		S3		S4			
Item Set	*n*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*M*	*SD*
Item Set A	19	0	0.0	2	10.5	13	68.4	4	21.1	3.11	0.57
Item Set B	19	7	36.8	4	21.1	5	26.3	3	15.8	2.21	1.13
Item Set C	19	4	21.1	11	57.9	1	5.3	3	15.8	2.16	0.96
Item Set D	19	4	21.1	11	57.9	2	10.5	2	10.5	2.11	0.88
Item Set E	19	4	21.1	6	31.6	9	47.4	0	0.0	2.26	0.81
Item Set F	19	3	15.8	14	73.7	0	0.0	2	10.5	2.05	0.78
Note: *M*=2.32, *SD*=.481											

Course B

As shown in Table 3, twenty-two (22) students participated in the study in Course B, and their overall level of self-directedness was found to be S2/S3 (*M*=2.49).

Table 3
Responses for "Attributes Contributing to Level of Self-Directedness" for Course B

		S1		S2		S3		S4			
Item Set	*n*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*M*	*SD*
Item Set A	22	1	4.5	1	4.5	16	72.7	4	18.2	3.05	0.65
Item Set B	22	8	36.4	7	31.8	2	9.1	5	22.7	2.18	1.18
Item Set C	22	2	9.1	11	50.0	8	36.4	1	4.5	2.36	0.73
Item Set D	22	1	4.5	13	59.1	3	13.6	5	22.7	2.55	0.91
Item Set E	22	4	18.2	5	22.7	12	54.5	1	4.5	2.45	0.86
Item Set F	22	3	13.6	9	40.9	9	40.9	1	4.5	2.36	0.79
Note: *M*=2.49, *SD*=.469											

Course C

As shown in Table 4, seventeen (17) students participated in the study in Course C, and their overall level of self-directedness was found to be S2 (*M*=2.14).

Table 4
Responses for "Attributes Contributing to Level of Self-Directedness" for Course C

		S1		S2		S3		S4			
Item Set	*n*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*M*	*SD*
Item Set A	17	3	17.6	1	5.9	13	76.5	0	0.0	2.59	0.80
Item Set B	17	5	29.4	10	58.8	2	11.8	0	0.0	1.82	0.64
Item Set C	17	1	5.9	14	82.4	1	5.9	1	5.9	2.12	0.60
Item Set D	17	3	17.6	11	64.7	1	5.9	2	11.8	2.12	0.86
Item Set E	17	2	11.8	6	35.3	9	52.9	0	0.0	2.41	0.71
Item Set F	17	8	47.1	6	35.3	1	5.9	2	11.8	1.82	1.02
Note: *M*=2.14, *SD*=.401											

Course D

As shown in Table 5, seventy-seven (77) students participated in the study in Course D, and their overall level of self-directedness was found to be S2/S3 (*M*=2.28).

Table 5
Responses for "Attributes Contributing to Level of Self-Directedness" for Course D

		S1		S2		S3		S4			
Item Set	*n*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*M*	*SD*
Item Set A	77	6	7.8	23	29.9	32	41.6	16	20.8	2.75	0.88
Item Set B	77	35	45.5	24	31.2	8	10.4	10	13.0	1.91	1.04
Item Set C	77	9	11.7	46	59.7	8	10.4	14	18.2	2.35	0.91
Item Set D	77	13	16.9	43	55.8	12	15.6	9	11.7	2.22	0.87
Item Set E	77	26	33.8	20	26.0	30	39.0	1	1.3	2.08	0.89
Item Set F	77	8	10.4	39	50.6	22	28.6	8	10.4	2.39	0.81
Note: *M*=2.28, *SD*=.469											

Course E

As shown in Table 6, forty-nine (49) students participated in the study in Course E, and their overall level of self-directedness was found to be S2/S3 (*M*=2.44).

Table 6
Responses for "Attributes Contributing to Level of Self-Directedness" for Course E

		S1		S2		S3		S4			
Item Set	*n*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*M*	*SD*
Item Set A	49	2	4.1	5	10.2	28	57.1	14	28.6	3.10	0.74
Item Set B	49	12	24.5	21	42.9	9	18.4	7	14.3	2.22	0.99
Item Set C	49	1	2.0	35	71.4	3	6.1	10	20.4	2.45	0.84
Item Set D	49	11	22.4	20	40.8	11	22.4	7	14.3	2.29	0.98
Item Set E	49	11	22.4	13	26.5	24	49.0	1	2.0	2.31	0.85
Item Set F	49	14	28.6	17	34.7	10	20.4	8	16.3	2.24	1.05

Note: *M*=2.44, *SD*=.439

Findings Associated with Objective 2

The second objective was to describe the instructors' teaching stage within a course.

The variable "Attributes Contributing to Level of Self-Directedness" on the Instructor Questionnaire was composed of twenty-four (24) statements based on Grow's (1991) Staged Self Directed Learning (SSDL) Model and the review of literature. Each teaching stage (T1, T2, T3, and T4) was represented by six (6) statements. Frequencies, percentages, means, and standard deviations were calculated to determine the instructors' teaching stage in each of the five (5) courses participating in the pilot test. The findings from each of the courses are discussed below.

Course A

As shown in Table 7, one (1) instructor participated in the study in Course A, and his/her teaching stage was found to be T1/T2 (*M*=1.5).

Table 7
Responses for "Attributes Contributing to Teaching Stage" for Course A

		T1		T2		T3		T4		
Item Set	*n*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*M*
Item Set A	1	0	0.0	1	100	0	0.0	0	0.0	2.00
Item Set B	1	1	100.0	0	0.0	0	0.0	0	0.0	1.00
Item Set C	1	0	0.0	1	100	0	0.0	0	0.0	2.00
Item Set D	1	1	100.0	0	0.0	0	0.0	0	0.0	1.00
Item Set E	1	1	100	0	0.0	0	0.0	0	0.0	1.00
Item Set F	1	0	0.0	1	100	0	0.0	0	0.0	2.00
Note: *M*=1.5										

Course B

As shown in Table 8, one (1) instructor participated in the study in Course B, and his/her teaching stage was found to be T3 (*M*=3.17).

Table 8
Responses for "Attributes Contributing to Teaching Stage" for Course B

		T1		T2		T3		T4		
Item Set	*n*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*M*
Item Set A	1	0	0.0	0	0.0	1	100.0	0	0.0	3.00
Item Set B	1	0	0.0	0	0.0	0	0.0	1	100	4.00
Item Set C	1	0	0.0	0	0.0	1	100.0	0	0.0	3.00
Item Set D	1	0	0.0	0	0.0	1	100.0	0	0.0	3.00
Item Set E	1	0	0.0	0	0.0	1	100.0	0	0.0	3.00
Item Set F	1	0	0.0	0	0.0	1	100.0	0	0.0	3.00
Note: *M*=3.17										

Course C

As shown in Table 9, one (1) instructor participated in the study in Course C, and his/her overall level of self-directedness was found to be T2/T3 (*M*=2.50).

Table 9
Responses for "Attributes Contributing to Teaching Stage" for Course C

		T1		T2		T3		T4		
Item Set	*n*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*M*
Item Set A	1	0	0.0	1	100.0	0	0.0	0	0.0	2.00
Item Set B	1	0	0.0	0	0.0	1	100.0	0	0.0	3.00
Item Set C	1	0	0.0	1	100.0	0	0.0	0	0.0	2.00
Item Set D	1	0	0.0	0	0.0	0	0.0	1	100.0	4.00
Item Set E	1	1	100	0	0.0	0	0.0	0	0.0	1.00
Item Set F	1	0	0.0	0	0.0	1	100.0	0	0.0	3.00

Note: *M*=2.50

Course D

As shown in Table 10, one (1) instructor participated in the study in Course D, and his/her level of self-directedness was found to be T2 (*M*=2.17).

Table 10
Responses for "Attributes Contributing to Teaching Stage" for Course D

		T1		T2		T3		T4		
Item Set	*n*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*M*
Item Set A	1	0	0.0	1	100.0	0	0.0	0	0.0	2.00
Item Set B	1	0	0.0	1	100.0	0	0.0	0	0.0	2.00
Item Set C	1	1	100.0	0	0.0	0	0.0	0	0.0	1.00
Item Set D	1	0	0.0	0	0.0	0	0.0	1	100.0	4.00
Item Set E	1	1	100.0	0	0.0	0	0.0	0	0.0	1.00
Item Set F	1	0	0.0	0	0.0	1	100.0	0	0.0	3.00

Note: *M*=2.17

Course E

As shown in Table 11, one (1) instructor participated in the study in Course E, and his/her overall level of self-directedness was found to be T2 (*M*=1.83).

Table 11
Responses for "Attributes Contributing to Teaching Stage" for Course E

		T1		T2		T3		T4		
Item Set	*n*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*M*
Item Set A	1	0	0.0	1	100.0	0	0.0	0	0.0	2.00
Item Set B	1	0	0.0	1	100.0	0	0.0	0	0.0	2.00
Item Set C	1	0	0.0	0	0.0	1	100.0	0	0.0	3.00
Item Set D	1	1	100.0	0	0.0	0	0.0	0	0.0	1.00
Item Set E	1	1	100.0	0	0.0	0	0.0	0	0.0	1.00
Item Set F	1	0	0.0	1	100.0	0	0.0	0	0.0	2.00
Note: *M*=1.83										

Findings Associated with Objective 3

The third objective was to describe the students' level of agreement with the key assumptions of andragogy.

The variable "Attributes Associated with the Key Assumptions of Andragogy" on the Student Questionnaire was composed of twelve (12) statements based on Knowles, Holton, and Swanson's (1998) key assumptions of pedagogy, key assumptions of andragogy, and the review of literature. Each key assumption (the need to know, the learners' self-concept, the role of the learners' experiences, readiness to learn, orientation to learning, and motivation) was represented by two (2) statements. For each key assumption (represented by an item set), one statement aligned with a pedagogical principle and the other statement aligned with an andragogical principle. Frequencies, percentages, means, and standard deviations were calculated to determine the students'

level of agreement with the key assumptions of andragogy in each of the five (5) courses participating in the pilot test. The findings from each of the courses are discussed below.

Course A

As shown in Table 12, nineteen (19) students participated in the study in Course A, and they were found to align more closely with andragogy than pedagogy (*M*=1.68).

Table 12
Responses for "Attributes Associated with the Key Assumptions of Andragogy" for Course A

		Pedagogy		Andragogy			
Item Set	*n*	*f*	*%*	*f*	*%*	*M*	*SD*
Item Set G	19	4	21.1	15	78.9	1.79	0.42
Item Set H	19	9	47.4	10	52.6	1.53	0.51
Item Set I	19	3	15.8	16	84.2	1.84	0.38
Item Set J	19	6	31.6	13	68.4	1.68	0.48
Item Set K	19	3	15.8	16	84.2	1.84	0.38
Item Set L	19	11	57.9	8	42.1	1.42	0.51
Note: *M*=1.68, *SD*=0.24							

Course B

As shown in Table 13, twenty-two (22) students participated in the study in Course B, and they were found to align more closely with andragogy than pedagogy (*M*=1.67).

Table 13
Responses for "Attributes Associated with the Key Assumptions of Andragogy" for Course B

		Pedagogy		Andragogy			
Item Set	*n*	*f*	*%*	*f*	*%*	*M*	*SD*
Item Set G	22	9	40.9	13	59.1	1.59	0.50
Item Set H	22	12	54.5	10	45.5	1.45	0.51
Item Set I	22	2	9.1	20	90.9	1.91	0.29
Item Set J	22	8	36.4	14	63.6	1.64	0.49
Item Set K	22	2	9.1	20	90.9	1.91	0.29
Item Set L	22	11	50.0	11	50.0	1.50	0.51
Note: *M*=1.67, *SD*=0.22							

Course C

As shown in Table 14, seventeen (17) students participated in the study in Course C, and they were found to align more closely with andragogy than pedagogy (*M*=1.73).

Table 14
Responses for "Attributes Associated with the Key Assumptions of Andragogy" for Course C

		Pedagogy		Andragogy			
Item Set	*n*	*f*	*%*	*f*	*%*	*M*	*SD*
Item Set G	17	5	29.4	12	70.6	1.71	0.47
Item Set H	17	5	29.4	12	70.6	1.71	0.47
Item Set I	17	1	5.9	16	94.1	1.94	0.24
Item Set J	17	5	29.4	12	70.6	1.71	0.47
Item Set K	17	3	17.6	14	82.4	1.82	0.39
Item Set L	17	9	52.9	8	47.1	1.47	0.51
Note: *M*=1.73, *SD*=0.28							

Course D

As shown in Table 15, seventy-seven (77) students participated in the study in Course D, and they were found to align more closely with andragogy than pedagogy (*M*=1.65).

Table 15
Responses for "Attributes Associated with the Key Assumptions of Andragogy" for Course D

		Pedagogy		Andragogy			
Item Set	*n*	*f*	*%*	*f*	*%*	*M*	*SD*
Item Set G	77	32	41.6	45	58.4	1.58	0.50
Item Set H	77	36	46.8	41	53.2	1.53	0.50
Item Set I	77	7	9.1	70	90.9	1.91	0.29
Item Set J	77	30	39.0	47	61.0	1.61	0.49
Item Set K	77	14	18.2	63	81.8	1.82	0.39
Item Set L	77	43	55.8	34	44.2	1.44	0.50
Note: *M*=1.65, SD=0.26							

Course E

As shown in Table 16, forty-nine (49) students participated in the study in Course E, and they were found to align more closely with andragogy than pedagogy (*M*=1.72).

Table 16
Responses for "Attributes Associated with the Key Assumptions of Andragogy" for Course E

		Pedagogy		Andragogy			
Item Set	*n*	*f*	*%*	*f*	*%*	*M*	*SD*
Item Set G	49	11	22.4	38	77.6	1.78	0.42
Item Set H	49	22	44.9	27	55.1	1.55	0.50
Item Set I	49	10	20.4	39	79.6	1.80	0.41
Item Set J	49	12	24.5	37	75.5	1.76	0.43
Item Set K	49	6	12.2	43	87.8	1.88	0.33
Item Set L	49	22	44.9	27	55.1	1.55	0.50
Note: *M*=1.72, *SD*=0.25							

Findings Associated with Objective 4

The fourth objective was to describe the instructors' level of agreement with the key assumptions of andragogy.

The variable "Attributes Associated with the Key Assumptions of Andragogy" on the Instructor Questionnaire was composed of twelve (12) statements based on Knowles, Holton, and Swanson's (1998) key assumptions of pedagogy, key assumptions of andragogy, and the review of literature. Each key assumption (the need to know, the learners' self-concept, the role of the learners' experiences, readiness to learn, orientation to learning, and motivation) was represented by two (2) statements. For each key assumption (represented by an item set), one statement aligned with a pedagogical principle and the other statement aligned with an andragogical principle. Frequencies,

percentages, means, and standard deviations were calculated to determine the instructors' agreement with the key assumptions of andragogy in each of the five (5) courses participating in the pilot test. The findings from each of the courses are discussed below.

Course A

As shown in Table 17, one (1) instructor participated in the study in Course A, and he/she more closely aligned with andragogy than pedagogy (*M*=1.67).

Table 17
Responses for "Attributes Associated with the Key Assumptions of Andragogy" for Course A

		Pedagogy		Andragogy		
Item Set	*n*	*f*	*%*	*f*	*%*	*M*
Item Set G	1	0	0.0	1	100	2.0
Item Set H	1	0	0.0	1	100	2.0
Item Set I	1	1	100.0	0	0.0	1.0
Item Set J	1	0	0.0	1	100	2.0
Item Set K	1	1	100.0	0	0.0	1.0
Item Set L	1	0	0.0	1	100	2.0

Note: *M*=1.67

Course B

As shown in Table 18, one (1) instructor participated in the study in Course B, and he/she aligned completely with the key assumptions of andragogy (*M*=2.00).

Table 18
Responses for "Attributes Associated with the Key Assumptions of Andragogy" for Course B

		Pedagogy		Andragogy		
Item Set	*n*	*f*	*%*	*f*	*%*	*M*
Item Set G	1	0	0.0	1	100.0	2.0
Item Set H	1	0	0.0	1	100.0	2.0
Item Set I	1	0	0.0	1	100.0	2.0
Item Set J	1	0	0.0	1	100.0	2.0
Item Set K	1	0	0.0	1	100.0	2.0
Item Set L	1	0	0.0	1	100.0	2.0
Note: *M*=2.00						

Course C

As shown in Table 19, one (1) instructor participated in the study in Course C, and he/she aligned completely with the key assumptions of andragogy (*M*=2.00).

Table 19
Responses for "Attributes Associated with the Key Assumptions of Andragogy" for Course C

		Pedagogy		Andragogy		
Item Set	*n*	*f*	*%*	*f*	*%*	*M*
Item Set G	1	0	0.0	1	100.0	2.0
Item Set H	1	0	0.0	1	100.0	2.0
Item Set I	1	0	0.0	1	100.0	2.0
Item Set J	1	0	0.0	1	100.0	2.0
Item Set K	1	0	0.0	1	100.0	2.0
Item Set L	1	0	0.0	1	100.0	2.0
Note: *M*=2.00						

Course D

As shown in Table 20, one instructor (1) participated in the study in Course D, and he/she aligned completely with the principles of andragogy (*M*=2.00).

Table 20
Responses for "Attributes Associated with the Key Assumptions of Andragogy" for Course D

		Pedagogy		Andragogy		
Item Set	*n*	*f*	*%*	*f*	*%*	*M*
Item Set G	1	0	0.0	1	100.0	2.00
Item Set H	1	0	0.0	1	100.0	2.00
Item Set I	1	0	0.0	1	100.0	2.00
Item Set J	1	0	0.0	1	100.0	2.00
Item Set K	1	0	0.0	1	100.0	2.00
Item Set L	1	0	0.0	1	100.0	2.00
Note: *M*=2.00						

Course E

As shown in Table 21, one (1) instructor participated in the study in Course E, and he/she aligned more closely with andragogy than pedagogy (*M*=1.67).

Table 21
Responses for "Attributes Associated with the Key Assumptions of Andragogy" for Course E

		Pedagogy		Andragogy		
Item Set	*n*	*f*	*%*	*f*	*%*	*M*
Item Set G	1	0	0.0	1	100.0	2.0
Item Set H	1	0	0.0	1	100.0	2.0
Item Set I	1	0	0.0	1	100.0	2.0
Item Set J	1	0	0.0	1	100.0	2.0
Item Set K	1	1	100.0	0	0.0	1.0
Item Set L	1	1	100.0	0	0.0	1.0
Note: *M*=1.67						

Findings Associated with Objective 5

The fifth objective was to compare the students' level of self-directedness in a course with the students' level of agreement with andragogy.

For Objective 1, means were calculated for individual student responses on each of the six item sets under the variable "Attributes Contributing to Level of Self-Directedness." For Objective 3, means were calculated for individual student responses on each of the six item sets under the variable "Attributes Associated with the Key Assumptions of Andragogy." Student responses were grouped by course and overall means for each variable were calculated for each course.

For each of the five (5) courses participating in the pilot study, a compare means was conducted to determine whether a higher level of agreement with the key assumptions of andragogy led to a higher level of student self-directedness. The results of this analysis are discussed below.

Course A

As shown in Table 22, nineteen (19) students participated in the study in Course A. Their overall level of self-directedness was determined to be S2/S3 (M=2.32). The students aligned more closely with andragogical principles than pedagogical principles (M=1.68). Figure 13 shows an overall increase in level of self-directedness as the level of agreement with the key assumptions of andragogy increases.

Table 22
Students' Level of Self-Directedness Compared with Students' Level of Agreement with the Key Assumptions of Andragogy for Course A

M_{and}	M_{sdl}	*n*	*SD*
1.33	2.23	3	0.36
1.50	2.13	4	0.08
1.67	2.21	4	0.19
1.83	2.21	4	0.19
2.00	2.79	4	0.33
Total	2.32	19	0.48

Note: M_{and}=1.68, SD_{and}=0.24

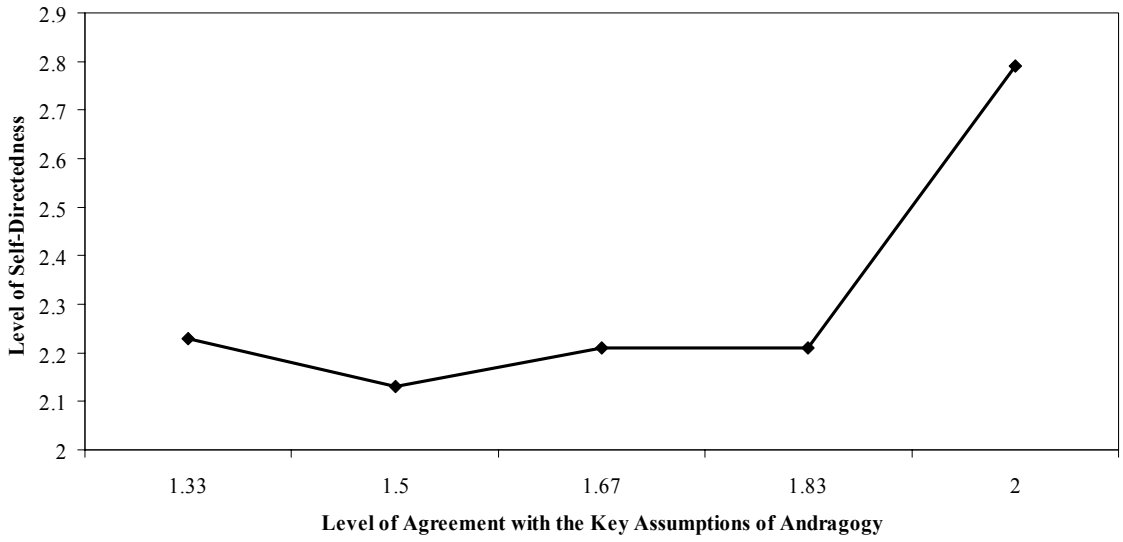

Figure 13. Students' Level of Self-Directedness Compared with Students' Level of Agreement with the Key Assumptions of Andragogy for Course A

Course B

As shown in Table 23, twenty-two (22) students participated in the study in Course B. Their overall level of self-directedness was determined to be S2/S3 (*M*=2.49). The students aligned more closely with andragogical principles than pedagogical principles (*M*=1.67). Figure 14 shows an overall increase in level of self-directedness as the level of agreement with the key assumptions of andragogy increases.

Table 23
Students' Level of Self-Directedness Compared with Students' Level of Agreement with the Key Assumptions of Andragogy in Course B

M_{and}	M_{sdl}	*n*	*SD*
1.17	1.83	1	0.00
1.33	2.12	3	0.48
1.50	2.42	2	0.12
1.67	2.41	7	0.50
1.83	2.71	7	0.38
2.00	3.00	2	0.00
Total	2.49	22	0.47

Note: M_{and}=1.67, SD_{and}=0.22

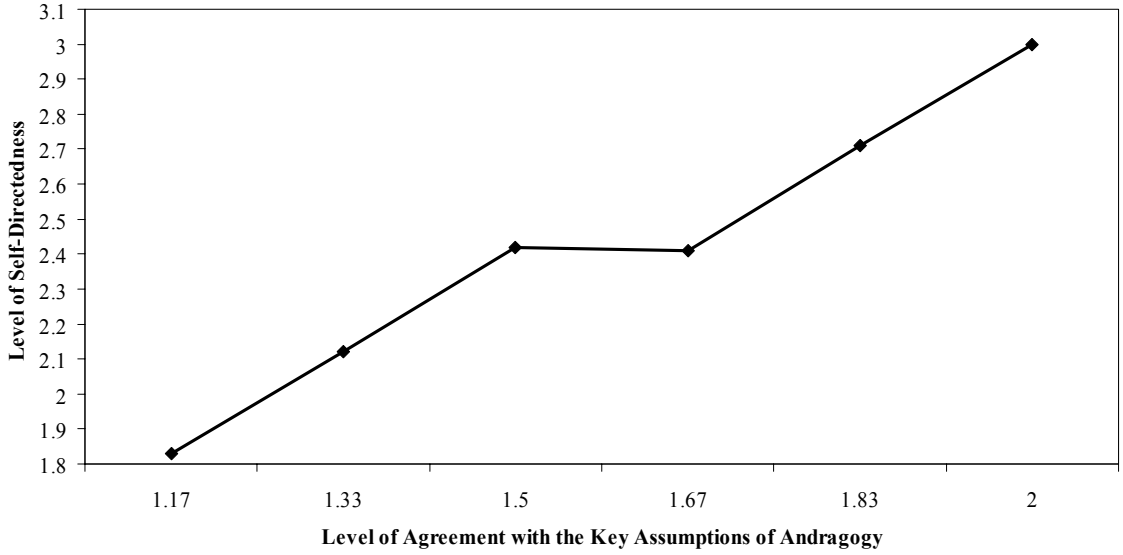

Figure 14. Students' Level of Self-Directedness Compared with Students' Level of Agreement with the Key Assumptions of Andragogy for Course B

Course C

As shown in Table 24, seventeen (17) students participated in the study in Course C. Their overall level of self-directedness was determined to be S2 (M=2.15). The students aligned more closely with andragogical principles than pedagogical principles (M=1.67). Figure 15 shows an overall increase in level of self-directedness as the level of agreement with the key assumptions of andragogy increases.

Table 24
Students' Level of Self-Directedness Compared with Students' Level of Agreement with the Key Assumptions of Andragogy in Course C

M_{and}	M_{sdl}	n	SD
1.00	1.00	1	0.00
1.33	2.83	1	0.00
1.50	1.92	2	0.12
1.67	2.00	4	0.14
1.83	2.42	4	0.22
2.00	2.23	5	0.19
Total	2.15	17	0.41

Note: M_{and}=1.67, SD_{and}=0.22

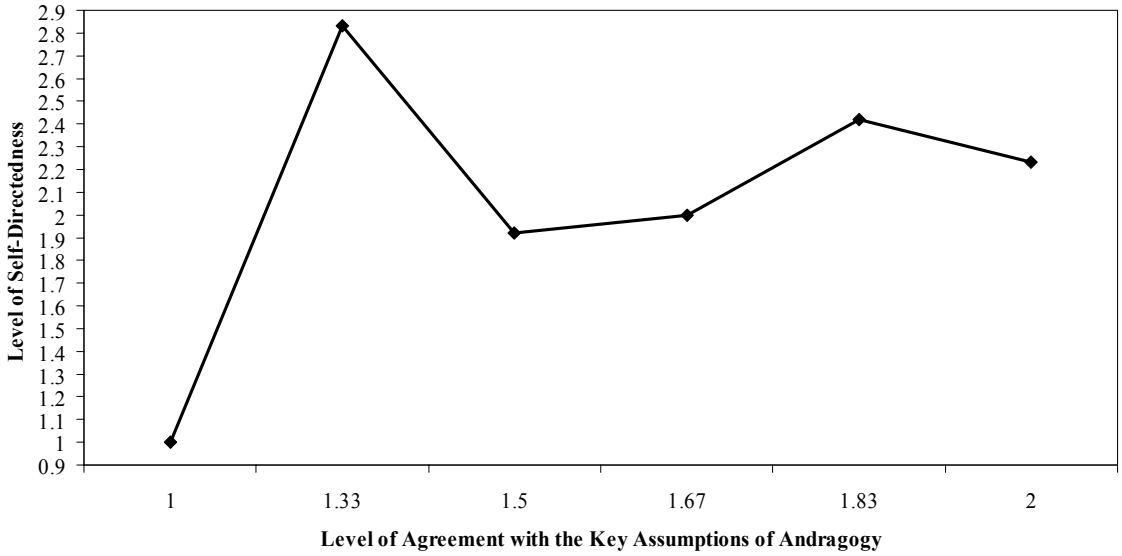

Figure 15. Students' Level of Self-Directedness Compared with Students' Level of Agreement with the Key Assumptions of Andragogy for Course C

Course D

As shown in Table 25, seventy-seven (77) students participated in the study in Course D. Their overall level of self-directedness was determined to be S2/S3 (*M*=2.28). The students aligned more closely with andragogical principles than pedagogical principles (*M*=1.65). Figure 16 shows an overall increase in level of self-directedness as the level of agreement with the key assumptions of andragogy increases.

Table 25
Students' Level of Self-Directedness Compared with Students' Level of Agreement with the Key Assumptions of Andragogy in Course D

M_{and}	M_{sdl}	N	SD
1.00	1.83	2	0.24
1.17	1.96	4	0.08
1.33	2.24	9	0.43
1.50	2.18	13	0.54
1.67	2.09	19	0.34
1.83	2.34	17	0.45
2.00	2.77	13	0.35
Total	2.28	77	0.47

Note: M_{and}=1.65, SD_{and}=0.26

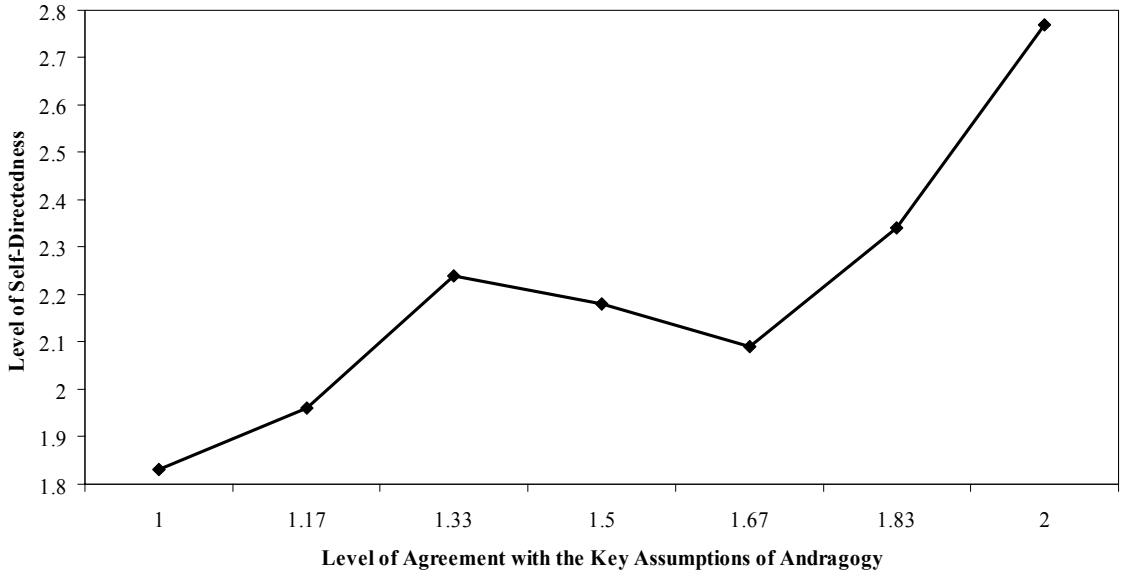

Figure 16. Students' Level of Self-Directedness Compared with Students' Level of Agreement with the Key Assumptions of Andragogy for Course D

Course E

As shown in Table 26, forty-nine (49) students participated in the study in Course E. Their overall level of self-directedness was determined to be S2/S3 (M=2.44). The students aligned more closely with andragogical principles than pedagogical principles

(M=1.72). Figure 17 shows an overall increase in level of self-directedness as the level of agreement with the key assumptions of andragogy increases.

Table 26
Students' Level of Self-Directedness Compared with Students' Level of Agreement with the Key Assumptions of Andragogy for Course E

M_{and}	M_{sdl}	n	SD
1.17	2.13	4	0.28
1.33	2.17	3	0.50
1.50	2.30	5	0.43
1.67	2.47	11	0.48
1.83	2.56	14	0.37
2.00	2.49	12	0.50
Total	2.44	49	0.44

Note: M_{and}=1.72, SD_{and}=0.25

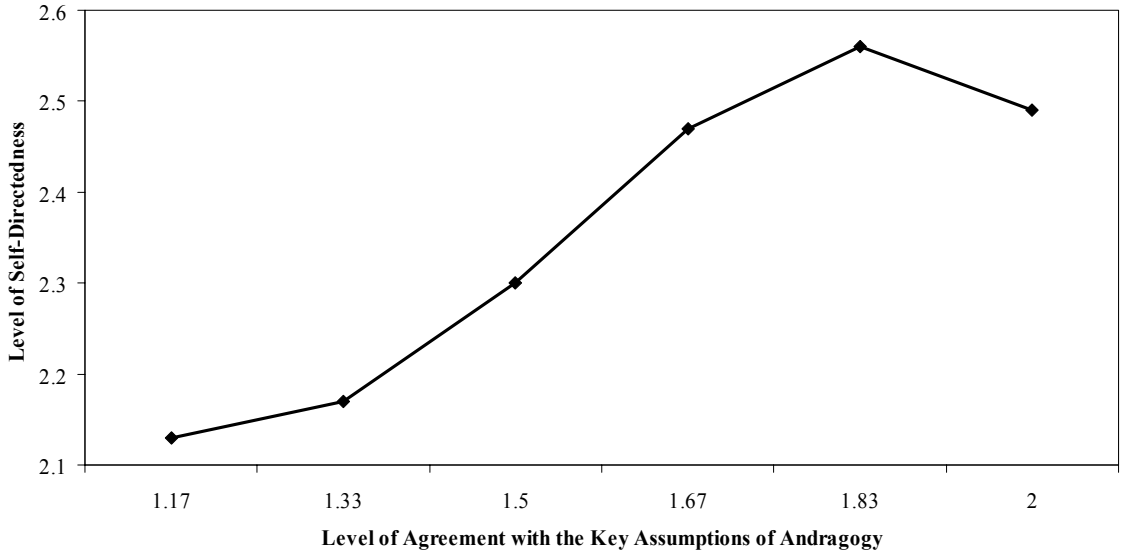

Figure 17. Students' Level of Self-Directedness Compared with Students' Level of Agreement with the Key Assumptions of Andragogy for Course E

Findings Associated with Objective 6

The sixth objective is to describe whether instructors with a high level of agreement with the application of the key assumptions of andragogy to teaching will be more likely to foster self-directedness in students.

For Objective 2, means were calculated for instructors'responses on each of the six item sets under the variable "Attributes Contributing to Level of Self-Directedness." For Objective 4, means were calculated for instructors' responses on each of the six item sets under the variable "Attributes Associated with the Key Assumptions of Andragogy."

A table was generated to compare the means for the instructors' overall level of self-directedness and their level of agreement with the key assumptions of andragogy to determine whether a higher level of agreement with the key assumptions of andragogy led to a higher initial teaching stage for each of the five (5) courses participating in the pilot study. Table 27 and Figure 18 show that the higher an instructor's level of agreement with the key assumptions of andragogy, the more likely he/she will be to foster self-directedness in students.

Table 27
Instructors' Teaching Stage Compared with Instructors' Level of Agreement with the Key Assumptions of Andragogy in Courses A-E

Course	M_{and}	M_{sdl}	n
Course A	1.67	1.50	1
Course B	2.00	3.17	1
Course C	2.00	2.50	1
Course D	2.00	2.17	1
Course E	1.67	1.83	1

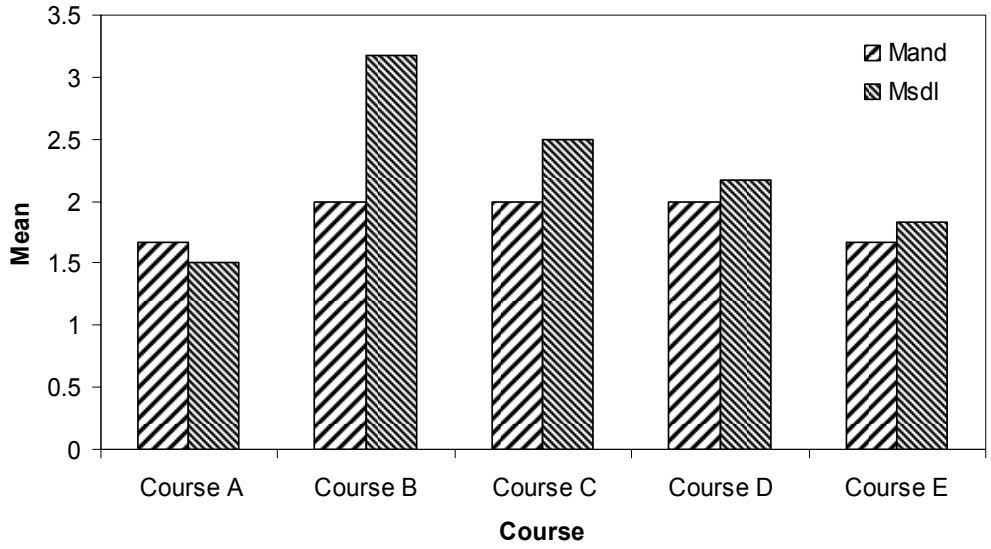

Figure 18. Instructors' Teaching Stage Compared with Instructors' Level of Agreement with Andragogy in Courses A-E

Findings Associated with Objective 7

The seventh objective is to describe whether students with a high level of agreement with the key assumptions of andragogy will be more likely to be self-directed than students with a low level of agreement.

For Objective 1, means were calculated for individual student responses on each of the six item sets under the variable "Attributes Contributing to Level of Self-Directedness." For Objective 3, means were calculated for individual student responses on each of the six item sets under the variable "Attributes Associated with the Key Assumptions of Andragogy." Student responses were grouped by course and overall means for each variable were calculated for each course.

For each of the five (5) courses participating in the pilot study, a two-tailed Pearson correlation was conducted to determine whether a higher level of agreement with the key assumptions of andragogy led to a higher level of student self-directedness. Table 28 shows that for three of the five courses (Course B, Course C, and Course D), a

significant correlation with found between the students'level of agreement with the key assumptions of andragogy and the students' level of self-directedness.

Table 28
Correlation of Students' Level of Agreement with the Key Assumptions of Andragogy and Level of Self-Directedness for Courses A-E

Course	Corr.	Sig.
Course A	0.39	0.103
Course B	**0.60	0.003
Course C	*0.52	0.032
Course D	**0.42	0.000
Course E	0.28	0.051

Note: *Significant at the .05 level;
**Significant at the .01 level

Findings Associated with Objective 8

The eighth objective was to develop a decision model to help instructors minimize mismatches between the students' level of self-directedness and the instructor's teaching stage within the context of a course.

The decision model was developed based on the work of Grow (1991), the review of literature, and results obtained in the pilot test. It was applied to the analysis of data for each objective and is included in Chapter IV. The decision rules for each of the perfect matches, near matches, mismatches, and severe mismatches are presented below.

Decision Rules for Teaching and Learning Stages

Perfect Matches: Equal Teaching Stage and Student Level of Self-Directedness

The following four (4) decision rules (T1/S1, T2/S2, T3/S3, T4/S4) describe a perfect match between teaching stage and student level of self-directedness. When a perfect match is determined from the data collected from the instruments, the appropriate decision rule below should be applied at the beginning of a course or sequence of instruction to help students attain motivation, knowledge, and skills. After students have become oriented or grounded, the instructor should move to the next highest decision rule to help students become more self-directed or autonomous in learning. When students are oriented or comfortable at the next level, the instructor should then move to the next highest level. For example, if the data from the instruments yields a T2/S2 perfect match, the instructor should begin instruction with that decision rule, progress to the T3/S3 decision rule with the students are ready, then progress to the T4/S4 decision rule. Each of the four (4) decision rules for perfect matches are presented below.

T1/S1 Perfect Match

Student Characteristics

- Stage 1 learners, or "dependent" learners, need an instructor who is considered to be an expert or authority figure who will give them specific, detailed directions on what to learn, how to learn it, and when to learn it.

- Some dependent learners will learn very successfully under the guidance of an expert, others will seek to "passively slide through the educational system, responding only to teachers that 'make' them learn" (Grow, 1991, p. 129).
- Stage 1 is the most teacher-centered.
- Dependence is situational and therefore varies from subject to subject – some students will be dependent in only one subject, while others will be enduringly dependent.

Teaching Strategies

- Establish credibility and authority early in the course.
- Providing learners with a clearly-organized, rigorous approach to the subject-matter through: a) providing straightforward objectives and techniques for achieving them, b) providing direction for learners, c) providing rigorous assignments with definite deadlines, and d) involving learners in the design and content of learning.
- Use coaching or insight methods to equip learners to take an increasing control of their own learning.

Learning Strategies

- Formal lectures emphasizing subject matter
- Structured drills
- Highly specific assignments
- Intensive individual tutoring.

T2/S2 Perfect Match

Student Characteristics

- Stage 2 learners, or "motivated" learners, are considered to be good students by most instructors.
- They are open to learning, are generally interested in the subject matter, and are more confident than Stage 1 learners, even though they may be ignorant in the subject matter being presented.
- They must be shown the meaning of an assignment before proceeding to see what value it will have in their own lives.

Teaching Strategies

- Explain the meaning of an assignment before proceeding to show students what value it will have in their own lives.
- Persuade, explain, and sell, using a highly directive, but highly supportive approach to generate enthusiasm for learning and to reinforce learning willingness to learn.
- Give clear explanations of why skills are important, how assignments will help the learners obtain the skills, and what value the assignments will have on the learner's lives.
- Encourage students to set attainable, realistic goals and hold them to the attainment of those goals in order to decrease dependence and increase self-directedness.

Learning Strategies

- □ Demonstration followed by guided practice
- □ Structured projects with predictable outcomes
- □ Close supervision with ample encouraging feedback
- □ Highly interactive computerized drill and practice

T3/S3 Perfect Match

Student Characteristics

- □ Learners have prior knowledge and skills in the subject area and see themselves as participants, not just spectators in their own education.
- □ Learners are ready to explore the subject under the guidance of the instructor, but are also ready to explore some of it on their own.
- □ Learners have a good self-concept, self-confidence, sense of direction, and ability to work with others, but need to develop it further to further decrease their dependence on the instructor.
- □ They benefit greatly from learning how they learn and they can apply the knowledge to their own lives in order to learn more effectively.
- □ Learners may examine themselves and their culture in order to understand how to separate what they feel, value, and want, from what they should feel, value, and want.
- □ Learners learn to value their own life experiences as well of the personal experiences of others.

- Learners develop critical thinking, individual initiative, and a sense of themselves as co-creators of the culture that shapes them.

Teaching Strategies

- Share decision making with students, letting them take increasing control of their own learning.
- Concentrate on facilitation and communication and support students in using the skills that they have.
- Offer additional tools, methods, and techniques for increasing self-direction and meaningful ways of interpreting experiences.
- Help students transition toward independence by negotiating interim goals and evaluations then giving learners more rope.

Learning Strategies

- Open-ended, but carefully designed student group projects approved and facilitated (but not directed) by the instructor
- Providing written criteria, learning contracts, and/or evaluation checklists to help learners monitor their own progress
- Seminars with instructor as a participant

T4/S4 Perfect Match

Learner Characteristics

- □ Learners set their own goals and standards for learning – with or without help from experts and use experts, institutions, and other resources to pursue these goals.
- □ Learners are both willing and able to take responsibility for their own learning, direction, and productivity.
- □ Learners exercise skills in time management, project management, goal-setting, self-evaluation, peer critique, information gathering, and use of educational resources.
- □ Learners can learn from any kind of instructor, but most thrive in an atmosphere of autonomy.

Teaching Strategies

- □ Consult with learners to develop written criteria, an evaluation checklist, a timetable, and a management chart for each project they develop.
- □ Hold regular meetings so students can chart and discuss progress and problems.
- □ Encourage students to cooperate and consult with each other, but not to abandon responsibility.
- □ Focus on the process of being productive as well as the product.
- □ Emphasize long-term progress in career or life, through stages such as intern, apprentice, journeyman, master, and mentor.

- □ Actively monitor progress to ensure success, and step in only to assist students in acquiring the skills to be self-directive and self-monitoring.

Learning Strategies

- □ Internships
- □ Term projects
- □ Independent study
- □ Theses/dissertations
- □ Creative writing projects.

Mismatches and Near Matches: Teaching Stage Below Student Level of Self-Directedness

The following five (5) decision rules (T1/S4 Severe Mismatch, T1/S3 Mismatch, T1/S2 Near Match, T2/S4 Mismatch, T2/S3 Near Match, T3/S4 Near Match) describe initial mismatches and near matches between teaching stage and student level of self-directedness where the student level of self-directedness is above the teaching stage. When a mismatch or near match is determined from the data collected from the instruments, the appropriate decision rule from the choices below should be applied at the beginning of a course or sequence of instruction to bring the teaching stage up to the level of student self-direction. After a perfect match is obtained, the instructor should move to the next highest *perfect match* decision rule to help students become more self-directed or autonomous in learning. When students are oriented or comfortable at the next level, the instructor should then move to the next highest level. For example, if the data from the instruments yields a T1/S2 near match, the instructor should first apply the T1/S2 Near

Match Decision Rule to increase his/her teaching stage to T2, progress to the T3/S3 decision rule with the students are ready, then progress to the T4/S4 decision rule. Each of the five (5) mismatches and near matches where teaching stage is below student level of self-directedness is presented below.

The T1/S4 Severe Mismatch

Learner Characteristics

- Some S4 learners will develop the ability to function well and retain overall control of their learning.
- Others will resent the T1 instructor and will rebel against the control exerted by the instructor.
- This mismatch may cause the learner to retreat into boredom.

Teaching Strategies

- Consult with learners to develop written criteria, an evaluation checklist, a timetable, and a management chart for each project they develop.
- Hold regular meetings so students can chart and discuss progress and problems.
- Encourage students to cooperate and consult with each other, but not to abandon responsibility.
- Focus on the process of being productive as well as the product.
- Emphasize long-term progress in career or life, through stages such as intern, apprentice, journeyman, master, and mentor.

- Actively monitor progress to ensure success, and step in only to assist students in acquiring the skills to be self-directive and self-monitoring.

Learning Strategies

- Internships
- Term projects
- Independent study
- Theses/dissertations
- Creative writing projects.

The T1/S3 Mismatch

Learner Characteristics

- This mismatch occurs when students who are capable of more individual involvements in learning are relegated to passive roles in authoritarian classrooms.
- After many years of responsibility, adults may experience difficulty learning from S1 teachers, because many of them are used to being in authority.

Teaching Strategies

- Share decision making with students, letting them take increasing control of their own learning.
- Concentrate on facilitation and communication and support students in using the skills that they have.

- □ Offer additional tools, methods, and techniques for increasing self-direction and meaningful ways of interpreting experiences.
- □ Help students transition toward independence by negotiating interim goals and evaluations then giving learners more rope.

Learning Strategies

- □ Open-ended, but carefully designed student group projects approved and facilitated (but not directed) by the instructor
- □ Providing written criteria, learning contracts, and/or evaluation checklists to help learners monitor their own progress
- □ Seminars with instructor as a participant

The T1/S2 Near Match

Learner Characteristics

- □ The T1/S2 Near Match combines students that are available, interested, and somewhat motivated with an instructor that may be too directive and rigid.
- □ Where S2 students are looking for someone to persuade, explain, and motivate and an environment where they can begin to share their life experiences with others and assimilate learning with their experiences to construct new knowledge, the T1 instructor is lecturing and providing assignments that serve to pour knowledge into the learners' heads without taking their needs and interests into account.

Teaching Strategies

- □ Explain the meaning of an assignment before proceeding to show students what value it will have in their own lives.
- □ Persuade, explain, and sell, using a highly directive, but highly supportive approach to generate enthusiasm for learning and to reinforce learning willingness to learn.
- □ Give clear explanations of why skills are important, how assignments will help the learners obtain the skills, and what value the assignments will have on the learner's lives.
- □ Encourage students to set attainable, realistic goals and hold them to the attainment of those goals in order to decrease dependence and increase self-directedness.

Learning Strategies

- □ Demonstration followed by guided practice
- □ Structured projects with predictable outcomes
- □ Close supervision with ample encouraging feedback
- □ Highly interactive computerized drill and practice

The T2/S4 Mismatch

Learner Characteristics

- The T2/S4 Mismatch combines students that are ready to set their own goals for what they need to learn and how they want to learn it, with an instructor that is providing too much direction and rigidity.
- While the instructor may be engaging and inspiring to listen to, the students are looking for the freedom to interact with the people and the resources necessary to construct new meaning out of something that is relevant in their own lives.
- These students will be somewhat frustrated with the learning situation, may feel smothered by the instructor, and may seem rebellious as they seek to take more control of their own learning.

Teaching Strategies

- Consult with learners to develop written criteria, an evaluation checklist, a timetable, and a management chart for each project they develop.
- Hold regular meetings so students can chart and discuss progress and problems.
- Encourage students to cooperate and consult with each other, but not to abandon responsibility.
- Focus on the process of being productive as well as the product.
- Emphasize long-term progress in career or life, through stages such as intern, apprentice, journeyman, master, and mentor.
- Actively monitor progress to ensure success, and step in only to assist students in acquiring the skills to be self-directive and self-monitoring.

Learning Strategies

- Internships
- Term projects
- Independent study
- Theses/dissertations
- Creative writing projects.

The T2/S3 Near Match

Learner Characteristics

- The T2/S3 Near Match combines students that have the prior knowledge and skills to begin exploring the subject on their own under the direction of an expert, with an instructor that is providing a little too much direction.
- These students have an understanding of how their prior life experiences and the experiences of others are relevant and important in constructing new knowledge.
- They are looking for opportunities to share with and listen to other students, but are learning under an instructor that is doing a little more lecturing and sharing than the students need.
- This mismatch may result in students feeling babied and unengaged.

Teaching Strategies

- Share decision making with students, letting them take increasing control of their own learning.

- Concentrate on facilitation and communication and support students in using the skills that they have.
- Offer additional tools, methods, and techniques for increasing self-direction and meaningful ways of interpreting experiences.
- Help students transition toward independence by negotiating interim goals and evaluations then giving learners more rope.

Learning Strategies

- Open-ended, but carefully designed student group projects approved and facilitated (but not directed) by the instructor
- Providing written criteria, learning contracts, and/or evaluation checklists to help learners monitor their own progress
- Seminars with instructor as a participant

The T3/S4 Near Match

Learner Characteristics

- The T3/S4 Near Match combines students who are ready to set their own goals for learning and that understand the importance of their prior experiences and the experiences of others to the learning process with an instructor that is guiding students to reach specific outcomes.
- The S4 student is ready to undertake his/her own project, using the instructor as a resource, where the T3 instructor will have his/her hands in the development of

the goals and objectives for project and will provide more direction and guidance than the student needs.

- □ Learning can take place under this near match with little frustration between the student and the instructor, but the danger lies in preventing student growth and perpetuating dependence.

Teaching Strategies

- □ Consult with learners to develop written criteria, an evaluation checklist, a timetable, and a management chart for each project they develop.
- □ Hold regular meetings so students can chart and discuss progress and problems.
- □ Encourage students to cooperate and consult with each other, but not to abandon responsibility.
- □ Focus on the process of being productive as well as the product.
- □ Emphasize long-term progress in career or life, through stages such as intern, apprentice, journeyman, master, and mentor.
- □ Actively monitor progress to ensure success, and step in only to assist students in acquiring the skills to be self-directive and self-monitoring.

Learning Strategies

- □ Internships
- □ Term projects
- □ Independent study
- □ Theses/dissertations

- Creative writing projects.

Mild and Severe Mismatches: Teaching Stage Above Student Level of Self-Directedness

The following seven (7) decision rules (T2/S1 Near Match, T3/S2 Near Match, T3/S1 Mismatch, T4/S3 Near Match, T4/S2 Mismatch, and the T4/S1 Severe Mismatch) describe initial mismatches and near matches between teaching stage and student level of self-directedness where the teaching stage is initially higher than the student level of self-directedness. When a mismatch or near match is determined from the data collected from the instruments, the appropriate decision rule from the choices below should be applied at the beginning of a course or sequence of instruction to match the teaching stage to the level of student self-direction. After a perfect match is obtained, the instructor should move to the next highest *perfect match* decision rule to help students become more self-directed or autonomous in learning. When students are oriented or comfortable at the next level, the instructor should then move to the next highest level. For example, if the data from the instruments yields a T3/S1 mismatch, the instructor should first apply the T3/S1 Mismatch Decision Rule to match his/her teaching stage to T1, progress to the T2/S2 decision rule with the students are ready, then progress to the T3/S3 decision rule, and so on. Each of the seven (7) mismatches and near matches where initial teaching stage is above student level of self-directedness are presented below.

The T2/S1 Near Match

Learner Characteristics

- The T2/S1 Near Match combines students that are in need of an authority figure that will give specific, detailed instructions on what to learn and how to learn it, with an instructor that is encouraging students to set their own goals for learning.
- S1 students need rigorous assignments that will help them review basic facts with definite deadlines for completing them, where the T2 instructor may be providing more loosely structured assignments that allow the students to apply new concepts to their prior knowledge, skills, and experiences.
- The result of this mismatch may be poor performance from the students due to the lack of direction they are receiving.
- The advantage will be that students are encouraged to increase their level of self-directedness.

Teaching Strategies

- Establish credibility and authority early in the course.
- Providing learners with a clearly-organized, rigorous approach to the subject-matter through: a) providing straightforward objectives and techniques for achieving them, b) providing direction for learners, c) providing rigorous assignments with definite deadlines, and d) involving learners in the design and content of learning.
- Use coaching or insight methods to equip learners to take an increasing control of their own learning.

Learning Strategies

- Formal lectures emphasizing subject matter,
- Structured drills
- Highly specific assignments
- Intensive individual tutoring.

The T3/S2 Near Match

Learner Characteristics

- The T3/S2 Near Match combines students who are interested in the subject matter, are motivated to learn, but may lack prior knowledge, skills, and/or self-confidence to be successful on their own with an instructor that gives students more freedom than they are ready for.
- S2 students need an instructor to guide them through the learning process without leaving decisions on what to learn and how to learn it to them.
- They need to learn from an instructor's life experiences while being encouraged to find the value and meaning of their own life experiences and the experiences of others.
- The result of this mismatch will be that students may feel like they are being left in the dust. They may retreat from the learning experience and may not perform up to their potential.

Teaching Strategies

- □ Explain the meaning of an assignment before proceeding to show students what value it will have in their own lives.
- □ Persuade, explain, and sell, using a highly directive, but highly supportive approach to generate enthusiasm for learning and to reinforce learning willingness to learn.
- □ Give clear explanations of why skills are important, how assignments will help the learners obtain the skills, and what value the assignments will have on the learner's lives.
- □ Encourage students to set attainable, realistic goals and hold them to the attainment of those goals in order to decrease dependence and increase self-directedness.

Learning Strategies

- □ Demonstration followed by guided practice
- □ Structured projects with predictable outcomes
- □ Close supervision with ample encouraging feedback
- □ Highly interactive computerized drill and practice

The T3/S1 Mismatch

- □ The T3/S1 Mismatch combines students who are looking to the instructor to be the expert and authority in the subject are with an instructor that shares responsibility for teaching and learning with the students.

- The instructor will encourage students to share prior life experiences and relate them to the subject matter, while the students will not see the value of their experiences and will instead rely on the experience of the instructor to construct new knowledge.
- S1 students are in need of specific learning objectives established by the instructor and rigorous assignments that will assess the learning of those objectives, but are placed instead with an instructor that will allow the students to set objectives for learning and will assign group projects to help students meet the objectives they set.
- S1 students will not be ready for the freedom that the T3 instructor will give, will feel left behind, and will not perform well.

Teaching Strategies

- Establish credibility and authority early in the course.
- Providing learners with a clearly-organized, rigorous approach to the subject-matter through: a) providing straightforward objectives and techniques for achieving them, b) providing direction for learners, c) providing rigorous assignments with definite deadlines, and d) involving learners in the design and content of learning.
- Use coaching or insight methods to equip learners to take an increasing control of their own learning.

Learning Strategies

- Formal lectures emphasizing subject matter
- Structured drills
- Highly specific assignments
- Intensive individual tutoring.

The T4/S3 Near Match

Learner Characteristics

- The T4/S3 Near Match combines a student that is ready for some freedom, who possesses some of the skills needed to be a successful self-directed learner, but who may lack the self-confidence, self-concept, and ability to work with others with an instructor that will give students the freedom to set objectives on their own with the expectation that the student will use the instructor and other students as resources for learning.
- The S3 student may need close supervision where the T4 instructor will give the students more space and may only come into the learning experience when invited.
- This mismatch may result in mild discomfort on the part of the student as they are given freedom that they may be equipped for, but are not yet ready to handle.

Teaching Strategies

- Share decision making with students, letting them take increasing control of their own learning.

- □ Concentrate on facilitation and communication and support students in using the skills that they have.
- □ Offer additional tools, methods, and techniques for increasing self-direction and meaningful ways of interpreting experiences.
- □ Help students transition toward independence by negotiating interim goals and evaluations then giving learners more rope.

Learning Strategies

- □ Open-ended, but carefully designed student group projects approved and facilitated (but not directed) by the instructor
- □ Providing written criteria, learning contracts, and/or evaluation checklists to help learners monitor their own progress
- □ Seminars with instructor as a participant

The T4/S2 Mismatch

Learner Characteristics

- □ The T4/S2 Mismatch combines students who are interested in the subject matter, are motivated to learn, but lacking in the knowledge, skills, and abilities to know what they need to learn, with an instructor that is going to draw from the student's prior knowledge to help them establish objectives to learn according to their needs.
- □ Because S2 students don't know what they need and are not confident in their own ability to learn from their past experiences, this could create a problem.

- This mismatch will leave most S2 students with the question “now what?” They will feel that the instructor is absent and will feel lost and alone.

Teaching Strategies

- Explain the meaning of an assignment before proceeding to show students what value it will have in their own lives.
- Persuade, explain, and sell, using a highly directive, but highly supportive approach to generate enthusiasm for learning and to reinforce learning willingness to learn.
- Give clear explanations of why skills are important, how assignments will help the learners obtain the skills, and what value the assignments will have on the learner’s lives.
- Encourage students to set attainable, realistic goals and hold them to the attainment of those goals in order to decrease dependence and increase self-directedness.

Learning Strategies

- Demonstration followed by guided practice
- Structured projects with predictable outcomes
- Close supervision with ample encouraging feedback
- Highly interactive computerized drill and practice

The T4/S1 Severe Mismatch

Learner Characteristics

- The T4/S1 Severe Mismatch occurs when a T4 instructor delegates responsibility that the learner is not equipped to handle, causing resentment in the learner.
- With such students, humanistic methods may fail.
- Any students will not be able to make use of the "freedom to learn," because they lack the skills such as goal-setting, self-evaluation, project management, critical thinking, group participation, learning strategies, information resources, and self-esteem – which make self-directed learning possible.
- Wanting close supervision, immediate feedback, frequent interaction, constant motivation, and the reassuring presence of an authority figure telling them what to do, such students are unlikely to respond well to the delegating style of a nice humanistic facilitator, hands-off delegator, or critical theorist who demands that they confront their learning roles.

Teaching Strategies

- Establish credibility and authority early in the course.
- Providing learners with a clearly-organized, rigorous approach to the subject-matter through: a) providing straightforward objectives and techniques for achieving them, b) providing direction for learners, c) providing rigorous assignments with definite deadlines, and d) involving learners in the design and content of learning.

- □ Use coaching or insight methods to equip learners to take an increasing control of their own learning.

Learning Strategies

- □ Formal lectures emphasizing subject matter
- □ Structured drills
- □ Highly specific assignments
- □ Intensive individual tutoring.

Case Studies

The case studies below detail the application of the instruments, the decision model, and the decision rules to individual courses.

Course A

Upon applying the decision model to Course A, the instructor was found to be a T1/T2 (*M*=1.5) and the students were found to be S2/S3 (*M*=2.32). In this case, the teaching stage is below the student level of self-directedness. In order to decrease student frustration and increase student motivation and engagement at the beginning of the course, the T1/S2 Near Match decision rule should be applied (see below). This decision rule will bring about a T2/S2 match. Once the students are comfortable with the level of direction they are receiving, the instructor should move to the T3/S3 decision model, then the T4/S4 decision model.

The T1/S2 Near Match

T1/S2 Learner Characteristics

- The T1/S2 Near Match combines students that are available, interested, and somewhat motivated with an instructor that may be too directive and rigid.
- Where S2 students are looking for someone to persuade, explain, and motivate and an environment where they can begin to share their life experiences with others and assimilate learning with their experiences to construct new knowledge, the T1 instructor is lecturing and providing assignments that serve to pour knowledge into the learners' heads without taking their needs and interests into account.

T2 Teaching Strategies

- Explain the meaning of an assignment before proceeding to show students what value it will have in their own lives.
- Persuade, explain, and sell, using a highly directive, but highly supportive approach to generate enthusiasm for learning and to reinforce learning willingness to learn.
- Give clear explanations of why skills are important, how assignments will help the learners obtain the skills, and what value the assignments will have on the learner's lives.
- Encourage students to set attainable, realistic goals and hold them to the attainment of those goals in order to decrease dependence and increase self-directedness.

S2 Learning Strategies

- □ Demonstration followed by guided practice
- □ Structured projects with predictable outcomes
- □ Close supervision with ample encouraging feedback
- □ Highly interactive computerized drill and practice

Course B

Upon applying the decision model to Course B, the instructor was found to be a T3 (*M*=3.17) and the students were found to be S2/S3 (*M*=2.49). In this case, the teaching stage is above the level of student self-directedness. In order to increase student motivation and engagement at the beginning of the course, the T3/S2 Near Match decision rule should be applied (see below). This decision rule will bring about a T2/S2 match. Once the students are comfortable with the level of direction they are receiving, the instructor should move to the T3/S3 decision model, then the T4/S4 decision model.

The T3/S2 Near Match

T3/S2 Learner Characteristics

- □ The T3/S2 Near Match combines students who are interested in the subject matter, are motivated to learn, but may lack prior knowledge, skills, and/or self-confidence to be successful on their own with an instructor that gives students more freedom than they are ready for.
- □ S2 students need an instructor to guide them through the learning process without leaving decisions on what to learn and how to learn it to them.

- They need to learn from an instructor's life experiences while being encouraged to find the value and meaning of their own life experiences and the experiences of others.
- The result of this mismatch will be that students may feel like they are being left in the dust. They may retreat from the learning experience and may not perform up to their potential.

T2 Teaching Strategies

- Explain the meaning of an assignment before proceeding to show students what value it will have in their own lives.
- Persuade, explain, and sell, using a highly directive, but highly supportive approach to generate enthusiasm for learning and to reinforce learning willingness to learn.
- Give clear explanations of why skills are important, how assignments will help the learners obtain the skills, and what value the assignments will have on the learner's lives.
- Encourage students to set attainable, realistic goals and hold them to the attainment of those goals in order to decrease dependence and increase self-directedness.

S2 Learning Strategies

- Demonstration followed by guided practice
- Structured projects with predictable outcomes

- Close supervision with ample encouraging feedback
- Highly interactive computerized drill and practice

Course C

Upon applying the decision model to Course C, the instructor was found to be a T2/T3 (*M*=2.50) and the students were found to be S2 (*M*=2.14). In this case, the teaching stage is slightly above the level of student self-directedness. In order to increase student motivation and engagement at the beginning of the course, the T2/S2 Perfect Match decision rule should be applied (see below). Once the students are comfortable with the level of direction they are receiving, the instructor should move to the T3/S3 decision model, then the T4/S4 decision model.

T2/S2 Perfect Match

T2/S2 Student Characteristics

- Stage 2 learners, or "motivated" learners, are considered to be good students by most instructors.
- They are open to learning, are generally interested in the subject matter, and are more confident than Stage 1 learners, even though they may be ignorant in the subject matter being presented.
- They must be shown the meaning of an assignment before proceeding to see what value it will have in their own lives.

T2 Teaching Strategies

- □ Explain the meaning of an assignment before proceeding to show students what value it will have in their own lives.
- □ Persuade, explain, and sell, using a highly directive, but highly supportive approach to generate enthusiasm for learning and to reinforce learning willingness to learn.
- □ Give clear explanations of why skills are important, how assignments will help the learners obtain the skills, and what value the assignments will have on the learner's lives.
- □ Encourage students to set attainable, realistic goals and hold them to the attainment of those goals in order to decrease dependence and increase self-directedness.

S2 Learning Strategies

- □ Demonstration followed by guided practice
- □ Structured projects with predictable outcomes
- □ Close supervision with ample encouraging feedback
- □ Highly interactive computerized drill and practice

Course D

Upon applying the decision model to Course D, the instructor was found to be a T2 (*M*=2.17) and the students were found to be S2/S3 (*M*=2.28). In this case, the

teaching stage is slightly below the level of student self-directedness. In order to decrease student frustration and increase student motivation and engagement at the beginning of the course, the T2/S2 Perfect Match decision rule should be applied (see below). Once the students are comfortable with the level of direction they are receiving, the instructor should move to the T3/S3 decision model, then the T4/S4 decision model.

T2/S2 Perfect Match

T2/S2 Student Characteristics

- Stage 2 learners, or "motivated" learners, are considered to be good students by most instructors.
- They are open to learning, are generally interested in the subject matter, and are more confident than Stage 1 learners, even though they may be ignorant in the subject matter being presented.
- They must be shown the meaning of an assignment before proceeding to see what value it will have in their own lives.

T2 Teaching Strategies

- Explain the meaning of an assignment before proceeding to show students what value it will have in their own lives.
- Persuade, explain, and sell, using a highly directive, but highly supportive approach to generate enthusiasm for learning and to reinforce learning willingness to learn.

- □ Give clear explanations of why skills are important, how assignments will help the learners obtain the skills, and what value the assignments will have on the learner's lives.
- □ Encourage students to set attainable, realistic goals and hold them to the attainment of those goals in order to decrease dependence and increase self-directedness.

S2 Learning Strategies

- □ Demonstration followed by guided practice
- □ Structured projects with predictable outcomes
- □ Close supervision with ample encouraging feedback
- □ Highly interactive computerized drill and practice

Course E

Upon applying the decision model to Course E, the instructor was found to be a T2 (*M*=1.83) and the students were found to be S2/S3 (*M*=2.44). In this case, the teaching stage is slightly below the level of student self-directedness. In order to decrease student frustration and increase student motivation and engagement at the beginning of the course, the T2/S2 Perfect Match decision rule should be applied (see below). Once the students are comfortable with the level of direction they are receiving, the instructor should move to the T3/S3 decision model, then the T4/S4 decision model.

T2/S2 Perfect Match

T2/S2 Student Characteristics

- Stage 2 learners, or "motivated" learners, are considered to be good students by most instructors.
- They are open to learning, are generally interested in the subject matter, and are more confident than Stage 1 learners, even though they may be ignorant in the subject matter being presented.
- They must be shown the meaning of an assignment before proceeding to see what value it will have in their own lives.

T2 Teaching Strategies

- Explain the meaning of an assignment before proceeding to show students what value it will have in their own lives.
- Persuade, explain, and sell, using a highly directive, but highly supportive approach to generate enthusiasm for learning and to reinforce learning willingness to learn.
- Give clear explanations of why skills are important, how assignments will help the learners obtain the skills, and what value the assignments will have on the learner's lives.
- Encourage students to set attainable, realistic goals and hold them to the attainment of those goals in order to decrease dependence and increase self-directedness.

S2 Learning Strategies

- □ Demonstration followed by guided practice
- □ Structured projects with predictable outcomes
- □ Close supervision with ample encouraging feedback
- □ Highly interactive computerized drill and practice

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of the study, objectives of the study, type of research, population, instrumentation, data collection, data analysis, summary of findings, conclusions, and recommendations are presented in this chapter.

Purpose and Objectives of Study

The purpose of this study was to develop and pilot test two instruments based upon the Staged Self Directed Learning Model (Grow, 1991) and the key assumptions of andragogy (Knowles, Holton, and Swanson, 1998): one measuring the self-directed learning readiness of a student in the context of an individual course and the other measuring the teaching style of the instructor in the context of the same course. The data obtained from the pilot test were analyzed, students and instructors were categorized according to level of self-directedness or teaching stages, and a decision model was applied to match the students' level of self-directedness to the instructors' teaching stage. Once matched, the end goal is to move students to a higher level of self-directedness throughout the course.

The specific objectives of the study were to:

1. Describe students' level of self-directedness within a course.
2. Describe instructor's teaching stage within a course.
3. Describe students' level of agreement with the key assumptions of andragogy.

4. Describe instructor's level of agreement with the key assumptions of andragogy.
5. Compare students' level of self-directedness in a course with students' level of agreement with andragogy.
6. Describe whether instructors with a high level of agreement with the application of the key assumptions of andragogy to teaching will be more likely to foster self-directedness in students.
7. Describe whether students with a high level of agreement with the key assumptions of andragogy will be more likely to be self-directed than students with a low level of agreement.
8. Develop a decision model to help instructors minimize mismatches between the students' level of self-directedness and the instructor's teaching stage within the context of a course.

Summary of Methodology

Research Design

The research design was descriptive and correlational in nature. The conceptual framework was developed around Knowles, Holton, and Swanson's (1998) key assumptions of andragogy and Grow's (1991) Staged Self-Directed Learning (SSDL) Model. The decision model was developed from the researcher's understanding of self-directedness at each level for students and instructors. The review of literature provides the basis for this understanding.

The dependent variables selected to describe the students' level of self-directedness or learning stage include: a) S1: Dependent, b) S2: Interested, c) S3:

Involved, d) S4: Self-Directed. The dependent variables selected to describe the instructors' level of self-directedness or teaching stage include: a) T1: Authority/Coach, b) T2: Motivator/Guide, c) T3: Facilitator, and d) T4: Consultant/Delegator. The independent variables are associated with the key assumptions of andragogy and include: a) the need to know, b) the learners' self-concept, c) the role of the learners' experiences, d) readiness to learn, e) orientation to learning, and f) motivation.

Because of the sensitivity of research on human subjects, Institutional Review Board (IRB) approval was needed before collecting the data. IRB Approval was requested for the survey instruments (2004-0518) and was approved on October 1, 2004 (see Appendix A).

Pilot Test

The pilot test was conducted in three phases. The first phase was performed using three sections of an undergraduate course in the Department of Poultry Science at Texas A&M University. The first phase tested the first iteration of the instruments (see Appendix B and Appendix C), which included twenty-four (24) statements in the first category (Attributes Contributing to the Level of Self-Directedness) and twenty-four (24) statements in the second category (Attributes Associated With the Key Assumptions of Andragogy). Participants were asked to indicate their level of agreement with the statements in each of the categories using a four-point Likert scale including the following choices: Strongly Disagree, Disagree, Agree, and Strongly Agree. Data were collected during the Fall 2004 semester. In Course Section A, one (1) instructor and thirty-five (35) students responded. In Course Section B, one (1) instructor and forty-

four (44) students responded. In Course Section C, one (1) instructor and forty (40) students responded. The total number of respondents was 122. Reliability for the instruments was estimated by calculating a Cronbachs alpha. Instrument reliability for Part 1: Attributes Contributing to Level of Self-Directedness was r=.89 and for Part 2: Attributes Associated with the Key Assumptions of Andragogy was r=.94.

The second phase was performed using an undergraduate course in the Department of Agricultural Education at Texas A&M University. The second phase tested the second iteration of the instruments (see Appendix D), which broke the twenty-four (24) statements from the first category into six (6) item sets containing four statements each. The item sets contained a statement describing each of the four dependent variables and forced participants to choose only one of the four. Data collection occurred during the Fall 2004 semester with twenty-five (25) students participating. Reliability for section one of the modified instrument was determined using pretest/posttest methods and was calculated using a paired samples t-test, t(24)=.93, p=.00.

The third phase was performed using four undergraduate courses in the Department of Agricultural Education and one undergraduate course in the Department of Military Science (which have been coded for purposes of reporting). The purpose of the third phase was to test the third and final iteration of the instruments (see Appendix E and Appendix F), which measured the dependent variables in six (6) item sets containing four (4) statements each and the independent variables in six (6) item sets containing two (2) statements each – forcing participants to choose their level of agreement with pedagogy or andragogy. Data collection occurred during the Fall 2004 semester. In

Course A, one (1) instructor and nineteen (19) students responded. In Course B, one (1) instructor and twenty-two (22) students responded. In Course C, one (1) instructor and seventeen (17) students responded. In Course D, one (1) instructor and seventy-seven (77) students responded. In Course E, one (1) instructor and (49) students responded. The total number of respondents was 189. Reliability for the instruments was estimated by calculating a Cronbachs alpha. Instrument reliability for Part 1: Attributes Contributing to Level of Self-Directedness was calculated at r=.47 and instrument reliability for Part 2: Attributes Associated with the Key Assumptions of Andragogy was calculated at r=.58.

Recommendations for increasing instrument reliability are provided in this chapter. The use of pretest/posttest for estimating reliability resulted in more reliable data than did the use of a Cronbach's alpha. Because of the design and implementation of the final phase of testing (one-shot case study), it was not possible to use pretest/posttest procedures for estimating reliability. The use of a Cronbach's alpha to estimate reliability may have resulted in artificially low reliability results.

Final Instrumentation

The research instruments were designed based upon the review of literature and were divided into two sections.

The first section, composed of six (6) item sets containing four (4) statements each, was designed to measure the students'/instructors' level of self-directedness. Each of the four (4) statements in each item set represents a different teaching or learning stage. In each of the item sets, the participants were asked to choose the statement that

they had the highest level of agreement with. The level of measurement for this variable was nominal.

The second section, composed of six (6) item sets containing (2) statements each, was designed to measure the students'/instructors' level of agreement with the key assumptions of andragogy. One statement in each item set represents a pedagogical approach, the other represents an andragogical approach. In each item set, the participants were asked to choose the statement that they had the highest level of agreement with. The level of measurement of this variable was nominal.

Data Analysis

The data collected from the questionnaires was analyzed using the Statistical Package for Social Sciences (SPSS, Inc., 12.0.2, 2004).

For Objective 1, the variable "Attributes Contributing to Level of Self-Directedness" was analyzed and described by summing and averaging the responses on each of the six item sets contained in Part 1 of the instrument for each respondent and by calculating frequencies and percentages.

For Objective 2, the variable "Attributes Contributing to Level of Self-Directedness" was analyzed and described by summing and averaging the responses on each of the six item sets contained in Part 1 of the instrument for each respondent then by calculating frequencies and percentages.

For Objective 3, the variable "Attributes Associated with the Key Assumptions of Andragogy" was analyzed and described by summing and averaging the responses on

each of the six item sets contained in Part 1 of the instrument for each respondent then by calculating frequencies and percentages.

For Objective 4, the variable "Attributes Associated with the Key Assumptions of Andragogy" was analyzed and described by summing and averaging the responses on each of the six item sets contained in Part 1 of the instrument for each respondent then calculating frequencies and percentages.

For Objective 5, the variables "Attributes Associated with the Level of Self-Directedness" and "Attributes Associated with the Key Assumptions of Andragogy" were analyzed and described by summing and averaging the responses on each of the six item sets contained in Part 1 and Part 2 of the instrument for each respondent then by conducing a compare means between the two.

For Objective 6, the variables "Attributes Associated with the Level of Self-Directedness" and "Attributes Associated with the Key Assumptions of Andragogy" were summed and averaged to obtain an overall level of self-directedness and an overall level of agreement with the key assumptions of andragogy. Then, a table was generated by the researcher to compare the two variables.

For Objective 7, the variables "Attributes Associated with the Level of Self-Directedness" and in "Attributes Associated with the Key Assumptions of Andragogy" were analyzed and described by summing and averaging the responses on each of the six item sets contained in Part 1 and Part 2 of the instrument for each participant, then conducting a two-tailed Pearson correlation between the two.

For Objective 8, the decision model was developed based on the work of Grow (1991) and the review of literature.

Summary of Findings, Conclusions, and Implications for Each Objective

This section presents a summary of findings, conclusions, and implications by objective.

Objective 1

Findings

The first objective was to describe students' level of self-directedness within a course. The results were obtained by calculating frequencies, percentages, and means for each of the five courses participating in the pilot test.

In Course A, nineteen (19) students participated and their overall level of self-directedness was found to be S2/S3 (M=2.32).

In Course B, twenty-two (22) students participated and their overall level of self-directedness was found to be S2/S3 (M=2.49).

In Course C, seventeen (17) students participated and their overall level of self-directedness was found to be S2 (M=2.14).

In Course D, seventy-seven (77) students participated and their overall level of self-directedness was found to be S2/S3 (M=2.28).

In Course E, forty-nine (49) students participated and their overall level of self-directedness was found to be S2/S3 (M=2.44).

Conclusions

For the five (5) undergraduate courses participating in the pilot test, the students were found to be S2 or S2/S3. One could conclude that undergraduate courses in the Department of Agricultural Education could be designed in the S2 mode and taught in the T2 mode initially with a plan in place to increase student self-directedness by increasing the teaching stage as the semester progresses.

Implications

It would be very useful for instructors university-wide to know how to design a course to maximize teaching effectiveness from the beginning of the semester. The instruments can be used in different departments and colleges to determine where their student level of self-directedness is at the beginning and ending of courses at every level (100, 200, 300, 400, 600) to help tailor instruction to the students initial needs while increasing student self-directedness as the course progresses.

Objective 2

Findings

The second objective was to describe the instructors' teaching stage within a course. The results were obtained by calculating frequencies, percentages, and means.

In Course A, one (1) instructor participated and his/her teaching stage was found to be T1/T2 (M=1.5).

In Course B, one (1) instructor participated in the study, and his/her teaching stage was found to be T3 (M=3.17).

In Course C, one (1) instructor participated in and his/her overall level of self-directedness was found to be T2/T3 (*M*=2.50).

In Course D, one (1) instructor participated and his/her level of self-directedness was found to be T2 (*M*=2.17).

In Course E, one (1) instructor participated and his/her overall level of self-directedness was found to be T2 (*M*=1.83).

Conclusions

Teaching stage varied among instructors in the pilot test from T1/T2, to T2, to T2/T3, to T3. No severe mismatches were identified in any of the courses in the pilot test. One could conclude that, as a rule, most instructors do not teach to a high level of student self-directedness.

Implications

It is useful for instructors to be aware of their teaching stage relative to the students' level of self-directedness at the beginning of the course to maximize student motivation, engagement, and self-concept. It is also important for instructors to know how to increase their teaching stage in order to increase student self-directedness throughout the semester.

Objective 3

The third objective was to describe the students' level of agreement with the key assumptions of andragogy. The results were obtained by calculating frequencies, percentages, and means.

In Course A, nineteen (19) students participated and they were found to align more closely with andragogy than pedagogy (*M*=1.68).

In Course B, twenty-two (22) students participated and they were found to align more closely with andragogy than pedagogy (*M*=1.67).

In Course C, seventeen (17) students participated and they were found to align more closely with andragogy than pedagogy (*M*=1.73).

In Course D, seventy-seven (77) students participated and they were found to align more closely with andragogy than pedagogy (*M*=1.65).

In Course E, forty-nine (49) students participated and they were found to align more closely with andragogy than pedagogy (*M*=1.72).

Conclusions

For all five (5) of the courses participating in the pilot study, the students were found to align more closely with andragogy than pedagogy. One could conclude that based upon this association, that students will generally be ready to take increasing control of their learning with the assistance of the instructor.

Implications

In order for students to feel comfortable taking increasing control of their own learning, it is important for the instructor to make students aware of the key assumptions of andragogy and to incorporate the key assumptions in teaching at each teaching stage.

Objective 4

The fourth objective was to describe the instructors' level of agreement with the key assumptions of andragogy. The results were obtained by calculating frequencies, percentages, and means.

In Course A, one (1) instructor participated and he/she more closely aligned with andragogy than pedagogy (M=1.67).

In Course B, one (1) instructor participated and he/she aligned completely with the key assumptions of andragogy (M=2.00).

In Course C, one (1) instructor participated and he/she aligned completely with the key assumptions of andragogy (M=2.00).

In Course D, one instructor (1) participated and he/she aligned completely with the principles of andragogy (M=2.00).

In Course E, one (1) instructor participated and he/she aligned more with andragogy than pedagogy (M=1.67).

Conclusions

Three of the instructors participating in the pilot test were found to align perfectly with the key assumptions of andragogy. Two of the instructors were found to align more

closely with andragogy than pedagogy. One could conclude, based upon this association, that instructors are ready to give students an increasing level of control over their own learning, even if they are not comfortable doing so. In order to help instructors develop more of a sense of familiarity with andragogy and pedagogy, the Center for Teaching Excellence could create a training program based on this model.

Implications

In order to incorporate andragogical principles into teaching, instructors must be aware of the theory and key assumptions of andragogy. By putting andragogy into practice, instructors will be able to increase their teaching stage and help students increase their level of self-directedness.

Objective 5

The fifth objective was to compare the students' level of self-directedness in a course with the students' level of agreement with andragogy.

In Course A, an overall increase in the level of self-directedness was discovered as the students' level of agreement with the key assumptions of andragogy increased.

In Course B, an overall increase in the level of self-directedness was discovered as the students' level of agreement with the key assumption of andragogy increased.

In Course C, an overall increase in the level of self-directedness was discovered as the students' level of agreement with the key assumption of andragogy increased.

In Course D, an overall increase in the level of self-directedness was discovered as the students' level of agreement with the key assumption of andragogy increased.

In Course E, an overall increase in the level of self-directedness was discovered as the students' level of agreement with the key assumption of andragogy increased.

Conclusions

For each of the five (5) courses participating in the pilot study, the students' level of self-directedness increased as the students' level of agreement with the key assumptions of andragogy increased. One can conclude that the more students know about how the learning will benefit their lives, the more responsibility they are given for decisions regarding their own learning, the more instructors draw upon their prior knowledge and experience, the more they can relate the course material to problems they are trying to solve and tasks they are trying to perform in their own lives, and the more learning will contribute to increased self-esteem and quality of life, the more likely they are to be self-directed.

Implications

The implication of this finding is that teaching methods are very important to a student increasing his/her level of self-directedness. Because most students come from a pedagogical educational system, they will only learn to take increasing control of their own learning as control is granted by the instructor. The instructor must be aware of teaching strategies that align with andragogy in order to best facilitate this process.

Objective 6

The sixth objective is to describe whether instructors with a high level of agreement with the application of the key assumptions of andragogy to teaching will be more likely to foster self-directedness in students.

The data analysis revealed that for all five (5) courses participating in the pilot test, the higher an instructor's level of agreement with the key assumptions of andragogy, the more likely he/she will be to foster self-directedness in students.

Conclusions

The more understanding of and agreement with the key assumptions of andragogy, the more likely an instructor will be to foster self-directedness within students.

Implications

Instructors should be aware of the key assumptions of andragogy and have resources available to them that demonstrate how to incorporate the principles of andragogy into teaching.

Objective 7

The seventh objective is to describe whether students with a high level of agreement with the key assumptions of andragogy will be more likely to be self-directed than students with a low level of agreement.

A significant correlation was found between the students'level of agreement with the key assumptions of andragogy and the students' level of self-directedness in three of the five courses participating in the pilot test (Course B, Course C, and Course D).

Conclusions

Students with a high level of agreement with the key assumptions of andragogy will be more likely to be self-directed that students with a low level of agreement.

Implications

Student self-directedness can be increased as students are made aware of the key assumptions of andragogy and are able to apply them to their own learning.

Objective 8

The eighth objective was to develop a decision model to help instructors minimize mismatches between the students' level of self-directedness and the instructor's teaching stage within the context of a course.

For the student decision model, level of self-directedness is assigned in the following manner: S1 (*M*=1.0-1.25), S1/S2 (*M*=1.26-1.75), S2 (*M*=1.76-2.25), S2/S3 (*M*=2.26-2.75), S3 (*M*=2.76-3.25), S3/S4 (*M*=3.26-3.75), S4 (*M*=3.76-4.0). For the instructor decision model, teaching stage is assigned in the following manner: T1 (*M*=1.0-1.25), T1/T2 (*M*=1.26-1.75), T2 (*M*=1.76-2.25), T2/T3 (*M*=2.26-2.75), T3 (*M*=2.76-3.25), T3/T4 (*M*=3.26-3.75), T4 (*M*=3.76-4.0).

Conclusions

The decision models are an accurate way to assign students and instructors to the appropriate self-directed learning/teaching stage using the data obtained from the instruments. The decision rules offer a picture of each scenario and effective strategies to match teaching stage with the students' level of self-directedness. The goal of education is to increase the students' level of self-directness. An instructor must be responsive to student needs and be ready to increase their teaching stage as students become ready.

Implications

The decision model can be used with grouped student data or for individual students to help provide targeted instruction that matches (and helps to increase) student self-direction.

Additional Implications and Recommendations

1. The use of pretest/posttest for estimating reliability resulted in more reliable data than did the use of a Cronbach's alpha. Because of the design and implementation of the final phase of testing (one-shot case study), it was not possible to use pretest/posttest procedures for estimating reliability. The use of a Cronbach's alpha to estimate reliability may have resulted in artificially low reliability results. Additional items should be added to both sections of each instrument to increase reliability and validity. Additional paired statements and

the use of pretest/posttest methods will increase reliability and validity of the instruments.

2. Teachers should use the instruments at the beginning of each course to maximize teaching effectiveness and to maximize student self-concept, motivation, and engagement.
3. Additional research is needed to determine and measure the attributes of self-directedness and to determine how each attribute is exhibited at each level of self-directedness. Each attribute needs to be addressed and measured in the student instrument to help instructors best respond to student needs.
4. Additional research is needed on the application of teaching and learning strategies to each stage of the decision rule. The decision rules could be enhanced if teaching and learning strategies could be applied to each stage based on quantitative data.
5. Additional research is needed to develop a comprehensive model of self-directed learning based upon the assimilation of the models discussed in the review of literature and other models not presented in this study. The instruments and decision rules should be adapted to and built around this comprehensive model.
6. Additional research is needed to develop a definition for self-directed learning based upon learner attributes, social context, political context, and teaching stages. The instruments developed for this study could be improved under the lens of a comprehensive definition.

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APPENDIX A

INSTITUTIONAL REVIEW BOARD APPROVAL LETTER

VPR
Office of the Vice President for Research
Texas A&M University

Date October 1, 2004

MEMORANDUM

Office of Research Compliance

Academy for Advanced Telecommunication and Learning Technologies

Center for Information Assurance and Security

Comparative Medicine Program

Institute for Scientific Computation

Integrative Center for Homeland Security

Microscopy and Imaging Center

Office of Graduate Studies

Technology Commercialization Center

Texas A&M University Research Park

Texas A&M University

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FAX 979.862.3176

TO: Mr. Lance Richards
Dept. of Agricultural Education
MS 2116

FROM: Dr. E. Murl Bailey, CIP, Advisor
Institutional Review Board
MS 1112

SUBJECT: IRB Protocol Review

Title: Developing a Decision Model to Describe Levels of Self-Directedness Based Upon the Key Assumptions of Andragogy

Protocol Number: 2004-0518
Review Category: Exempt from Full Review
Approval Date: October 1, 2004 **to** September 30, 2005

The approval determination was based on the following Code of Federal Regulations http://ohrp.osophs.dhhs.gov/humansubjects/guidance/45cfr46.htm

✓ 46.101(b)(1)	46.101(b)(4)
46.101(b)(2)	46.101(b)(5)
46.101(b)(3)	46.101(b)(6)

Remarks:

After specific review, it has been determined that approval for waiver (or alteration) of the requirement to obtain informed consent may be granted under 45 CFR 46.116(d)(1-4). However, a study information sheet with all elements of consent must be provided to study participants.

The Institutional Review Board – Human Subjects in Research, Texas A&M University has reviewed and approved the above referenced protocol. Your study has been approved for one year. As the principal investigator of this study, you assume the following responsibilities:

Renewal: Your protocol must be re-approved each year in order to continue the research. You must also complete the proper renewal forms in order to continue the study after the initial approval period.

Adverse events: Any adverse events or reactions must be reported to the IRB immediately.

Amendments: Any changes to the protocol, such as procedures, consent/assent forms, addition of subjects, or study design must be reported to and approved by the IRB.

Informed Consent/Assent: All subjects should be given a copy of the consent document approved by the IRB for use in your study.

Completion: When the study is complete, you must notify the IRB office and complete the required forms.

PART 46.101 PROTECTION OF HUMAN SUBJECTS

46.101

(a) Except as provided in paragraph (b) of this section, this policy applies to all research involving human subjects conducted, supported or otherwise subject to regulation by any Federal Department or Agency which takes appropriate administrative action to make the policy applicable to such research. This includes research conducted by Federal civilian employees or military personnel, except that each Department or Agency head may adopt such procedural modifications as may be appropriate from an administrative standpoint. It also includes research conducted, supported, or otherwise subject to regulation by the Federal Government outside the United States.

(1) Research that is conducted or supported by a Federal Department or Agency, whether or not it is regulated as defined in 46.102(e), must comply with all sections of this policy.

(2) Research that is neither conducted nor supported by a Federal Department or Agency but is subject to regulation as defined in 46.102(e) must be reviewed and approved, in compliance with 46.101, 46.102, and 46.107 through 46.117 of this policy, by an Institutional Review Board (IRB) thatoperates in accordance with the pertinent requirements of this policy.

(b) Unless otherwise required by Department or Agency heads, research activities in which the only involvement of human subjects will be in one or more of the following categories are exempt from this policy:[1]

(1) Research conducted in established or commonly accepted educational settings, involving normal educational practices, such as (i) research on regular and special education instructional strategies, or (ii) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.

(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:
(i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

(3) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior that is not exempt under paragraph (b)(2) of this section, if:
(i) the human subjects are elected or appointed public officials or candidates for public office; or (ii) Federal statute(s) require(s) without exception that the confidentiality of the personally identifiable information will be maintained throughout the research and thereafter.

(4) Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.

(5) Research and demonstration projects which are conducted by or subject to the approval of Department or Agency heads, and which are designed to study, evaluate, or otherwise examine:
(i) Public benefit or service programs; (ii) procedures for obtaining benefits or services under those programs; (iii) possible changes in or alternatives to those programs or procedures; or (iv) possible changes in methods or levels of payment for benefits or services under those programs.

(6) Taste and food quality evaluation and consumer acceptance studies, (i) if wholesome foods without additives are consumed or (ii) if a food isconsumed that contains a food ingredient at or below the level and for a use found to be safe, or agricultural chemical or environmental contaminant at or below the level found to be safe, by the Food and Drug Administration or approved by the Environmental Protection Agency or the Food Safety and Inspection Service of the U.S. Department of Agriculture.

APPENDIX B

PRELIMINARY STUDENT INSTRUMENT

(USED IN PHASE I OF PILOT TEST)

DEVELOPING A DECISION MODEL TO DESCRIBE LEVELS OF SELF-DIRECTEDNESS BASED UPON THE KEY ASSUMPTIONS OF ANDRAGOGY

STUDENT QUESTIONNAIRE

First of all, I would like to thank you for taking the time to fill out the following questionnaire. It is our hope that it will be as fun for you to fill out as it has been for us to develop! You are part of a pilot test to develop an instrument to measure students' readiness for self-directed learning. Using the information collected in this study, instructors will be able tailor instruction to fit the needs of students in each individual course. The application will be to provide a more effective educational experience for students and to aid in students' growth through a course.

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The questionnaire will take you approximately ten minutes to complete and will be collected by the facilitator once everyone has finished. The research being conducted will be used in partial fulfillment of the requirements for my Master's degree.

If you have any questions about this questionnaire or this study, please contact me by e-mail at lrichards@tamu.edu or by phone at 979-458-4297. Once again, thank you very much for your time!

Sincerely,

Lance J. Richards

James R Lindner

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PART I: ATTRIBUTES CONTRIUBITING TO LEVEL OF SELF-DIRECTEDNESS

Below, you will find a listing of characteristics contributing to self-directed learning readiness. Please read each item carefully and answer honestly and objectively.

Using the following scale, circle the response that best fits your level of agreement with each question.

1=Strongly Disagree (**SD**)
2=Disagree (**D**)
3=Agree (**A**)
4=Strongly Agree (**SA**)

Items	SD	D	A	SA
I am generally not motivated to learn on my own.	1	2	3	4
I have little prior knowledge of the material to be learned in this course.	1	2	3	4
I see myself as a participant in my education, not a spectator.	1	2	3	4
I set my own goals for learning without the help of the instructor.	1	2	3	4
I rely on feedback from the instructor to build confidence in my understanding of the material.	1	2	3	4
I am interested in learning the material in this course.	1	2	3	4
I am ready to explore this subject matter under the guidance of an expert.	1	2	3	4
I use resources outside of class to meet my goals.	1	2	3	4
I prefer highly structured assessment to measure what I have learned.	1	2	3	4
I am motivated by good instructors.	1	2	3	4
I like to be provided with resources to help me learn on my own.	1	2	3	4
I am willing to take responsibility for my own learning.	1	2	3	4

Continued on Next Page →→→

Items (continued)	SD	D	A	SA
I am able to learn best by attending a formal lecture that emphasizes subject matter.	1	2	3	4
I am more willing to complete assignments that I know the purpose of.	1	2	3	4
I would benefit from learning how I learn.	1	2	3	4
I learn best when I set my own goals.	1	2	3	4
I believe that the instructor is an authority figure who should give explicit directions on what to do.	1	2	3	4
I am confident in my ability to learn.	1	2	3	4
I value my life experiences.	1	2	3	4
I prefer that the instructor provide direction only when requested.	1	2	3	4
I am very interested in the material taught in this course.	1	2	3	4
Most instructors would consider me to be a good student.	1	2	3	4
I benefit from participating in student-developed group projects performed without close supervision.	1	2	3	4
I have prior knowledge and skills in this subject area.	1	2	3	4

PART II: ATTRIBUTES ASSOCIATED WITH THE KEY ASSUMPTIONS OF ANDRAGOGY

Below, you will find a list of attributes associated with the key assumptions of andragogy. Please read each item carefully and answer honestly and objectively.

Using the following scale, circle the response that best fits your level of agreement with each question.

1=Strongly Disagree (**SD**)
2=Disagree (**D**)
3=Agree (**A**)
4=Strongly Agree (**SA**)

Items	SD	D	A	SA
I need to know why I need to learn something before beginning a course.	1	2	3	4
I have a sense of being responsible for my own decisions.	1	2	3	4
I benefit educationally from instructors that use techniques that tap into my experiences.	1	2	3	4
I become ready to learn those things that I need to know in order to cope effectively with my real-life situations.	1	2	3	4
I am motivated to learn to the extent that I perceive that learning will help me perform tasks.	1	2	3	4
I tend to be more motivated toward learning that helps me solve problems in my life.	1	2	3	4
I need to discover the gaps between where I am and where I want to be at the beginning of a course.	1	2	3	4
I learn best from experiences that help me take increasing control of my own learning.	1	2	3	4
I believe that instructors should encourage students to examine their biases.	1	2	3	4

Continued on Next Page →→→

Items (continued)	SD	D	A	SA
I vary in the amount of assistance I need in a course according to my prior competence in the subject matter.	1	2	3	4
I gain new knowledge most effectively when it is presented in the context of real-life situations.	1	2	3	4
I am motivated most when I believe I can learn the new material.	1	2	3	4
I need to discover how the material to be learned in the course is relevant to my life.	1	2	3	4
I prefer the freedom to determine how to learn the material in a course.	1	2	3	4
I benefit educationally from instructors that use techniques that tap into the experiences of other learners.	1	2	3	4
I vary in the amount of encouragement I need in a course according to my commitment to learning the material.	1	2	3	4
I learn new skills most effectively when they are presented in the context of application to real-life situations.	1	2	3	4
I tend to be more motivated toward learning that results in increases in my quality of life.	1	2	3	4
It is important to know that an assignment is relevant to learning in a course before starting it.	1	2	3	4
I feel that I am responsible for the direction of my life.	1	2	3	4
I benefit educationally from instructors that engage students in group discussion.	1	2	3	4
I vary in the amount of support I need in a course according to my confidence in my learning abilities.	1	2	3	4
Continued on Next Page →→→				

Items (continued)	SD	D	A	SA
I gain new values most effectively when they are presented in the context of application to real-life situations.	1	2	3	4
I tend to be more motivated toward learning that increases my job satisfaction.	1	2	3	4

END

Please hold on to your questionnaire until all participants are done.
THANK YOU FOR YOUR TIME AND HELP!

APPENDIX C

PRELIMINARY INSTRUCTOR INSTRUMENT

(USED IN PHASE I OF PILOT TEST)

DEVELOPING A DECISION MODEL TO DESCRIBE LEVELS OF SELF-DIRECTEDNESS BASED UPON THE KEY ASSUMPTIONS OF ANDRAGOGY

INSTRUCTOR QUESTIONNAIRE

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The questionnaire is divided into two sections. Please read the directions for each section carefully before responding. Please answer all questions honestly and objectively. All individual responses collected in this study are confidential. No information about individual participants will be published or disclosed. Your responses will be combined with others and reported as grouped data.

The questionnaire will take you approximately ten minutes to complete and will be collected by the facilitator once everyone has finished. The research being conducted will be used in partial fulfillment of the requirements for my Master's degree.

If you have any questions about this questionnaire or this study, please contact me by e-mail at lrichards@tamu.edu or by phone at 979-458-4297. Once again, thank you very much for your time!

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PART I: ATTRIBUTES CONTRIUBITING TO LEVEL OF SELF-DIRECTEDNESS

Below, you will find a list of attributes contributing to the level of directedness exhibited by an instructor. Please read each item carefully and answer honestly and objectively.

Using the following scale, circle the response that best fits your level of agreement with each question.

1=Strongly Disagree (**SD**)
2=Disagree (**D**)
3=Agree (**A**)
4=Strongly Agree (**SA**)

Items	SD	D	A	SA
I establish credibility at the beginning of a course.	1	2	3	4
I bring enthusiasm to the class, making students excited about learning.	1	2	3	4
I share decision making with students, letting students take an increasing role in deciding how they learn.	1	2	3	4
I consult with students to develop written criteria (such as a grading rubric or timeline) for each project they develop.	1	2	3	4
I provide students with a clearly-organized, rigorous approach to the subject.	1	2	3	4
I reinforce students' enthusiasm by using a highly directive, but highly supportive approach to teaching.	1	2	3	4
I encourage students to apply the skills they have through facilitation and communication.	1	2	3	4
I encourage students to cooperate with each other, but not to abandon responsibility.	1	2	3	4
I provide learners with straightforward objectives and techniques for achieving them.	1	2	3	4
Continued on Next Page →→→				

Items (continued)	SD	D	A	SA
I clearly explain why the concepts being taught are important.	1	2	3	4
I help students relate learning to their past experiences.	1	2	3	4
I focus on the process of being productive as well as the final product.	1	2	3	4
I provide learners with direction.	1	2	3	4
I show concrete results for what I teach.	1	2	3	4
I help students transition toward independence.	1	2	3	4
I encourage students to work on more advanced projects with clear meaning outside the classroom.	1	2	3	4
I assign rigorous assignments with definite deadlines.	1	2	3	4
I encourage students to set goals.	1	2	3	4
I assign students to work in groups on open-ended but carefully designed projects.	1	2	3	4
I actively monitor progress to ensure student success, but step in only to assist students in acquiring the skills to be self-directive and self-monitoring.	1	2	3	4
I assign highly specific assignments and exams.	1	2	3	4
I explain each assignment and convince students of its value.	1	2	3	4
I provide written criteria (such as learning contracts or grading rubrics) to help learners monitor their own progress.	1	2	3	4
I cultivate the students' ability to learn.	1	2	3	4

PART II: ATTRIBUTES ASSOCIATED WITH THE KEY ASSUMPTIONS OF ANDRAGOGY

Below, you will find a list of attributes associated with the key assumptions of andragogy. Please read each item carefully and answer honestly and objectively.

Using the following scale, circle the response that best fits your level of agreement with each question.

1=Strongly Disagree (**SD**)
2=Disagree (**D**)
3=Agree (**A**)
4=Strongly Agree (**SA**)

Items	SD	D	A	SA
Students need to know why they need to learn something before setting out to learn it.	1	2	3	4
Students have a sense of being responsible for their own decisions and their own lives.	1	2	3	4
Students benefit educationally from instructors that use techniques that tap into their experiences.	1	2	3	4
Students become ready to learn those things that they need to know in order to cope effectively with their real-life situations.	1	2	3	4
Students are motivated to learn to the extent that they perceive learning will help them perform tasks.	1	2	3	4
Students tend to be more motivated toward learning that helps them solve problems in their lives.	1	2	3	4
Students need to discover the gaps between where they are and where they want to be at the beginning of a course.	1	2	3	4
Students learn best from experiences that help them take increasing control of my own learning.	1	2	3	4

Continued on Next Page →→→

Items (continued)	SD	D	A	SA
Students should be encouraged by their instructors to examine their biases.	1	2	3	4
Students vary in the amount of assistance they need in a course according to their prior competence in the subject matter.	1	2	3	4
Students gain new knowledge most effectively when it is presented in the context of real-life situations.	1	2	3	4
Students are motivated most when they believe they can learn the new material.	1	2	3	4
Students need to discover how the material to be learned in a course is relevant to their lives.	1	2	3	4
Students prefer the freedom to determine how to learn the material in a course.	1	2	3	4
Students benefit educationally from instructors who use techniques that tap into the experiences of other students.	1	2	3	4
Students vary in the amount of encouragement they need in a course according to their commitment to learning the material.	1	2	3	4
Students learn new skills most effectively when they are presented in the context of application to real-life situations.	1	2	3	4
Students tend to be more motivated toward learning that results in increases in their quality of life.	1	2	3	4
Students need to know how an assignment is relevant to learning in a course before starting it.	1	2	3	4
Students have a sense of responsibility for the direction of their lives.	1	2	3	4
Students benefit educationally from instructors that engage students in group discussion.	1	2	3	4
Students vary in the amount of support they need in a course according to their confidence in their learning abilities.	1	2	3	4
Continued on Next Page →→→				

Items (continued)	SD	D	A	SA
Students gain new values most effectively when they are presented in the context of application to real-life situations.	1	2	3	4
Students tend to be more motivated toward learning that increases their job satisfaction.	1	2	3	4

END

Please hold on to your questionnaire until all participants are done.
THANK YOU FOR YOUR TIME AND HELP!

APPENDIX D

REVISED STUDENT INSTRUMENT

(USED IN PHASE II OF PILOT TEST)

For each set of items below, select the ***one item*** that best describes you by placing a √ in the appropriate box.

Item Set A	Select the *One* Item that Best Describes You
I am generally not motivated to learn on my own.	☐
I have little prior knowledge of the material to be learned in this course.	☐
I see myself as a participant in my education, not a spectator.	☐
I set my own goals for learning without the help of the instructor.	☐

Item Set B	Select the *One* Item that Best Describes You
I rely on feedback from the instructor to build confidence in my understanding of the material.	☐
I am interested in learning the material in this course.	☐
I am ready to explore this subject matter under the guidance of an expert.	☐
I use resources outside of class to meet my goals.	☐

Item Set C	Select the *One* Item that Best Describes You
I prefer highly structured assessment to measure what I have learned.	☐
I am motivated by good instructors.	☐
I like to be provided with resources to help me learn on my own.	☐
I am willing to take responsibility for my own learning.	☐

Continued on Next Page →→→

Item Set D	Select the *One* Item that Best Describes You
I am able to learn best by attending a formal lecture that emphasizes subject matter.	☐
I am more willing to complete assignments that I know the purpose of.	☐
I would benefit from learning how I learn.	☐
I learn best when I set my own goals.	☐

Item Set E	Select the *One* Item that Best Describes You
I believe that the instructor is an authority figure who should give explicit directions on what to do.	☐
I am confident in my ability to learn.	☐
I value my life experiences.	☐
I prefer that the instructor provide direction only when requested.	☐

Item Set F	Select the *One* Item that Best Describes You
I am very interested in the material taught in this course.	☐
Most instructors would consider me to be a good student.	☐
I benefit from participating in student-developed group projects performed without close supervision.	☐
I have prior knowledge and skills in this subject area.	☐

APPENDIX E

FINAL STUDENT INSTRUMENT

(USED IN PHASE III OF PILOT TEST)

DEVELOPING A DECISION MODEL TO DESCRIBE LEVELS OF SELF-DIRECTEDNESS BASED UPON THE KEY ASSUMPTIONS OF ANDRAGOGY

STUDENT QUESTIONNAIRE

First of all, I would like to thank you for taking the time to fill out the following questionnaire. It is our hope that it will be as fun for you to fill out as it has been for us to develop! You are part of a pilot test to develop an instrument to measure students' readiness for self-directed learning. Using the information collected in this study, instructors will be able tailor instruction to fit the needs of students in each individual course. The application will be to provide a more effective educational experience for students and to aid in students' growth through a course.

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PART I: ATTRIBUTES CONTRIUBITING TO LEVEL OF SELF-DIRECTEDNESS

For each set of items below, select the ***one item*** that best describes you by placing a √ in the appropriate box. Please read each item carefully and answer honestly and objectively.

Item Set A	Select the *One* Item that Best Describes You
I am generally not motivated to learn on my own.	☐
I have little prior knowledge of the material to be learned in this course.	☐
I see myself as a participant in my education, not a spectator.	☐
I set my own goals for learning without the help of the instructor.	☐

Item Set B	Select the *One* Item that Best Describes You
I rely on feedback from the instructor to build confidence in my understanding of the material.	☐
I am interested in learning the material in this course.	☐
I am ready to explore this subject matter under the guidance of an expert.	☐
I use resources outside of class to meet my goals.	☐

Item Set C	Select the *One* Item that Best Describes You
I prefer highly structured assessment to measure what I have learned.	☐
I am motivated by good instructors.	☐
I like to be provided with resources to help me learn on my own.	☐
I am willing to take responsibility for my own learning.	☐

Continued on Next Page →→→

Item Set D	Select the *One* Item that Best Describes You
I am able to learn best by attending a formal lecture that emphasizes subject matter.	☐
I am more willing to complete assignments that I know the purpose of.	☐
I would benefit from learning how I learn.	☐
I learn best when I set my own goals.	☐

Item Set E	Select the *One* Item that Best Describes You
I believe that the instructor is an authority figure who should give explicit directions on what to do.	☐
I am confident in my ability to learn.	☐
I value my life experiences.	☐
I prefer that the instructor provide direction only when requested.	☐

Item Set F	Select the *One* Item that Best Describes You
I am very interested in the material taught in this course.	☐
Most instructors would consider me to be a good student.	☐
I benefit from participating in student-developed group projects performed without close supervision.	☐
I have prior knowledge and skills in this subject area.	☐
Questionnaire Continues on Next Page →→→	

PART II: ATTRIBUTES ASSOCIATED WITH THE KEY ASSUMPTIONS OF ANDRAGOGY

For each set of items below, select the ***one item*** that best describes you by placing a √ in the appropriate box. Please read each item carefully and answer honestly and objectively.

Item Set G	Select the *One* Item that Best Describes You
I need to know only that which I need to learn to earn a passing grade.	☐
I need to know how the course material will apply to my life before I set out to learn it.	☐

Item Set H	Select the *One* Item that Best Describes You
I feel that it is the job of the instructor to tell me how to approach learning the material in a course.	☐
I feel that I am responsible for determining how to approach learning the material in a course.	☐

Item Set I	Select the *One* Item that Best Describes You
I learn most effectively when drawing from my instructor's life experiences.	☐
I learn most effectively when drawing from my own life experiences.	☐

Item Set J	Select the *One* Item that Best Describes You
I become ready to learn only that which the instructor tells me I must learn to earn a passing grade.	☐
I become ready to learn only that which can be applied directly to my life.	☐

Continued on Next Page →→→

Item Set K	Select the *One* Item that Best Describes You
I see learning as course-centered, only applying knowledge within the course in which I am enrolled.	☐
I see learning as life-centered, using knowledge to help solve problems in my life beyond the course in which I am enrolled.	☐

Item Set L	Select the *One* Item that Best Describes You
I am motivated to learn by external motivators (such as grades, the instructor's approval, etc.)	☐
I am motivated to learn by internal motivators (such as increased self-esteem, quality of life, etc.)	☐

END

Please hold on to your questionnaire until all participants are done.
THANK YOU FOR YOUR TIME AND HELP!

APPENDIX F

FINAL INSTRUCTOR INSTRUMENT

(USED IN PHASE III OF PILOT TEST)

DEVELOPING A DECISION MODEL TO DESCRIBE LEVELS OF SELF-DIRECTEDNESS BASED UPON THE KEY ASSUMPTIONS OF ANDRAGOGY

INSTRUCTOR QUESTIONNAIRE

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PART I: ATTRIBUTES CONTRIUBITING TO LEVEL OF SELF-DIRECTEDNESS

For each set of items below, select the ***one item*** that best describes you by placing a √ in the appropriate box. Please read each item carefully and answer honestly and objectively.

Item Set A	Select the *One* Item that Best Describes You
I establish credibility at the beginning of a course.	☐
I bring enthusiasm to the class, making students excited about learning.	☐
I share decision making with students, letting students take an increasing role in deciding how they learn.	☐
I consult with students to develop written criteria (such as a grading rubric or timeline) for each project they develop.	☐

Item Set B	Select the *One* Item that Best Describes You
I provide students with a clearly-organized, rigorous approach to the subject.	☐
I reinforce students´ enthusiasm by using a highly directive, but highly supportive approach to teaching.	☐
I encourage students to apply the skills they have through facilitation and communication.	☐
I encourage students to cooperate with each other, but not to abandon responsibility.	☐

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Item Set C	Select the *One* Item that Best Describes You
I provide learners with straightforward objectives and techniques for achieving them.	☐
I clearly explain why the concepts being taught are important.	☐
I help students relate learning to their past experiences.	☐
I focus on the process of being productive as well as the final product.	☐

Item Set D	Select the *One* Item that Best Describes You
I provide learners with direction.	☐
I show concrete results for what I teach.	☐
I help students transition toward independence.	☐
I encourage students to work on more advanced projects with clear meaning outside the classroom.	☐

Item Set E	Select the *One* Item that Best Describes You
I assign rigorous assignments with definite deadlines.	☐
I encourage students to set goals.	☐
I assign students to work in groups on open-ended but carefully designed projects.	☐
I actively monitor progress to ensure student success, but step in only to assist students in acquiring the skills to be self-directive and self-monitoring.	☐
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Item Set F	Select the *One* Item that Best Describes You
I assign highly specific assignments and exams.	☐
I explain each assignment and convince students of its value.	☐
I provide written criteria (such as learning contracts or grading rubrics) to help learners monitor their own progress.	☐
I cultivate the students´ ability to learn.	☐
Questionnaire Continues on Next Page →→→	

PART II: ATTRIBUTES ASSOCIATED WITH THE KEY ASSUMPTIONS OF ANDRAGOGY

For each set of items below, select the ***one item*** that best describes you by placing a √ in the appropriate box. Please read each item carefully and answer honestly and objectively.

Item Set G	Select the *One* Item that Best Describes You
Students need to know only that which they need to learn to earn a passing grade.	☐
Students need to know how the course material will apply to their lives before setting out to learn it.	☐

Item Set H	Select the *One* Item that Best Describes You
Students should rely on the instructor to tell them how to approach learning the material in a course.	☐
Students should be responsible for determining how to approach learning the material in a course.	☐

Item Set I	Select the *One* Item that Best Describes You
Students learn most effectively when drawing from the instructor's life experiences.	☐
Students learn most effectively when drawing from their own life experiences.	☐

Item Set J	Select the *One* Item that Best Describes You
Students become ready to learn only that which the instructor tells them they must learn to earn a passing grade.	☐
Students become ready to learn only that which can be applied directly to their lives.	☐

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Item Set K	Select the *One* Item that Best Describes You
Students see learning as course-centered, only applying knowledge within the course in which they are enrolled.	☐
Students see learning as life-centered, using knowledge to help solve problems in their lives beyond the course in which they are enrolled.	☐

Item Set L	Select the *One* Item that Best Describes You
Students are motivated to learn by external motivators (such as grades, the instructor's approval, etc.)	☐
Students are motivated to learn by internal motivators (such as increased self-esteem, quality of life, etc.)	☐

END

Please hold on to your questionnaire until all participants are done.
THANK YOU FOR YOUR TIME AND HELP!

VITA

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EDUCATION

Master of Science – Agricultural Education ***August 2005***
Emphasis Area – Adult and Distance Education; Human Resource Development
Texas A&M University, College Station, TX

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Minor, Business Administration
Texas A&M University, College Station, TX

PROFESSIONAL EXPERIENCE

Director of College Ministries ***June 2003-Present***
A&M United Methodist Church, College Station, TX
Responsible for:

- Guiding the vision and direction of the College Ministries Program
- Integrating College Ministries with Children, Youth, Adults, and Music Ministries
- Providing and facilitating opportunities for student guided ministries in the areas of study, fellowship, outreach, service, stewardship, and worship
- Advising and empowering College Council, a group of Undergraduate and Graduate students, to take leadership in College Ministries, in the church, in the community, and in the world
- Teaching and writing curriculum for Bible Studies, Sunday School, and Retreats
- Utilizing and empowering an adult College Ministries Committee to assist in the financing and operations of College Ministries
- Serving on the Church Council, Building Committee, Worship Committee and others as needed
- Managing and coordinating staff and volunteers
- Counseling and mentoring students
- Developing and facilitating web-based ministries

Information Specialist ***August 2002 – December 2004***
Department of Petroleum Engineering – Texas A&M University, College Station, TX
Responsible for:

- Establishing and guiding the vision and mission of the Distance Learning Program
- Coordinating marketing and outreach efforts to the petroleum industry
- Designing and developing curriculum, educational materials, and web pages
- Integrating graphics, animated videos, and audio into online educational materials
- Providing computer technology training and support to faculty and students
- Establishing instructional, course, and program objectives
- Performing needs assessments and program evaluations
- Improving teaching practices in undergraduate and graduate education
- Serving on three University-level committees to improve services, quality, and administration of distance learning