

DOCUMENT RESUME

ED 446 702

HE 033 557

AUTHOR Tweedell, Cynthia Benn
TITLE A Theory of Adult Learning and Implications for Practice.
PUB DATE 2000-10-00
NOTE 19p.; Paper presented at the Annual Meeting of the Midwest Educational Research Association (Chicago, IL, October 2000).
PUB TYPE Reports - Descriptive (141) -- Speeches/Meeting Papers (150)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Adult Education; *Adult Learning; College Students; Higher Education; *Nontraditional Students; Student Characteristics
IDENTIFIERS Indiana Wesleyan University

ABSTRACT

This paper presents the most current thinking on how to best structure adult learning programs, noting that adult learners demand a convenient program which is specially designed with their learning style in mind. They learn best in an interactive format with heavy emphasis on the practical application of their learning. The paper discusses the development of adult education in the 20th century, examines the design of adult education programs, and describes today's adult learners. It highlights the design of the Division of Adult and Professional Studies at Indiana Wesleyan University. The university's model features a semi-independent structure, interactive learning in study groups, and experiential learning. The model is an application of adult learning theory and includes scattered sites and evening and weekend scheduling to make education accessible when other programs would create barriers. The interactive nature of the classes and a curriculum rooted in students' everyday experiences motivate these learners to persist toward meeting their educational goals. Retention data for this program are examined and implications for adult education are discussed. (Contains 31 references.) (SM)

A Theory of Adult Learning And Implications for Practice

Paper presented at
Midwest Educational Research Association
Annual Meeting
Chicago, Illinois
October, 2000

PERMISSION TO REPRODUCE AND
DISSEMINATE THIS MATERIAL HAS
BEEN GRANTED BY

C. Tweedell

TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC)

1

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

This document has been reproduced as
received from the person or organization
originating it.

Minor changes have been made to
improve reproduction quality.

Points of view or opinions stated in this
document do not necessarily represent
official OERI position or policy.

Cynthia Benn Tweedell, Ph.D.
Coordinator of Assessment
Division of Adult and Professional Studies
Indiana Wesleyan University

Abstract: This paper presents the most current thinking on how to best structure adult learning programs. Adult learners demand a convenient program which is specially designed with their learning style in mind. They learn best in an interactive format with heavy emphasis on the practical application of their learning. This paper examines the Division of Adult and Professional Studies at Indiana Wesleyan University as a case study. This model is an application of adult learning theory and includes scattered sites, evening and weekend scheduling to make education accessible when other programs would create barriers. The interactive nature of the classes and a curriculum rooted in students' everyday experiences motivate these learners to persist toward meeting their educational goals. Finally, retention data for this program are examined and implications discussed.

The Theory of Adult Learning and Implications for Practice

The implementation of new programs for adult professionals has been the salvation for many small colleges struggling with retrenchment during the 1980s. Some of these programs were hastily assembled with little rationale other than to create cash for the traditional campus. Thus, they are often the object of suspicion by educational traditionalists looking for sound programs based on good educational theory. This paper challenges the notion that non-traditional accelerated degree programs are educationally inferior. Using Indiana Wesleyan University's Adult and Professional Studies Division (APS) as a case study, this paper demonstrates the sound educational theory which undergirds this model of adult education.

There is a strong historical tradition of adult education in the United States. Continuing education programs, via the YMCA, Veteran's Administration, public schools, and corporations, have been an important force in the development of American labor since the Great Depression. These programs were usually quite separate from university programs, which educated younger people. It became clear to early practitioners like Houle and Knowles that adult education, though vital to the growth of the nation, was fundamentally different than the education of children.

As adult education programs have spread to traditional colleges and universities, they have come under close theoretical scrutiny. Suddenly there is a wealth of research and writing on adult education, treating them as a new innovation in education. In reality, these programs have been around for over 70 years – they are just new to the university campus.

This paper surveys the different theoretical bases for the adult learning model implemented by Indiana Wesleyan. It describes adult learners: why they come and why they persist. From these theories and data come implications for practice.

The Development of Adult Education in the Twentieth Century

Lacking its own discipline, adult learning theory has developed along several disciplinary lines throughout the Twentieth Century. These disciplines included philosophy, psychology, and sociology. In the later part of the Twentieth Century, there has been an effort to synthesize adult learning theory to create its own discipline. This section reviews the theoretical antecedents of the Indiana Wesleyan model of adult education.

The philosophy of experiential learning

The contemporary practice of adult education traces its roots to the experiential learning philosophy of John Dewey. He pioneered the field of reflective learning-- education gained through meaningful experiences. In the 1920s he was invited to the University of Chicago to develop a laboratory school for the Department of Education, where researchers could study the impact of educational structures on learning (Dewey, 1963). This is the department which later produced Houle and Knowles.

Dewey's ideas formed the basis of the lifelong learning movement. He believed that individuals had the ability to grow throughout life. This contrasted with the view of the day which said that learning and growth are finite: once an individual reaches adulthood, maturity has occurred and learning diminishes (Cross-Durrant, 1987).

In his new educational methodology, Dewey proposed relating school learning to the whole of life. One would judge an educational institution according to how far it succeeds in enabling and developing an individual's innate powers of learning (Cross-Durrant, 1987).

Dewey believed that learning best occurs within an institution which will not obstruct experience. Traditional education produces lower-level knowledge where the answers are pre-determined. He proposed

a more progressive education which would promote higher level knowledge. For Dewey, the truth cannot be found in isolation from experience. Tradition is the wrong kind of experience to promote real growth. A progressive institution will shape experience by reorganizing the surroundings and providing an environment which will be conducive to growth. The outcome should be a fully integrated personality whose successive experiences are integrated with one another. This is the creation of self control gained as a product of reflective learning (Dewey, 1963).

Dewey's ideas form the basis for the facilitated workshop model that is utilized at Indiana Wesleyan's Adult and Professional Studies Division (APS). Dewey believed that college educators (professors as well as administrators) shape the students' experiences and must consider what surroundings are conducive to growth. The sequence of activities must be well-planned. Every experience should prepare one for others. For Dewey, the college is a community held together by these common activities. This is why a strong core curriculum is essential. Dewey believed professors should be seen as group leaders guiding experiences (Dewey, 1963).

At APS, adult students apply Dewey's model of experiential learning. All college studies are derived from life experience. A core curriculum and core group provide common experiences and structure the learning. Within their study groups, students reflect on the past as a means of understanding the present. Then they can anticipate and plan their own experiences for the future.

Developmental psychology

The adult model of education also takes into consideration social psychological theories of adult development. Adults are psychologically different than traditional college students who are in the later stages of adolescence. Thus, their learning style is different, requiring a completely different learning structure. The theories of Erikson, Havighurst, Kohlberg, Gilligan, Magolda and Bronfenbrenner are relevant here.

Erik Erikson's psychosocial-development theory traces personality development across the life span, including eight critical stages each involving a crisis. Adult stages include intimacy versus isolation, generativity versus stagnation; and integrity versus despair. As an individual ages there is a search for meaning which does not exist in the child. There is a need for vital involvement in one's world as opposed to the spurious flirtations of youth (Erikson, 1982). Thus adult education must aid in one's search for meaning and purpose

Havighurst views the developmental tasks of adulthood as meeting the needs of the individual in a social context: finding a mate, learning to live with a mate, establishing career and civic responsibilities. According to Havighurst, adults have a "teachable moment" when they can learn new behaviors in order to meet these task demands. Such practical application is the motivation for the adult learner (Romero, 1990).

Lawrence Kohlberg's moral development model (1984) has implications for the cognitive development in adult education. Adults begin with conventional morality (conformity to social expectations) and move to postconventional morality (abstract beliefs such as human rights, equality, dignity and justice). Respect for individual dignity is the foundation for this higher level of morality (Romero, 1990).

Carol Gilligan (1982) concludes that Kohlberg's approach is oriented toward values that are more important to men than to women. This is significant in this paper since a large number of adult students are women. Gilligan has developed a schema of moral development for women similar to that of Kohlberg. Where Kohlberg emphasizes rights, Gilligan emphasizes responsibilities. Women's participation in reproductive activity profoundly affects their orientation. Females are less separate than males. A woman's moral development stresses the necessity to be responsible in her relationships, to be sensitive to the needs of others, and to avoid giving hurt (Gilligan, 1982).

Magolda (1992) has made more recent contributions in the field of gender-related patterns of intellectual development. She found that men in the early stages of knowledge (absolute knowing) tend to use interaction with instructor (mastery pattern) while women tend to be detached from authority figures (receiving pattern). Since women have fewer opportunities for mentoring, key interaction with authorities is limited. By the end of their college program, application oriented knowing (transitional knowing) becomes important. Women tend to use peers to facilitate this in an interpersonal way, while men extend their patterns of knowing to learn applications in an impersonal way. Higher levels of knowing (independent and contextual knowing) also tend to be facilitated by women in an inter-individual pattern while men tend to focus on their own thinking.

The implications of this work for adult education indicate that more effort needs to be made to match women's pattern of knowing and reasoning with teaching strategies. Female students in the early stages of absolute knowing appreciate relationships with peers. At this stage it is important that the classroom is relational and the student has an opportunity to feel comfortable about the instructor's style of teaching and grading. Later during transitional and independent knowing, they need close relationships with instructors. Unless they perceive that instructors care about them, women will avoid relationships with instructors and instead rely on peers for development. Women benefit from positive interactions with students and need to be allowed to get involved in classroom activities.

Most of Bronfenbrenner's (1979) research is on children, observing them in natural settings to discover the impact of their socio-cultural environment on development. His work has important implications for adult education because he saw learning as a function of social interaction. A person's development occurs within a large system of interlocking social structures. Each of these structures-- home, school, church, media-- create an ecological context through which a unique individual emerges. Development is enhanced when there are a variety of cultural contexts. Lasting change comes in the way a person perceives and deals with the social environment.

The Indiana Wesleyan model is derived from this social model of learning. Cohort groups represent diverse cultural contexts and experiences. Learning is facilitated when interaction is enhanced. However, the strong Christian mission becomes the tie that binds, in spite of cultural differences, which in another context may be overwhelming to the individual.

Critical theory of learning

Critical theory comes out of a sociological analysis of education which sees social institutions as potentially oppressive to individuals. Adult education, in this context, ought to transform individuals so they may change society. This transformational model has been posited first by Lindeman and later by Mezirow and Freire.

Eduard Lindeman was an early 20th century American shaper of adult education. One of his most important contributions is the introduction of the concept of andragogy – though his conception was considerably different than that developed by Malcolm Knowles (1980). Lindeman was a sociologist interested in the use of adult education to foster social and political change. Thus his work is the origin of critical theory in adult education (transformational education). His proposed curriculum included heavy doses of political and social debate. As such, his work has found less relevance in the U.S. system which emphasizes career training and development: education as a force for social stability rather than social innovation (Brookfield, 1987).

One emphasis of Lindeman's, which has been felt in contemporary adult education, is his advocacy of the primacy of experience and interpersonal exchange as the vehicle of learning. This means that a discussion methodology is most appropriate for adult education. Also he emphasized situations rather than subjects. Therefore the curriculum and mode of delivery was radically different than the schooling of his day (Brookfield, 1987).

According to Mezirow, learning is a dynamic process which leads to the creation of meaning. Meaning perspectives (habits of expectation) serve as perceptual and cognitive codes to structure the way

we perceive, think, feel and act. Mezirow uses the conceptual frameworks of Habermas and Dewey to discuss emancipatory or reflective learning which leads to the understanding of oneself. Emancipatory learning occurs through reflection on meaning schemes or assumptions. Reflection can change or transform both meaning schemes (specific attitudes and beliefs) and meaning perspectives (sets of meaning schemes) (Mezirow, 1991).

At the same time, educational theorists specializing in young people's education have also been fascinated with the manner in which knowledge is constructed. Recently, a new theory called constructivism has emerged and been applied across the curriculum. This theory posits that meaning is created by the learner rather than passed down from educator to learner through rote. In this way "human beings have no access to an objective reality since we are constructing our version of it" (Fosnot, 1996, 23).

Constructivism has been vigorously applied to produce classroom innovations in science, mathematics, literature and other subjects from pre-school to college. This new approach to learning contributes to the thread of thinking that produces an adult model that stresses learning over teaching. In the adult classroom, learners are cooperatively constructing a new reality for themselves based on their world experiences. Their reality is infinitely different from those around them. They require a curriculum that guides their learning without limiting the unique process of the creation of knowledge.

Such learning leads to the transformation of perspectives. Adult learning leads to a more inclusive, differentiated, integrated perspective. For example, RNBS Completion Program graduates from Indiana Wesleyan experienced a significant increase in inductive thinking skills as measured by the California Critical Thinking Skills Test (Tweedell, 1999). This means that the program enabled them to use their individual experiences to broaden their perspective on the world.

Paulo Freire comes from a past speckled by controversy and confrontation. He is a writer as well as an activist for social change. He was "invited" to leave his native Brazil after the military coup of 1964. After a few years in exile in Chile he emigrated to the United States. His *Pedagogy of the Oppressed* (1970) has created a stir in the Third World which has reverberated in the U.S. His neo-Marxist style seeks to empower the oppressed using education to raise consciousness.

Freire points out that traditional education is a tool to oppress the elite. In the traditional "banking system" of education, "all-knowing" professors deposit selected bits of information into students minds and withdraw that knowledge later on a test or assignment. Thus, by choosing the readings, the syllabus, the lecture topics, and the test questions, the professor controls the minds of the students. Traditional education oppresses students by controlling their access to information. But reformed education has the potential to be transformational. By reforming the educational institutions we raise the consciousness of the oppressed so that they may free themselves (Freire, 1970).

Reform starts by liberating the educators. Freire sees in the colleges of education around the world a rediscovery of teacher-student dialogue rather than control (1970). At APS, college students become interactive in their learning, so that they will be liberated and in turn, liberate their world.

Conclusion

Adult education became a social movement in the United States beginning early in the Twentieth Century. Theorists from philosophy, psychology and sociology contributed ideas which formed the basis for the practice of adult education today. The next section will review contemporary efforts to synthesize these ideas into a unified theory of adult learning.

Synthesis: The Design of a Model of Adult Education

Practitioners, including those at APS, have drawn from theories of experiential learning, developmental psychology, and critical sociology to design a model of education which meets the needs and demands of adult learners. Much of this work comes from Dewey's Department of Education at University of

Chicago, which became a pioneer in the Adult Education movement. Two pioneering scholars from Chicago include Houle and Knowles, whose ideas have framed the contemporary discussion of adult education.

Cyril Houle's career is characterized by his efforts to increase the acceptance of adult education, establishing it as a credible sub-field in education. As chair of the graduate program in Higher Education at University of Chicago, he worked toward strengthening the bond between it and adult education (Griffith, 1987).

Houle was very interested in categorizing educational theory, situations, and systems. Houle's system is based on the following assumptions:

1. Learning occurs in a specific situation
2. Education planning should be based on realities of human experience and upon their constant change.
3. Education is a practical art.
4. Education is a cooperative rather than operative art.
5. The planning or analysis of an educational activity is usually undertaken in terms of some period that the mind abstracts for analytical purposes from complicated reality.
6. A generalized educational design should be used to strengthen (not replace) the values that arise from profound belief, dedication, or creativeness.
7. A program design should be based on decision points, not prescriptions.

(Houle, 1996, pp. 41-53)

In this way Houle attempted to systematize and unify many of the ideas about adult education and moderate tensions between philosophic positions. He searched for balance and harmony among the elements of education. For example, in the mid-twentieth century, when so many adult educators were focused on literacy, he balanced the research by continuing work on higher education (Griffith, 1987). By the 1980s, the doctoral program in higher education at University of Chicago had subsumed the adult education degree, a product of Houle's thinking that the two fields were one.*

One of Houle's most renowned doctoral students was Malcolm Knowles, who also became a leader in the field. Knowles' other early influences include Lindeman (his first supervisor as director of related training for the National Youth Administration), and Carl Rogers, whose work on "student-centered learning" led to his emphasis on study groups (Jarvis, 1987).

Knowles argues that adult education is a separate field with a separate theory. He borrows the term "andragogy" from a German educator to name this new type of education. The first edition of his important book: The modern practice of adult education contains the subtitle Andragogy versus pedagogy which sparked much debate in the field. The proponents on Knowles side maintain that since adults are existentially different than children the teaching of adults must be distinctively different than that of children. Proponents on the other side argue that andragogy is not a fully developed philosophical system deserving of its own discipline. When the revised edition of his book came out in 1980 the subtitle had been changed to Pedagogy to andragogy indicative of Knowles' new thinking that the two were not discrete

-
- At the time the author was a doctoral student in Higher Education at University of Chicago in the early 1980s, the focus of the program was on the history and philosophy of higher education and its implications amid a rapidly changing educational market. Adult education was one of many subfields of critical analysis.

processes based on age but that certain teaching methodologies are more effective for adults and others more effective for children. The two are now viewed as different curriculum models: one focuses on content, the other on process (Jarvis, 1987).

Andragogy is premised on assumptions about learners that are different than the assumptions of pedagogy. As persons mature they accumulate a growing reservoir of experience that becomes an increasingly rich resource for learning. Their motivation to learn is closely related to their social roles and they need an immediate application of their knowledge. Their orientation toward learning shifts from one of subject-centeredness to one of performance-centeredness (Knowles, 1980).

The implications of these assumptions lead to a learning environment which draws heavily on the learners' experience. The psychological and social climate must be one of acceptance, respect and support. Emphasis should be placed on the involvement of the adult learners in diagnosing their learning needs, planning, implementing and evaluating their learning. The structure of the learning process should take full advantage of their rich experiences. There must be sensitivity to the timing and grouping of learning to take advantage of their readiness to learn. Programs must have immediate application to take advantage of the adult's focus on problem solving. Knowles discusses the process of helping adults learn. This includes:

- Setting a climate for learning;
- Establishing a structure for mutual planning;
- Diagnosing needs for learning;
- Formulating directions (objectives for learning);
- Designing a pattern of learning experiences;
- Managing the learning experiences;
- Evaluating results. (Knowles, 1980, pp. 222-247).

These are the principles which greatly influence the construction of the Indiana Wesleyan's model for Adult and Professional Studies (APS). Here, the physical environment for learning gets much attention, making sure it is comfortable and flexible. Curriculum is heavily managed, including clear objectives and study group activities to enhance learning. Within the study groups, learners manage their own learning activities.

Knowles also addresses the organization and administration of adult education programs. He recommends the development of semi-independent structures for adult education within the larger structure, which give them freedom to be innovative. The best models usually improve the whole institution as changes begun in adult education affect the larger organization. (Knowles, 1980, p.70). At Indiana Wesleyan University the administration of the Adult and Professional Studies Division is closely connected to, but independent from, the Traditional Program. Knowles cites that those institutions which give adult education a separate division and administrative freedom are stronger programs than those in which adult education has remained a secondary function within a larger department.

In addition to the practice of andragogy, the APS model also applies contemporary ideas about women's education. It is clear that, particularly for adult women (who comprise the majority of learners at APS), there is a need for a new teaching style. The traditional classroom, with seats in rows facing a professor behind a podium, is well suited to males' learning styles, but is not designed to benefit women (Maher & Tetreault, 1994). This is relatively easy to remedy, given a little creativity. At APS we have transformed the individual desks into connecting tables forming a "U" shape. We have abandoned the lecture format for small group learning.

Social psychologists have found that adult women are more likely to succeed when learning is interactional. Magolda (1992) and others have indicated that women are likely to use peers to facilitate learning. Knowledge for women is gained by seeing the world from other perspectives. This requires meaningful interaction with other learners. Adults, particularly women, thrive when they discover they share responsibility for the content of learning. The professor is not viewed as an expert imparting substantive information, but a co-learner. Women in such classrooms construct their own meaningful realities through the acknowledgement of deep positional differences with others. However, the traditional university structure hinders the realization of such knowledge as emphasis is placed on substantive blocks of knowledge rather than interactive "situated knowledge" (Maher & Tetreault, 1994).

In light of all of this knowledge about adult learners, particularly women, it is not surprising to see the growth of semi-independent structures for adult learning with a specialized teaching style. These structures, like that at Indiana Wesleyan, embrace the unique learning styles of adult learners, and create an atmosphere which removes barriers to higher education for those whom traditional education fails.

In conclusion, adult learning theory is not new. It has roots in the progressive thinking of John Dewey's philosophy of experiential learning. It is informed by adult developmental psychology, applying insights from Erickson, Kohlberg, Gilligan, Bronfenbrenner, and others. It gains inspiration from the critical theories of Lindeman, Mezirow and Freire. It has been synthesized and systematized in the past thirty years by Houle and his student, Malcolm Knowles. As Adult Education divisions have boosted university enrollments, attention to the learning model has increased. The next section will analyze the demographics of these new university students- their motivations and expectations.

Who are the Adult Learners Today?

There is a wealth of literature about the characteristics and motivations of adult learners. However, much of this literature pertains to adult students in traditional programs. There is a void in the research on the characteristics and motivations of adults in nontraditional programs. This section reviews some of the best work done in this field and compares it to data gathered about students at Indiana Wesleyan University's Division of Adult and Professional Studies.

Characteristics and motivations of adult students

Merriam & Caffarella, (1999) in their book, Learning in adulthood, present a comprehensive literature review of research on adult students. Surprisingly, the profile of the adult learner has remained largely unchanged since they were first studied in 1969. Compared to the rest of the adult population, adults in formal education programs at colleges and universities are better educated, higher than average income, white, and suburban. These findings are more recently confirmed by DeJoy (1997) who also adds that adult learners have been out of school for an average of five years. They are more likely to be female than male.

Why do these adult learners choose to participate in a formal education program at this point in their lives? A national study by Johnstone and Rivera in 1965 (cited in Merriam & Caffarella, 1999) showed that the most common reason adults chose to enter education was for personal goals/satisfaction. Second was preparation for a career change and third was to advance in a current career. A more recent study by DeJoy (1997) showed similar results.

According to Cross (1981), the strongest predictors of participation are previous educational attainment and age. Previous educational experience leads to positive or negative attitudes about education, which can enhance or create a barrier for participation. Age is a factor because there is a socialized attitude that learning is for young people. Proximity is also very important. Adults must have educational opportunities conveniently located for them to increase participation. Also Cross notes that older, more mature learners are somewhat more likely than younger, less well-established adults to select a program that departs from the traditional.

DeJoy's (1997) recent study found similar motivations. Younger adults (ages 25-34) are more degree oriented and interested in enhancing their careers through adult education. Older adults (ages 35-44) are sometimes degree oriented in order to gain greater independence and more responsibility at work. But many are also in a phase of their lives where they seek more balance in their lives- not simply achievement for achievement's sake. DeJoy's (1997) research at George Fox College found older adults more likely to seek personal goal/satisfaction as their primary reason for returning to college.

Table 1 describes the reasons students have decided to attend college at this point in their lives and why they specifically chose Indiana Wesleyan's Adult and Professional Studies program. These results support national studies done by Johnstone and Rivera (cited in Merriam & Caffarella, 1999) and De Joy (1997). The students beginning the APS program indicate that personal satisfaction is their strongest motivator. Career development is a secondary motivator.

Retention of adult students

Tinto's (1987) model of undergraduate attrition is considered to be the classic work in the field. He posits that there are individual roots of student departure which are affected by interactional elements found within the institutional structure of the college. Ultimately the decision to leave college is a personal one, but it occurs within an important social context. The student's social interactions within the college context may make or break the decision to leave.

According to Tinto's model, when a student has values that are inconsistent to the college, it can produce social isolation and subsequent departure. Does this model have relevance for non-traditional students? Ashar and Skenes (1993), in studying adult students in a nontraditional program, found that "classes that were professionally more homogeneous, and thus socially more integrated, and smaller classes lost fewer students than less socially integrated and larger classes" (p. 96). At APS, students report (on alumni surveys and focus group interviews) close relationships with peers and facilitators. This is fostered by the cohort model which makes extensive use of study groups. These relationships are crucial in student persistence (Tweedell & Roeschley, forthcoming). So it appears that adults, too, are very dependent on social factors for success in college.

Boshier's congruency model (1973) for adult students is based on similar assumptions as Tinto's model for traditional students. Boshier sees the congruence between the participant and the educational environment as the key determinants of persistence. He recognizes that adult students fall into two groups: those who are motivated out of a desire for growth, and those who are motivated because of some perceived personal deficiency. Those who have a "deficiency" motivation will be more affected by social and environmental factors. This model has had limited testing; however, data suggest it is easier to predict persisters than drop outs.

Bean and Metzner (1985) examined Tinto's theory in light of empirical studies on non-traditional students and proposed a new model of attrition for adult students. Non-traditional students are distinguished from their traditional counterparts by their intense academic and vocational orientation to college. For them, the traditional social environment of the campus is not nearly as important as the academic offerings. Interaction with faculty and peers are not of the same duration and intensity and thus differ in their influence on attrition. They posit that outside encouragement, from family and community, appear to replace on campus support as a key to retention.

According to Bean and Metzner's model, retention decisions may often be beyond the scope of the institution. This current study challenges this notion. The Bean and Metzner and Boshier models apply to nontraditional students in a traditional college setting. The Adult and Professional Studies Division (APS) at Indiana Wesleyan University (IWU) is a nontraditional program designed for an adult student population. Here, interactions with both faculty and peers are intense and vital. This model transforms the faculty role into one of facilitator/mentor rather than lecturer. This fosters close student-faculty relationships. Interaction with peers is also transformed into a vital working relationship. Students must rely on peer relationships for success in study group assignments. This model gives the institution the means to intervene in retention decisions.

Kerka (1995) found that for adult students, retention is linked to a number of factors: a gap between learner expectations and reality; past school and home experiences; educational and practical concerns; and social integration. Adult learners are at varying stages of the life cycle compared to the traditional population and have more diverse reasons for leaving. For adults, social integration is not just fitting in to the campus setting- it involves how well they integrate the pursuit of education into their overall lives.

Table 2 presents data from students withdrawing from the APS program, comparing them to the present student body. It is significant that this program appears to retain race/ethnic minorities and women at about the same rates as white males. This is interesting in light of all the literature that suggests that these groups tend to be "at risk" in traditional programs (Wise & Fine, 1993; Sadker & Sadker, 1994; Holland and Eisenhart, 1990). Apparently, the characteristics of this program (a cohort model utilizing collaborative learning with close student/faculty relations) removes some of the barriers to achievement for these adult students. Students who are "at risk" in a traditional setting are not the same students who are "at risk" in a non-traditional setting. To find an explanation for attrition in the non-traditional setting, one must look beyond race and gender.

Table 3 gives the responses of withdrawing students on a questionnaire that listed possible reasons for dropping out of college. Most students marked more than one factor contributing to the decision to leave. This indicates that the decision existed within a very complex environment of intervening variables. Students may cite "family responsibilities" or "conflict with job" as their reason for leaving, but this is probably more of a precipitating factor rather than the sole criterion for leaving. For example, a student experiencing family difficulties may or may not decide to leave college depending on the social support found at the university. Tinto (1987) predicts that a student will become less committed to academic goals if there is incongruence between their perceived needs and the social supports found on campus. It appears this may be true for non-traditional settings as well.

To gain a more complete view of factors related to persistence, Table 4 looks at the motivations and attitudes of withdrawing students, compared to those who graduate. T-tests indicate significant differences in some attitudes. Students who withdraw are significantly less motivated by the convenience factors of the degree (evening classes, location, faster degree completion). One might conjecture that this is what leads them to be less satisfied with some aspects of the program. Students who are highly motivated by the convenience of the program tend to find congruence between their expectations and reality. They are therefore pleased that their personal needs were met by the structure of the program.

It appears these data support the college retention models of Tinto (1987) and Boshier (1973). Students are more successful in this non-traditional adult program if they come in with high motivations producing a high level of commitment to the program. Tinto and Boshier refer to this as congruence between the institution and perceived needs. Tinto suggests that such incongruence may result in a student who psychologically disengages from the academic activities and becomes socially isolated. Successful students are those who are vitally connected to the social environment of the college. For adult students in non-traditional programs this means that students must feel vitally connected to their cohort group. As their cohort becomes an important part of their lives, they are less likely to disengage.

An examination of the timing of withdrawing from the program supports this conceptualization that students are more likely to withdraw when they are not yet vitally connected to their cohort group. Of the withdrawing students, almost half (47.8%) reported they had completed less than four courses. They had not invested the time and energy necessary for strong connections to their program.

It appears then, that social connectivity and community (what Toennies (1963) would call *Gemeinschaft*) is the key to retention in non-traditional programs. An absence of community leads to the self-interest (*Gesellschaft*) of a traditional adult program where students move from one class of nameless faces to another, investing only enough of themselves to get the desired grade.

When students perceive that a non-traditional program reduces barriers to satisfying some vital needs, they are more likely to seek the social connections necessary for success. In the APS program, this means that

they will create healthy study group relations. Table 4 indicates one of the biggest differences between drop-outs and graduates is the attitude about study groups. Students who dropped out were probably less connected to their study groups, leading to a lower level of satisfaction. When social connectivity is not achieved in the study group, the perception of the program diminishes. It appears that APS students are very typical of adult students. They are interested in finding more personal and career satisfaction in their present situation. They reflect the Erikson's (1982) developmental theory of adults as seeking intimacy over isolation, generativity over stagnation, and integrity over despair. The APS program is particularly attractive to them because it removes the barriers of access, fitting well within their professional and personal lives. They do not want to be treated like traditional 18 – 24 year old college students. APS students want a special program designed just for them with their special needs in mind. The next section will explore the ways in which the APS program is designed with their special needs in mind.

The Components of a Successful Adult Model

From the experiential learning philosophy of John Dewey, adult developmental theory of psychologists like Erikson, and critical learning theory of sociologists like Lindeman, comes a model of adult education. This model was developed and systematized by Knowles and Houle and is informed by the most recent demographic data about adult students. The overall mission of APS is to serve a constituency previously denied access to a quality higher education program. The distinctive features of this program are its semi-independent structure, interactive learning in study groups, and experiential learning. This section will outline the theory behind each of these features.

A semi-independent structure for adult education

Adult and Professional Studies is a separate division within Indiana Wesleyan University. Its vice president is part of the Administrative Council of the University. All changes in academic policy are subject to approval by the University Academic Affairs Council and Vice President for Academic Affairs. The RNBS Completion Program and Graduate Education Program are under the joint administration of APS and the appropriate divisions on the traditional campus. However, the daily administration of the programs in APS is substantially different than that of the traditional program. Faculty are recruited differently, students are recruited differently, classes are independently scheduled, and assessment is independent. The degree requirements are fundamentally the same, however the specific course requirements are adjusted as appropriate for adult students.

The rationale for this semi-independent structure comes from the thinking of Knowles(1980) on the need for a separate educational structure for adults:

My observation of adult-education programs in all kinds of institutions across the country supports the generalization that there is a direct correlation between the strength of a program (as measured by size, vitality, quality of output, and support from the system) and its status in the policy-making structure...the strongest programs in universities are in those institutions in which the adult-education unit is parallel to academic affairs, student personnel, and equivalent function, and the chief executive officer is a vice-president for continuing education...the more important consideration is that with autonomy and status the adult-education unit is able to concentrate on processes uniquely effective for the education of adults. And it is better able to attract specialists in andragogy to manage the program. (p.71)

By thus separating the administration of Adult and Professional Studies, Indiana Wesleyan has been able to build a strong program which truly applies principles of sound learning theory for adults.

Interactive learning

Interactive learning-- including cooperative learning, collaborative learning, and learning through discussion-- has become a widely respected innovation in learning. In fact the term "self directed learning," which has also grown in popularity among adult educators, is actually a form of interactive learning. Brookfield (in Merriam and Cafarella, 1999) posits that self-directed learning can only happen in the context of reflection, action, collaboration, etc. It is never truly self-directed. Interactive learning through a study group, is at the heart of the APS model.

The Indiana Wesleyan University Division of Adult and Professional Studies Bulletin (1997-1999, p. 17) gives a good rationale for the use of study groups:

...we recognize that the group process can add substantially to learning, especially for adult professionals. Students working in groups are able to take on larger projects than they would be able to as individuals. This contributes to the ability to present our courses in a compressed format. Not only is learning enhanced through this method, but students also have the opportunity to hone their teamwork skill. We feel an education is incomplete which neglects this vital area.

The emphasis on interactive learning represents a paradigm shift: from teaching to learning. Millis and Cotell (1998) make a good case for interactive learning, as a proven method for increasing comprehension and depth of knowledge. The research supporting this method is overwhelming. It is particularly appropriate for the growing number of non-traditional students for whom traditional delivery methods are less effective. In interactive learning, the instructor de-emphasizes the position of "authority" and instead become a "consultant" in small group discussions (Hill, 1977). Instead of the instructor asserting authority by evaluating the discussion groups, they are often self-assessed.

At APS, where a majority of students are female, interactive learning takes advantage of women's learning style. Female students are more dependent on peers for knowledge (Gilligan, 1982; Magolda, 1992; Maher & Tetreault, 1994) and thus would be more comfortable with the interactive approach.

Interactive learning enables students to see things from a variety of perspectives and discover situated knowledge in the context of interaction. This knowledge is often more meaningful to adults than that gained through reading and lecture. Situated knowledge is of a higher order because it places knowledge within the daily course of living. Through interactions learners negotiate the meaning of their experiences. Therefore learners are active participants in the creation of knowledge rather than being external to it. Through community, learners interpret, reflect and form meanings. Community provides the context in which learning can take place (Stein, 1998).

Interactive learning is so well supported in the literature, one would wonder why the lecture method still survives at all. Lectures may be appropriate for younger students who have few experiences from which to draw knowledge. However, for adults, interactive learning is much superior than the use of non-human tools (study guides, sophisticated audio-visuials, etc.) (Cross, 1981). For adults, the most important tools for learning are a small group and a comfortable place where chairs can be arranged in a circle. Instead of a focus on teaching, there should be a focus on learning.

Experiential learning

Through the use of interactive learning, APS articulates John Dewey's ideal of experiential learning. He envisioned a progressive institution wherein students' experiences would form the basis for reflective learning. The success of an educational institution would be measured in the extent to which it can unlock the power of experience as a tool to learning (Dewey, 1963). Likewise Lindeman emphasized the primacy of experience interpreted through interpersonal interchange as the most powerful vehicle for adult learning. To him, the adult curriculum should emphasize situations not subjects (Brookfield, 1987).

At APS, students' experiences are at the heart of the curriculum. According to Knowles (1990), adults demand practical application of knowledge. Through assignments of research and other learning activities, the study group can do this efficiently. When assignments are tailored to specific work concerns, students take pleasure in applying their knowledge to address challenges faced at work. Study group members add currency and relevance to theoretical analysis when they can describe how the concepts they are studying are being applied in their place of employment.

According to Houle (1996), education planning should be based on the experiences of the students. At APS, extensive analysis of the demographics of our students, their expectations and motivations, informs program planning. In developing curriculum, writers begin with the experience of the students and then extend their experiences to include opportunities for enrichment. Assignments are often reflections on one's practical experiences. More than that, an important criteria in faculty selection is the rich experience they have in their areas of expertise. They bring these experiences to bear in their consultations with students.

Learning, for both adults and children, is an interactive process. The distinction of adult education is that the student brings a rich array of previous experiences and demands practical application for the education process. Children need to be given resources and structured activities to enrich their experience and aid interaction. Adults already have these experiences but need a vehicle by which they can interactively interpret these experiences. In addition, adults need to see the practical application of their knowledge in order to be motivated to continue (Knowles, 1980). At APS the study group becomes a forum for interpretive interaction. The application orientation of assignments and the accelerated format allow students to see the practice beyond their learning.

Conclusion

The model of adult education utilized by APS is not a new invention. It is the synthesis of nearly a century of work in the areas of experiential philosophy, developmental psychology, and critical sociology. Adult education programs have been an important part of the growth and development of the contemporary society. As these programs have become attached to universities, the programs have gained structure, rigor, and recognition.

Current issues have focused on identifying the adult student profile and analyzing student expectations and motivations for participation. By understanding who the students are, adult educators are able to build a program which can best take advantage of adults' special strengths. An analysis of the APS student body indicates they are typical adult learners: white, middle class, with above average income. A majority of adult learners are female, so a consideration of the unique learning styles of women is relevant.

Adults learn best in an interactive format with heavy emphasis on the practical application of their learning. Adults desire a learning situation which does not ask them to compromise family and professional demands. The APS model fits these requirements well. The scattered sites with evening and weekend scheduling, makes this education accessible when other programs would create barriers. The interactive nature of the classes and curriculum rooted in their everyday experiences motivates these learners to make the sacrifices necessary to meet their educational goals.

Table 1
Entrance Survey
 (n=485)

Why did you choose to get a college degree at this point in your life?
 Scale 1 - 5; 5= very important

	Mean	S.D.
Self development	4.57	0.79
Personal satisfaction of having a degree	4.50	0.88
Career advancement	4.46	0.91
Salary increase	4.24	1.04
Need to develop specific skills	3.82	1.10
God's calling in your life	3.63	1.24
Job security	3.55	1.30
Desire to change careers	2.99	1.50
Other	3.16	2.00

Why did you choose IWU?
 Scale: 1 - 5; 5 = very important

	Mean	S.D.
Convenience	4.54	0.89
Opportunity of faster degree completion	4.49	0.95
Program specifically designed for adults	4.46	0.95
Accessibility	4.41	0.93
Flexible class hours	4.36	1.06
Christian world view	3.69	1.26
Academic reputation of IWU	3.66	1.24
Affordability	3.40	1.31
Study group format	3.34	1.61
Acceptance of previous college credits	3.26	1.58
Other	2.41	2.04

Table 2
Permanent Withdrawals Compared to Current Students

	FY 98-99 Withdrawals (n=719)	Dec., 1999 Students (n=4427)
Female	56.9%	60.2%
Male	43.1%	39.8%
African American	14.2%	14.1%
White	82.9%	83.2%
Hispanic	1.2%	1.0%
Mean age	35.9	35.7

Table 3
Major Factors in the Decision to Withdraw
(n=186)

Reason	%
Conflict with job	30.6
Family responsibilities	27.7
Personal conflicts with class schedule	26.6
Decided to change majors	15.6
Cost	14.3
Personal problems	13.6
Study group problems	13.3
Family moving	10.9
Pace too fast	8.7
Health related problems	6.9
Decided to attend another college	6.9
Commuting distance too great	6.9
Academic advising inadequate	3.4
Curriculum	3.4
Felt alone or isolated	3.4
Courses not challenging	2.9
Faculty seemed to be of poor quality	1.7
Attitude of staff seemed impersonal	1.1
Classroom facilities	.6

Note: Many respondents marked more than one item as a "major factor" in the decision to withdraw.

Table 4
Comparison of Drop Outs (n=186) with Graduates (n=177)

Reasons for Attending (scale 1-3; 3=very important)				Satisfaction (scale 1-5; 5 = Excellent)			
	Status	Mean	S.D.		Status	Mean	S.D.
cost	drop	1.80	0.71	*Program length	drop	3.89	0.95
	grad	1.87	0.65		grad	4.23	0.75
*evening classes	drop	2.65	0.63	Quality of instruction	drop	3.86	1.05
	grad	2.87	0.33		grad	3.94	0.80
workshop format	drop	2.13	0.72	Overall course content	drop	3.86	1.06
	grad	2.06	0.69		grad	4.00	0.81
academic rep	drop	2.25	0.64	Interaction with faculty	drop	3.76	1.08
	grad	2.15	0.56		grad	3.90	0.91
registration	drop	2.28	0.62	Helpfulness of faculty	drop	3.92	1.13
	grad	2.23	0.68		grad	4.02	0.84
*location	drop	2.64	0.58	registration procedures	drop	4.17	0.95
	grad	2.76	0.44		grad	4.30	0.78
faculty-practitioners	drop	2.18	0.66	Fairness of grading	drop	4.01	1.03
	grad	2.22	0.62		grad	3.93	0.91
electives	drop	2.08	0.68	*Clarity of degree requirements	drop	4.07	1.03
	grad	1.98	0.68		grad	4.35	0.78
*faster degree completion	drop	2.72	0.51	Academic advising	drop	3.59	1.21
	grad	2.84	0.39		grad	3.73	0.99
cohort community	drop	1.88	0.72	*Study group concept	drop	3.09	1.39
	grad	1.80	0.63		grad	3.73	1.22
lockstep program	drop	1.68	0.77	Personal counseling services	drop	3.28	1.13
	grad	1.65	0.67		grad	3.13	0.97
Christian world view	drop	2.16	0.78	*Library and learning resources	drop	3.54	1.16
	grad	2.06	0.70		grad	3.23	1.09
				Financial Aid	drop	3.43	1.20
					grad	3.40	1.00
				Spiritual emphasis	drop	3.87	1.06
					grad	3.76	0.97

* T-tests indicate a significant difference between drop outs and graduates.

BEST COPY AVAILABLE

References

- Ashar, H. & Skenes, R. (1993). Can Tinto's student departure model be applied to nontraditional students? Adult Education Quarterly 43, 90-100.
- Bean, J. & Metzner, B. (1985). A conceptual model of nontraditional undergraduate student attrition. Review of Educational Research 55, 485-650.
- Boshier, R. (1973). Educational participation and dropout: A theoretical model. Adult Education 23: 255-282.
- Bronfenbrenner, U. (1979). The ecology of human development: Experiments by nature and design. Cambridge, MA: Harvard University Press.
- Brookfield, S. (1987). Eduard Lindeman. In Jarvis, P. Twentieth century thinkers in adult education. London: Routledge.
- Cross, K.P. (1981). Adults as learners. San Francisco: Jossey-Bass.
- Cross-Durrant, A. (1987). John Dewey and lifelong education. In Jarvis, P. Twentieth century thinkers in adult education. London: Routledge.
- DeJoy, J. (1997). Adult education: Who participates and why. How providers of adult education can create a climate conducive to promoting greater participation in undergraduate degree programs. (ERIC Document Reproduction Service No. ED 412 354)
- Dewey, John. (1963). Experience and education. New York: Collier.
- Erikson, E. (1982). The life cycle completed. New York: W.W. Norton.
- Fosnot, C.T. (1996). Constructivism: Theory, perspectives, and practice. New York: Teachers College Press.
- Freire, P. (1970). Pedagogy of the oppressed. New York: Continuum.
- Gilligan, C. (1982). In a different voice: Psychological theory and women's development. Cambridge, MA: Harvard University Press.
- Griffith, W. (1987). Cyril Houle. In Jarvis, P. Twentieth century thinkers in adult education. London: Routledge.
- Houle, C.O. (1996). The Design of Education, 2nd edition. San Francisco: Jossey-Bass.
- Hill, William. (1977). Learning through discussion. Beverly Hills, CA: Sage Publications.
- Jarvis, P. (1987). Malcolm Knowles. . In Jarvis, P. Twentieth century thinkers in adult education. London: Routledge.
- Kerka, S. (1995). Adult retention revisited. (ERIC Document Reproduction Service No. ED 389 880)

- Knowles, M.S. (1980). The modern practice of adult education: From pedagogy to andragogy. 2nd edition. Englewood Cliffs, NJ: Cambridge Adult Education.
- Knowles, M.S. (1990). The adult learner: a neglected species. Houston: Gulf Publishing.
- Kohlberg, L. (1984). The psychology of moral development. San Francisco: Harper & Row.
- Mackeracher, Dorothy (1998). Making Sense of Adult Learning. Toronto Ontario Canada: Culture Concepts, Inc.
- Magolda, M.B. (1992). Knowing and reasoning in college: Gender related patterns in students' intellectual development. San Francisco: Jossey Bass.
- Maher, F., & Tetreault, M. K. T. (1994). The feminist classroom. New York: Basic Books.
- Mezirow, J. (1991). Transformative dimensions of adult learning. San Francisco: Jossey-Bass.
- Merriam, S. & Caffarella, R. (1999). Learning in adulthood. San Francisco: Jossey-Bass.
- Millis, B.J. and Cottell, P.G. (1998). Cooperative learning for higher education faculty. Phoenix: Oryx Press.
- Romero, F. (1990). Aspects of adult development. In Rossman, M and Rossman, M. (eds.) Applying adult development strategies. San Francisco: Jossey-Bass, pp. 3 – 11.
- Stein, D. (1998). Situated learning in adult education. (ERIC Document Reproduction Service No. ED 418 250)
- Tweedell, C. and Roeschley, S. (forthcoming) Student retention in a nontraditional RNBS Completion Program. Marion, IN: Indiana Wesleyan University.
- Tweedell, C. (1999) California Critical Thinking Skills Test: RNBS Completion Program. Marion, IN: Indiana Wesleyan University.



U.S. Department of Education
Office of Educational Research and Improvement (OERI)
National Library of Education (NLE)
Educational Resources Information Center (ERIC)



REPRODUCTION RELEASE

(Specific Document)

I. DOCUMENT IDENTIFICATION:

Title: <i>A Theory of Adult Learning and Implications for Practice</i>	
Author(s): <i>Cynthia Benn Tweedell, Ph. D.</i>	
Corporate Source: <i>Indiana Wesleyan University</i>	Publication Date: <i>Oct. 2000</i>

II. REPRODUCTION RELEASE:

In order to disseminate as widely as possible timely and significant materials of interest to the educational community, documents announced in the monthly abstract journal of the ERIC system, *Resources in Education* (RIE), are usually made available to users in microfiche, reproduced paper copy, and electronic media, and sold through the ERIC Document Reproduction Service (EDRS). Credit is given to the source of each document, and, if reproduction release is granted, one of the following notices is affixed to the document.

If permission is granted to reproduce and disseminate the identified document, please CHECK ONE of the following three options and sign at the bottom of the page.

The sample sticker shown below will be affixed to all Level 1 documents

The sample sticker shown below will be affixed to all Level 2A documents

The sample sticker shown below will be affixed to all Level 2B documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE, AND IN ELECTRONIC MEDIA FOR ERIC COLLECTION SUBSCRIBERS ONLY, HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

2A

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

2B

Level 1

Level 2A

Level 2B



Check here for Level 1 release, permitting reproduction and dissemination in microfiche or other ERIC archival media (e.g., electronic) and paper copy.

Check here for Level 2A release, permitting reproduction and dissemination in microfiche and in electronic media for ERIC archival collection subscribers only

Check here for Level 2B release, permitting reproduction and dissemination in microfiche only

Documents will be processed as indicated provided reproduction quality permits.
If permission to reproduce is granted, but no box is checked, documents will be processed at Level 1.

I hereby grant to the Educational Resources Information Center (ERIC) nonexclusive permission to reproduce and disseminate this document as indicated above. Reproduction from the ERIC microfiche or electronic media by persons other than ERIC employees and its system contractors requires permission from the copyright holder. Exception is made for non-profit reproduction by libraries and other service agencies to satisfy information needs of educators in response to discrete inquiries.

Sign here, → please

Signature: <i>Cynthia Tweedell</i>	Printed Name/Position/Title: <i>Cynthia Tweedell / Coordinator of Assessment</i>	
Organization/Address: <i>Indiana Wesleyan University Marion, IN 46952</i>	Telephone: <i>765/677-2344</i>	FAX: <i>765/677-2380</i>
	E-Mail Address: <i>ctweedell@ind.wes.edu</i>	Date: <i>9/26/00</i>



(over)

III. DOCUMENT AVAILABILITY INFORMATION (FROM NON-ERIC SOURCE):

If permission to reproduce is not granted to ERIC, or, if you wish ERIC to cite the availability of the document from another source, please provide the following information regarding the availability of the document. (ERIC will not announce a document unless it is publicly available, and a dependable source can be specified. Contributors should also be aware that ERIC selection criteria are significantly more stringent for documents that cannot be made available through EDRS.)

Publisher/Distributor:
Address:
Price:

IV. REFERRAL OF ERIC TO COPYRIGHT/REPRODUCTION RIGHTS HOLDER:

If the right to grant this reproduction release is held by someone other than the addressee, please provide the appropriate name and address:

Name:
Address:

V. WHERE TO SEND THIS FORM:

Send this form to the following ERIC Clearinghouse: ERIC CLEARINGHOUSE ON ASSESSMENT AND EVALUATION UNIVERSITY OF MARYLAND 1129 SHRIVER LAB COLLEGE PARK, MD 20742 ATTN: ACQUISITIONS

However, if solicited by the ERIC Facility, or if making an unsolicited contribution to ERIC, return this form (and the document being contributed) to:

**ERIC Processing and Reference Facility
4483-A Forbes Boulevard
Lanham, Maryland 20706**

Telephone: 301-552-4200

Toll Free: 800-799-3742

FAX: 301-552-4700

e-mail: ericfac@inet.ed.gov

WWW: <http://ericfac.piccard.csc.com>