

Annotated Bibliography on Student Retention Research

Allen, D. (1999). Desire to Finish College: An Empirical Link Between Motivation and Persistence. Research in Higher Education, Vol. 40, No. 4, 1999, pp. 461-485

A strong desire for achievement was seen as an important component of student motivation to complete college. This study examined the structural relationships among four constructs: (1) motivational factors, (2) student background factors, (3) academic performance, and (4) persistence. Motivation and background factors were examined to determine their direct and indirect effects on academic performance and persistence for minorities and non-minorities. The study supported utilization of factors external to the students' college experience identified in the retention literature based on Bean's (1980) Student Attrition Model. While it was found that motivation failed to impact academic performance for either racial subgroup, a significant motivational effect on persistence was found for minorities but not for non-minorities in this study. Minority students with high levels of motivation tended to persist to their second year.

Anderson, E. (1982). Forces Influencing Student Persistence and Achievement Journal of Counseling Psychology, Vol. 32, No. 1, pp. 94-103

While it may seem a bit mechanistic to view academic success as the result of related causal forces, a force field analysis provides an excellent model for assessing academic programs. A force field analysis also helps distinguish between those forces that promote persistence generally and those that promote academic achievement, an important distinction in resource allocation. Forces act upon students and affecting institution and persistence vary in intensity and type. The intensity or strength of each force varies in magnitude from person to person and from group to group. This scheme can be applied to help explain causes of attrition and a basis for planning support services and directing institutional changes.

Astin, A. (1975). *Preventing Students from Dropping Out*, San Francisco: Jossey-Bass Publishers

A national study of dropouts provided the principal factual basis for this book and for its time, took a somewhat different approach. It sought to identify practical measures to minimize students' chances of dropping out. The data were both longitudinal and multi-institutional. Research subjects, selected from 1968 entering freshmen class, were surveyed initially in fall 1968 and followed up four years later in summer and fall of 1972. Data were drawn from the Cooperative Institutional Research Program (CIRP). The study identified important entering characteristics that maximized a student's chances of finishing college as well as experiential factors such as extracurricular activities. In addition, it was found that the college attended exerted an influence. This study was periodically cited in the student retention literature because it supported the theoretical model that student involvement was a key factor in persistence.

Attinasi, L. (1989). Getting In: Mexican Americans' Perceptions of University Attendance and the Implication for Freshmen Year Persistence. Journal of Higher Education, Vol, 60, No. 3, (May/June 1989), pp. 247-255

In this article, the author reported an exploratory study undertaken to collect and analyze qualitative data describing, from the Mexican American student's point of view, the context surrounding his or her decision to persist or not to persist in the university. Based on this description, concepts of the university-going process were formulated. The findings of the study suggested that for Mexican American freshmen background variables such as high curriculum, parents' education and parent occupations on persistence in college were mediated by significant-other influences. In addition, a student's willingness to stick it out may reflect early and thorough socializing by family, teachers, and friends for the college-going. Also, for Mexican American freshmen, persisting at the university is positively related to the development and use of cognitive maps of the physical, social, and academic/cognitive geographies.

Bank, B., Biddle, B., Slavings, R. (1992). What Do Students Want? Expectations and Undergraduate Persistence. Sociological Quarterly, Vol. 33, No. 3, pp. 321-335

Using data from a longitudinal study, this article described the expectancies of entering freshmen at a Midwestern state university. It distinguished expectancies from three other types of expectations, self-labels, attributed norms, and own norms. It investigated the extent to which all four types of expectation predicted who left and who stayed at the university. This article conceptualized students' thoughts and opinions as expectations that affect their persistence behaviors. Of the five types of expectancies, social expectancies were most frequently mentioned, and expectancies concerning specific positions best predicted students' persistence. On average, however, expectancies more weakly predicted persistence than did self-labels and own norms, which were shaped, in part, by attributed norms.

Bean, J. (1982). Conceptual Models of Student Attrition. In E.T. Pascarella (Ed.) *New Directions for Institutional Research: Studying Student Attrition*, No. 36, pp. 17-28, San Francisco, Jossey-Bass

A model of student attrition is a representation of the factors presumed to influence decisions to drop out of an institution. The model identifies the interrelationships among the various factors and the relationships between these factors and the dropout decision. The use of any model is based on certain assumptions about what is important in a dropout decision at a particular institution. This chapter discusses six types of models, all of which have the potential to help understand the attrition process.

Braxton, J. (1999). Theory Elaboration and Research and Development: Toward a Fuller Understanding of College Student Retention. Journal of College Student Retention, Vol. 1, No. 2, pp. 93-97

This was not an empirical study. The author sought to refocus the direction of retention research on the identification of various factors that facilitate or impede student social integration in the social communities of colleges and universities. One suggested approach was theory elaboration. This was the use of constructs derived from other theoretical perspectives to explain the phenomenon of interest. Another suggested approach was the research and development approach. The aim of this strategy was to identify reliable policies and programs that directly foster social integration, and indirectly positively affect student persistence.

Braxton, J., Shaw Sullivan, A. (1997). Appraising Tinto's Theory of College Student Departure. In J.C. Smart (Vol. XII), *Higher Education: Handbook of Theory and Research* (pp. 107-164). New York: Agathon Press

Given its near-paradigmatic status in research on college student departure, an empirical assessment of Tinto's theoretical model was conducted. Fifteen testable propositions have been derived from the Tinto's theoretical schema. However, little or no attention focused on the extent to which these propositions were supported by the empirical research. This chapter addressed this gap in scholarship. In the aggregate, the authors' assessment of empirical evidence regarding thirteen primary propositions indicated partial support for the theory. Five relationships were affirmed by single institutional assessments and three propositions strongly backed multi-institutional assessment. The lack of empirical support for many of the propositions reverted back to the conceptual critiques. Those that provided robust empirical backing could provide a starting point for revision of this model. Such revision might entail attempts to integrate these strongly backed propositions with other theoretical perspectives on student departure.

Burr, P., Burr, R., Novak, L. (1999). Student Retention Is More Complicated Than Merely Keeping the Students You Have Today: Toward A Seamless Retention Theory. Journal of College Student Retention, Vol. 1, No. 3, pp. 239-253

The authors proposed that a true seamless retention effort was one that began before students were enrolled and anticipated and identified the needs of students as they entered into the educational system. This article highlighted demographic trends that were changing the profile of the college student and his/her needs. No empirical study was implemented but solutions were offered for consideration within the U.S. higher education environment.

Burrell, L., Trombley, T. (1983). Academic Advising with Minority Students on Predominantly White Campuses. Journal of College Student Personnel, March 1983, pp. 121-126

This study surveyed minority students' perceptions of academic advising on several campuses. It attempted to determine the need for creative advising strategies to serve minority students within the predominantly white institutions. Data from five predominantly white colleges revealed academic advising as the most important support

service. Minority students were more likely to turn to minority advisors or counselors for help with academic problems, but students experiencing either personal or financial problems were likely to turn to their families for help. However, the data were not clear as to whether the term advisor referred to the minority students' official (assigned) advisor or someone who performs the advising role in an unofficial (non-assigned) capacity.

Cabrera, A., Nora, A. (1994). College Students' Perceptions of Prejudice and Discrimination and Their Feelings of Alienation: A Construct Validation Approach. Review of Education/Pedagogy/Cultural Studies, Vol. 16, No. 3-4, pp. 387-409

The purpose of this study was to establish the dimensionality of perceptions of prejudice and discrimination among different ethnic groups (Whites, Hispanics, African-Americans, Asian-Americans) and also to test the interrelationship between the different factor structures associated with each group and students' sense of alienation from their institution. The measurement model viewed perceptions of prejudice and discrimination (PPD) as comprised of three interrelated components: (1) Campus Racial/Ethnic Climate, (2) Prejudiced Attitudes Held by Faculty and Staff, and (3) In-Class Discriminatory Experiences. The study population was drawn from the fall 1990 entering freshman class at a major public, commuter, and predominantly white doctoral granting Midwestern institution. Using structural equation modeling, of the three sources, only In-class Discriminatory Experiences was found to exert a significant effect on feelings of Alienation. It was likely that Campus Racial/Ethnic Climate and perceptions of Prejudiced Attitudes of Faculty/Staff exerted an indirect impact on Alienation given the high intercorrelation they maintained with In-Class Discriminatory Experiences.

Cabrera, A., Nora, A., Castañeda, M. (1993). College Persistence: Structural Equations Modeling Test of an Integrated Model of Student Retention. Journal of Higher Education, Vol. 64, No. 2 (March/April 1993) pp. 123-139

Two theories have provided a comprehensive framework on college departure decisions. These two theoretical frameworks are Tinto's Student Integration Model and Beans' Student Attrition Model. This study attempted to document the extent to which these two theories can be merged in explaining students' persistence decisions by simultaneously testing all non-overlapping propositions underlying both conceptual frameworks. A two-step structural equation modeling strategy via LISREL VII was employed in estimating parameters. The student population was drawn from the fall 1988 entering freshman class at a large southern urban institution. In the study, traditional students, full-time, first-time freshmen were used. Results indicated that when these two theories were merged into one integrated model, a more comprehensive understanding of the complex interplay among individual, environmental, and institutional factors was achieved.

Cabrera, A., Castañeda, M., Nora, A., Hengstler, D. (1992). The Convergence Between Two Theories of College Persistence. Journal of Higher Education, Vol. 63, No. 2, (March/April 1992), pp. 143-164

The purpose of this article was to examine, empirically, the convergent and discriminant validity between two theories of college departure, Tinto's Student Integration Model and Bean's Model of Student Departure. This documented the extent to which the two theories could be merged to illuminate better the understanding of the college persistence process. A three-stage strategy was employed to test the convergent validity between the two theories. The student population was drawn from the fall 1988 entering freshman class at a large southwestern urban institution. Again, this model used traditional students, full-time, first-time freshmen. The results indicated that the two theories were not mutually exclusive; rather, they were complementary to one another as far as the presumed role of organizational and students' commitments to the institution were concerned.

Cremer, D. (1980). Educational Advising for Student Retention: An Institutional Perspective. Community College Review, Vol. 7, No. 4, pp. 11-18

Effective educational advising can have an impact on retention. This analysis of literature suggested seven propositions for consideration when organizing an advising program. Each proposition was discussed in the perspective of possible relevance for increasing student retention. Finally, these propositions were generalized to formulate a model for advising for retention. Each aspect of the model was summarized to give an overview of implementation issues.

DesJardins, S., Ahlburg, D., McCall, B. (1998). An Event History Model of Student Departure. Economics of Education Review, vol. 18, pp. 375-390

This study used a modeling technique often used in economics and other disciplines but rarely applied to educational research. The technique, known as event history modeling was used to examine the temporal dimensions of student departure from a large research university. Specifically, exogenous factors such as race, gender, disability, ACT scores, high school rank, age and time-varying factors were hypothesized to affect a student's individual enrollment decision at discrete points during their academic career. The study confirmed most of the substantive findings of earlier research but documented that key explanatory variables had differential effects over time. Pinpointing the times at which students were at risk of leaving college will permit more efficient intervention strategies that could reduce the social, institutions, and individual costs often associate with leaving college before degree completion.

Gándara, P. (1995). *Over the Ivy Walls: the Educational Mobility of Low-income Chicanos*, Albany, State University of New York Press

Using a qualitative approach, this book explored the characteristics and experiences of Chicanos who survived poverty and disadvantage to become highly successful academic achievers. It focused on the educational mobility of one Hispanic group, the most numerous: Mexican Americans or Chicanos. In so doing, it also attempted to integrate some of the large body of research on academic achievement into a coherent understanding of how low-income Chicanos found success in school. For the

most part, parents (especially the mothers) were very supportive of their children's educational goals, set high performance standards, modeled and encouraged literacy, and helped with schoolwork in any way they could. Many of their parents also facilitated their children's attendance in schools outside their neighborhoods that were perceived to be better than the schools to which their children had been assigned. Beyond the effects of parental press for achievement, subjects expressed intense personal drives for achievement, oftentimes manifested in comments to the effect that they had vowed they would not live in the kind of poverty into which they were born.

Gold, J. (1995). An Intergenerational Approach to Student Retention. Journal of College Student Development, Vol., 36, No. 2, pg. 182-187

The effects of intergenerational family patterns on the student's adaptation to the college environment were presented. According to this approach, the college student moves from the family of origin to the university family, carrying family-sponsored messages about the university, success, separating from home, and individual identity. Two case studies illustrated the application of this Bowenian perspective of student retention issues to preventive and remedial programs. To help students understand family patterns and change dysfunctional patterns of thinking and behaving, a genogram was used. This visually portrayed the student's family members, educational scripts, and other elements to help the students recognize the positive and negative messages inherited from the family of origin. The advantages and disadvantages of an intergenerational approach to student retention were proposed.

Grandy, J. (1998). Persistence in Science of High-Ability Minority Students. Journal of Higher Education, Vol. 69, No. 6 (November/December 1998), pp. 589-620

Concern over the under-representation of minorities in natural science, mathematics, and engineering (S/E) led to this longitudinal study of high-ability minority students. Identifying the reasons why academically capable minorities either persist or leave S/E was the focus of this study. More important to the study were students who were judged to be academically capable of becoming scientists or engineers but who for some reason chose to abandon their fields before graduating from college. The sample was drawn from high-ability students who took the Scholastic Aptitude Test (SAT) in 1985 and following the progress of those students for five years. Some of the major findings from a path analysis revealed that completing the first two years of coursework successfully gives the student encouragement to complete the last two years. Also, male S/E students appeared to need minority support more than female S/E did. More crucially, findings indicate that even when males and females have the same levels of math/science achievement, females have less ambition to make scientific discoveries and contributions than males do. This study developed a model in understanding the various environmental, motivational factors influencing student persistence.

Henderson, J. Understanding the Retention of Latino College Students. Journal of College Student Development, Vol., 41, No. 6, (November/December 2000) pp. 575-588

In this qualitative study, the research explored the retention of 10 Latino college students, particularly how their experiences and environmental factors contributed to their persistence. The participants ranged in age from 21 to 25 years and included 5 men and 5 women. The findings include 11 major categories or themes. These were: I Want to Do It, Family, Faculty and Staff, Co-curricular Involvement, Finding a Latino Community, Money Matters, I'm Going to Make It Within the Environment, Environment Equals People, Personal Experiences Shape the Perceptions of the Physical Environment, Involvement as a Way to Break Down the Environment.

Heverly, M. (1999). Predicting Retention From Students' Experiences with College Processes. Journal of College Student Retention, Vol. 1, No. 1, pp. 3-11

Over the past decade, retention was studied at Delaware County Community College by a variety of methods. Although valuable information resulted from these studies, a major limitation has been the difficulty in identifying specific, focused changes in college processes that had high potential for having an impact on retention patterns. A prospective study was conducted. Data was gathered shortly after students' encounters with key college processes in order to determine which components of those processes predicted student retention. The results identified the most commonly occurring negative comments focused on information needs. More specifically, this was needing information or getting wrong information and focused on instruction, financial aid and billing.

Holmes, S., Ebbers, L. Robinson, D., Mugenda, A. (2000). Validating African American Students at Predominantly White Institutions Journal of College Student Development, Vol. 2, No. 1, pp. 41-58

The purpose of this article was to provide a review of research and theory focusing on factors that have been cited as contributing to the retention and graduation rate of African-American students attending predominantly White institutions. The authors used recommendations cited in the literature to develop a model for predominantly White institutions to use in designing programs and services for African-American students. The Learning Outcomes Model used five sets of interactive to explain influences that affect the students' academic and cognitive development as they proceed through college. The model places more emphasis upon the institution's influence over the student's academic outcomes as opposed to the student's pre-enrollment characteristics.

Hummel, M., Steele, C. The Learning Community: A Program to Address Issues of Academic Achievement and Retention. Journal of Intergroup Relations, Summer 1996, Vol. 23, No. 2, pp. 28-33

Using the theories and research of Claude Steele and Uri Treisman as a framework, a learning community program was created to increase the academic success and student retention at the University of Michigan. The 21st Century Program combined a seminar, community living experience and academic course sections and workshops in order to uniquely address achievement and retention. This program was open to all first-year students in the College of Literature, Science, and the Arts and approximately 35 percent of the 265 participants were students of color. Research results indicated that for students who entered the program with standardized test scores in the top two-thirds of the sample distribution, there was no racial gap in grades achieved. African American students did as well as white students at these preparation levels, and African American student in the program did substantially better than white students outside the program.

Johnson, J. (1997). Commuter College Students: What Factors Determine Who Will Persist and Who Will Drop Out? College Student Journal, Vol.31, No. 3, pp. 323-333

Using multivariate statistical procedures, the study presented in this article investigated what factors distinguished between students who persisted and those who dropped out of a university that serves mainly commuter students. The sample for this longitudinal study was followed for six years. The students were surveyed a number of times during the six years and data were obtained from the University's Integrated Student Information System. Data were analyzed to determine membership of students in one of two groups: Dropout group or Retained group. Faculty- and staff-student interaction and connection was found to be the most important characteristics distinguishing the retained from the dropout students.

Jones, C., Slate, J., Marini, I. (1995). Locus of Control, Social Interdependence, Academic Preparation, Age, Study Time, and the Study Skills of College Students. Research in the Schools, Vol. 2, No. 1, pp. 55-62

The relationship of students' study skills to their locus of control, social interdependence, academic preparation, age, and study time were investigated. Participants were 266 students enrolled in seven sections of an introductory psychology course at a university in the mid-South. Study skills were related to locus of control, age, expected course grade, and study time. Social interdependence, high school grades, perceived academic preparation, number of hours enrolled, and number of hours employed, were unrelated to study skills. The need to address attitudinal and motivational variables in study skills programs were discussed.

Larose, S. Robertson, D., Roy, R., Legault, F. (1998). Nonintellectual Learning Factors as Determinants for Success in College Research in Higher Education, Vol. 39, No. 3, pp. 275-297

This article presented the results of the two studies hypothesizing that the nonintellectual learning dispositions were as important as intellectual assets in predicting the success of college students. It was expected that nonintellectual dispositions would be

empirically distinct from intellectual characteristics and would predict success in college for entering students beyond what could be explained by the traditional academic and intellectual measures. The first study was conducted with a traditional sample of freshmen students attending a French-speaking college in Quebec City. Subjects in the second study were high-risk students enrolled in a special learning center program at an American college. Findings in the first study suggested that nonintellectual dispositions, as well as changes in these dispositions throughout the first-year transition, increased the quality of the prediction of success in college above and beyond academic and intellectual dispositions. These results were replicated in the second study and using the Scholastic Aptitude Test as a measure of intellectual dispositions. Nonintellectual factors were found to be strong indicators of the feelings of competence that enable students to maintain a positive self-image during transitional periods, deal more effectively with new learning situations, and ultimately increase their chances for academic success. It was further concluded that nonintellectual factors appeared to be important in both low-risk populations and high-risk populations.

Lent, R., Brown, S., Larkin, K. (1984). Relation of Self-Efficacy Expectations to Academic Achievement and Persistence. Journal of Counseling Psychology, Vol. 31, No. 3, pp. 356-362

This study examined the relation of self-efficacy beliefs to subjects' persistence and success in pursuing science and engineering college majors. Subjects were 42 student who participated in a 10-week career-planning course on science and engineering fields. Findings indicated that subjects reporting high self-efficacy for educational requirements generally achieved higher grades and persisted longer in technical/scientific majors over the following year than those with low self-efficacy. Self-efficacy was also moderately correlated with objective predictors of academic aptitude and achievement.

Levin, M., Levin, J. (1991). A Critical Examination of Academic Retention Programs for At-Risk Minority College Students Journal of College Student Development, July 1991, Vol. 32, pp. 323-334

In this article, research on academic programs for improving retention of at-risk minority college student was reviewed and critically examined. Services and programs were examined with three major purposes (a) to understand the conceptual bases upon which academic retention programs have been built, (b) to isolate the critical components that were credited with making the difference between successful and unsuccessful programs, and (c) to identify issues that must be addressed in future research on academic retention programs for at-risk students. The focus here was on academic-based retention programs for college-age, at-risk minority students, a group that includes students of Black, Native American, Hispanic, and Southeast Asian heritage. This examination concluded that to improve retention rates for at-risk minority students, program developers would likely benefit from consultation or collaboration with researchers in the areas of cognition, learning, and instruction.

Lewallen, W. (1993). The Impact of Being Undecided on College-Student Persistence. Journal of College Student Development, Vol. 34, pp. 103-112

This study examined the impact of being undecided on persistence using college-impact theories of student change. It was hypothesized that simply knowing that a student was undecided in academic and career goals at college entrance was not sufficient information to conclude that the student was at-risk of not persisting. Astin's conceptual model of input-environment-outcome (I-E-O) was used in this study. Data were obtained from a longitudinal data file of the Cooperative Institutional Research Program (CIRP) involving a national representative sample of students who entered college as freshmen in the fall of 1985. Through step-wise multiple regression, it was found that being undecided about major choice or career choice was not significantly associated with persistence. These findings generally refuted the evidence of previous research studies.

Li, G., Killian, T. (1999). Students Who Left College: An Examination of Their Characteristics and Reasons for Leaving. Paper presented at Association of Institutional Research annual conference at Seattle, WA.

The purpose of this study was to examine patterns of attrition at a mid-western Research I institution in two ways. First, institutional data were used to compare students who left prematurely with those who stayed. Second, qualitative data collected from phone interviews with students who left the institution were analyzed and categorized into themes. Specifically, two research questions were addressed: (1) in what ways did students who left the university significantly differ from the students that stayed in the university and (2) what were the primary reasons that students who left the institution gave for their decision to leave? According to the results of this study, students' background characteristics were statistically different for the retained and not retained students. Both quantitative and qualitative data showed that there were a variety of reasons for leaving without a degree from the university including academics, personal, financial, and campus services.

Lowe, A., Toney, M. (2000). Academic Advising: Views of the Givers and Takers. Journal of College Student Retention, Vol. 2, No. 2, pp. 93-108

This study was designed to examine the satisfaction with academic advising among students enrolled in a university teacher certification program. An attempt was made to determine if the type of advisor, the status of the student (undergraduate or graduate), and the frequency of contacts with the advisor significantly predicted student satisfaction. Also, there was a focus on whether retention rates were related to these variables. The participants were 200 undergraduate and graduate students enrolled in a school of education, college of arts and sciences and a university adult college for returning students. The academic advisors were staff, whose primary responsibility was advising and faculty. The results indicated that academic advising services vary widely across colleges and that the distribution of services varied between student groups. These factors impacted student satisfaction with the advising process. Further, it was found that

there are differences in the perception of the importance of advising responsibilities based on student status.

Mayo, J., Murguía, E., Padilla, R. (1995). Social Integration and Academic Performance Among Minority University Students. Journal of College Student Development, Vol. 36, No. 6, pp. 542-552

The effect of social integration on academic performance among Mexican American, Black, and Native American students was analyzed at a large, Southwestern public university. Formal social integration, defined as participation in student organizations and contact with faculty outside the classroom, had a much greater impact on academic performance (cumulative grade point average) than did informal social integration, the enjoyment of social life, the degree of social comfort on campus, and relationship with fellow students. Policy implications of the study were presented, namely, that universities should provide support for the ethnic-based organizations and that contacts between faculty and students outside of the classroom should be encouraged.

McLaughlin, G., Brozovsky, P., McLaughlin, J. (1998). Changing Perspectives on Student Retention: A Role for Institutional Research. Research in Higher Education, Vol. 39, No. 1, pp. 1-17

This paper proposes a role for institutional research in changing institutional attitudes about the priority placed on student retention efforts. Problems associated with changing perspectives are described using Kubler-Ross's work *On Death and Dying*. Potential barriers associated with changing the status of student retention efforts within the institution are identified relative to her stages of grief: denial, hostility, bargaining, depression, and acceptance. Tactics useful in addressing and moving through each stage are described. Results from several studies on student retention provide information that has been used to promote and change attitudes toward student retention efforts at all levels at Virginia Tech.

Milem, J., Berger, J. (1996). A Modified Model of College Student Persistence: Exploring the Relationship between Astin's Theory of Involvement and Tinto's Theory of Student Departure. Paper presented at the annual meeting of the Association for the Study of Higher Education

This paper used longitudinal data to empirically test a conceptual model of student persistence which integrated behavioral constructs from Astin's work as a means of further specifying aspects of Tinto's Model. It proposed to measure the interaction between students and their environments by examining how involvement behaviors affect perceptions, which in turn affect subsequent behavior. This behavior-perception-behavior cycle provided an explanatory mechanism for describing how students navigated the stages of incorporation. The modified persistence model was tested causally through a path analysis. Findings suggested that various forms of involvement did influence students' perceptions of institutional support and peer support. In turn, these perceptions

of support appear to have an effect on students' levels of institutional commitment. Of greater significance, findings suggested that early involvement with faculty tended to have a positive role in this model of student persistence. While past emphasis has been placed on active engagement with peers, it should also be encouraged that students become involved with their professors.

Mohr, J., Eiche, K., Sedlacek, W. (1998). So Close, Yet So Far: Predictors of Attrition in College Seniors. Journal of College Student Development, Vol. 39, No. 4, July/August 1998, pp. 343-354

The purpose of this study was to identify issues relevant to non-transfer college seniors who disenroll from their academic programs before graduating. Forty-two of these non-returning seniors were interviewed by telephone, as were 48 returning seniors who served as a comparison group. Interview data indicated that college seniors offered a variety of reasons for disenrolling before graduating, including financial strain, transferring to another school, moving, starting or supporting a family, enhancing career development, personal problems, and needing a break from college. Quantitative analyses suggested that non-retention of seniors was best predicted by dissatisfaction with academic guidance, dissatisfaction with access to school-related information, and dissatisfaction with quality of education, as well as by feelings of institutional alienation. Implications of the results for retention of seniors and for future research were discussed.

Mouw, J., Khanna, R. (1993). Prediction of Academic Success: A Review of the Literature and Some Recommendations. College Student Journal, Vol, 27, pp. 328-336

A critical review of the literature on the prediction of academic success in college is followed by the summary of results of an empirical study. The conclusions drawn was that the ability of any of the predictors, including the traditional high school rank and entrance tests to predict college success is disappointingly low.

Moxley, D., Najor-Durack, A., & Dumbrigue, C. (2001). Keeping Students in Higher Education: Successful Practices and Strategies for Retention. VA: Kogan Page.

While governments and society drive hard to get increasing numbers of young people into higher education, colleges and universities are faced with the issue of keeping them there. This timely book looks at the issues surrounding student drop outs, and presents a practical how to guide to identifying problems and developing practical solutions to the problem of retaining students. This is an issue of strong interest world wide, particularly as higher education moves into an era where funding is dependent on student numbers and where new forms of teaching and larger groups of students make traditional pastoral care increasingly difficult

Murtaugh, P., Burns, L., Schuster, J. (1999). Predicting the Retention of University Students. Research in Higher Education, Vol. 40, No. 3, 1999, pp. 355-371

Survival analysis was used to model the retention of 8,867 undergraduate students at Oregon State University between 1991 and 1996. Attrition was found to increase with age, and decreasing with decreasing high school GPA and first-quarter GPA. Nonresidents had higher attrition rates than did resident and international students, and students taking the Freshman Orientation Course appeared to be at reduced risk of dropping out. Statistically significant associations of retention with ethnicity/race and college at first enrollment were also noted. A proportional hazards regression model was developed to predict a student's probability of leaving school based on these demographic and academic values.

Neumann, Y., Finaly-Neuman, E. (1989). Predicting Juniors' and Seniors' Persistence and Attrition: A Quality of Learning Experience Approach. Journal of Experimental Education, Vol. 57, pp. 129-140

The purpose of this study was to examine the power of quality of learning experience (QLE) indicators in predicting juniors' and seniors' persistence and attrition and to identify the relative salience of each of the QLE components in explaining persistence. Two different models were defined and assessed: the compensatory model and the multiple hurdles model. The compensatory model represents the situation where a student's decision to withdraw or persist is a weighted linear combinations of learning experience component scores. The multiple hurdles approach assumes that scoring high on multiple facets on the QLE is needed to increase the probability of persisting in college. These models were tested using logistic regression and discriminant analysis. The major findings were: (a) QLE indicators played a significant role in prediction juniors' and seniors' persistence; (b) the predictability and classification power were weaker for the compensatory model and stronger for the multiple hurdles framework; (c) three dominant predictors were student-faculty contact, students' involvement in the academic program and the content of that program.

Nichols, J., Orehovec, P., Ingold, S. (1998). Using Logistic Regression to Identify New At-Risk Freshmen. Journal of Marketing for Higher Education, Vol. 9., No. 1, pp. 25-37

The search to identify students who are attrition risks early in their collegiate careers is often elusive. More often, practitioners rely on the random initiation of program strategies aimed at improving retention and graduate rates without any viable research base. To address this issue, a logit model was developed using historical data to identify characteristics inherent in a student's decision to withdraw from college. Once the model was derived, predicted probabilities of retention for an incoming class was computed. The overall benefits of the logit model was the ability to identify a sizable group of at-risk new students whose return rate was some 15 percentage points lower

than the not at-risk cohort group using a model constructed of various types of historical demographic and behavioral information.

Noldon, D., Sedlacek, W. (1996). Race Differences in Attitudes, Skills and Behaviors Among Academically Talented Students. Journal of the Freshmen Year Experience, Vol. 8, No. 2, pp. 43-56

This study compared the responses of incoming Asian, Black and White honors students who attended an orientation program at a large eastern research institution. The purpose was to determine whether the college adjustment of students of color was associated with non-cognitive, contextual, and sociocultural factors. Data were analyzed descriptively and use of chi-square and analysis of variance (ANOVA and MANOVA) with LSD post hoc tests. Overall, academic issues provided the greatest single category of differences with Asian students reporting the greatest number of group differences. The students indicated an overall agreement with wanting to improve learning skills. This finding was in contrast with common stereotypes that honors students do not have this type of need. Many Black and some Asian students felt they would identify on campus with their own racial group (48% and 18%). Most Asians and some Whites both indicated that they would not formally identify with a group (25% and 14% respectively). The data from this study showed that these three groups of academically talented students in this survey possess unique cultural and historical differences that are based on stereotypes that profoundly affect their ability to carve out a distinct identity.

Okun, M., Benin, J., Williams, A. (1996). Staying in College. Journal of Higher Education, Vol., 67, No. 5, (September/October 1996). pp. 576-596

This study investigated the possibility that the magnitude of the relation between intention and subsequent enrollment behavior varied with (a) grades, (b) commitment, and (c) encouragement from others to stay. Commitment was assessed using a newly developed measure which tapped the priority students gave to doing well in college relative to their goals in non-college roles. A random sample was drawn, stratified proportionately by day versus evening schedule, of sections of Introduction to Psychology offered at a community college located in a metropolitan area of Phoenix, Arizona. Logistic regression analysis was employed in which a main effects model was generated. This model included two control variables, credit load and certainty of finances with four predictor variables, grade point average, commitment, encouragement, and enrollment intention. Findings indicated that for students who intended to stay and to transfer alike, credit loads of 1-3 hours and semester GPA's below 2.00 were associated with increased risk of institutional departure. Also, the intention-departure relation was higher among students who place a high priority on doing well in colleges as compared to students who placed a moderate priority on doing well in college. Overall, the findings confirmed previous studies that indicated the intentions of community college students often degenerate over periods ranging from 14 to 23 weeks. Findings were also consistent with investment theory, which postulated that individuals with the smallest investment (i.e. credit load), were most likely to leave an organization.

Padilla, R., Trevino, J., Gonzalez, K., Trevino, J. (1997). Developing Local Models of Minority Student Success in College. Journal of College Student Development, Vol. 38, No. 2, March/April 1997, pp. 125-135

This study was designed to reveal the strategies that successful minority students employed to overcome barriers to academic success in college. Departing from the traditional research that examined what students do wrong that leads to leaving college, an innovative technique was used that assessed the informal knowledge required by minority students to succeed. The researchers sought to identify the campus specific heuristic knowledge and actions that successful minority students employed to overcome barriers to academic success. Analysis of the data produced four grounded categories of barriers that successful minority students had to overcome. These were discontinuity barriers, lack of nurturing barriers, lack of presence barriers, and resource barriers. The participants described successful students as those who were able to nurture themselves, sought out supportive others, acquired needed skills and information, and created a niche on campus so that they could capably address the challenges at the university.

Padilla, R. (1999). College Student Retention: Focus on Success. Journal of College Student Retention, Vol. 1, No. 2, pp. 131-145

In this article, the argument is made that student success should be the foundation for college student retention efforts. Utilizing a black box approach, together with a theoretical framework derived from expert systems thinking and the application of qualitative research methods, it is shown that the knowledge base and behavioral repertoire of successful students can be identified systematically and used to help students succeed in college. The information is locally derived and locally relevant, thus insuring that successful students can be identified for a given campus.

Pascarella, E., Terenzini, P. (1991). *How College Affects Students: Findings and Insights from Twenty Years of Research*, San Francisco, Jossey-Bass Inc.

This volume reviewed and synthesized evidence on the impact of college on student development accumulated from 1967 to 1991. Chapters addressed different broad categories of college outcomes within four taxonomic dimensions. These dimensions were: cognitive-psychological (subject matter knowledge, critical thinking), cognitive-behavioral (level of educational attainment, occupational attainment, income and the like), affective-psychological (values, attitudes, personality orientations), and affective-behavioral (leadership, choice of major, choice of career, use of leisure of time). Issues that guided this synthesis included evidence that individuals change during the time in which they attended college; evidence of different kinds of postsecondary institutions have on student change; effects of different experiences within the same institution and documenting the long-term effects of college. Chapters 5 and 6 had specific relevance to the area of student retention. These chapters discussed theories and research that used a psychosocial orientation. This consisted of the personal, internal, psychological aspects of the individual and the individual's personal orientations to the external world.

Pelletier, W., Perry, R., Hladkyj, S. (1998). Identifying High-Risk Students: Psychological Indicators of Attrition in Undergraduates. Paper presented at the annual meeting of the American Educational Research Association in San Diego, CA.

The present study investigated early psychological indicators of attrition in 506 male and female students at a Midwestern Canadian university. The data was collected at the beginning of the year, and then once again towards the end of the final semester. Two models of analyses were done. Results indicated that perceived adjustment to the university setting, goal relevance, self-concept and the expectancy for success served as markers for identifying at-risk students, and replicated earlier findings that the students' level of perceived control was a critical variable in this dynamic.

Porter, O. (1990). Undergraduate Completion and Persistence at Four-year Colleges and Universities. National Institute of Independent Colleges and University, Washington, D.C.

In 1987, the National Institute of Independent Colleges and Universities conducted a 2-year study of the persistence behavior of undergraduates at America's four-year colleges and universities. The High School and Beyond study, a national survey of 28,000 1980 high school seniors developed by the U.S. Department of Education National Center for Education Statistics, was selected as the data base. A comparison of independent and public institutions was the principal interest in the analysis, but three other areas were examined as well: the persistence of minority students, the unique experience of high-ability/low socio-economic status students, and the role of grants in the first year of persistence. The findings were mainly descriptive and did not indicate causal relationships. Findings indicated that completion was more timely and at a higher rate in independent colleges and universities. Black and Hispanic completion rates lagged seriously behind those of whites and Asian Americans. The greatest enrollment loss occurred during the first year and after the eighth semester. Both socioeconomic status and academic ability influenced persistence.

Rendon, L. (1994). Validating Culturally Diverse Students: Toward a New Model of Learning and Student Development. Innovative Higher Education, Vol. 19, No. 1, Fall 1994, pp. 33-51

The Transition to College Project was designed primarily to determine how student learning was affected by student involvement in academic and non-academic experiences in college. In particular, the project was interested in assessing the influences of students' out-of-class experiences on learning and retention. It attempted to address how students become active and involved participants in the academic community and, how students' out-of-class experiences, particularly their interpersonal interactions, reinforce, augment or attenuate curricular and classroom learning and achievement of broader general education goals? The researchers interviewed a total of 132 first-year students in a predominantly minority community college in the southwest, a predominantly white, residential, liberal arts college in a middle Atlantic state, a

predominantly black, urban, commuter comprehensive state university in the midwest, and a large, predominantly white, residential, research university in a middle Atlantic state. An open-ended interview protocol was designed and yielded five important findings. First, traditional students expressed few, if any concerns about success in college while nontraditional students communicated some doubts about their ability to succeed. Also, many nontraditional students needed active intervention from significant others to help them negotiate institutional life. Third, success during the critical first year of college appeared contingent upon whether students can get involved in institutional life on their own or whether external agents can validate students, in an academic and/or interpersonal way. Fourth, nontraditional students could be transformed into powerful learners through in- and out-of-class academic and/or interpersonal validation. Finally, involvement in college is not easy for nontraditional students.

Richardson, R., Fisk Skinner, E. (1988). Making It In A Majority University: The Minority Graduate's Perspective. Change, May/June 1988, pp. 37-42

In this article, the authors built on a study conducted by the Office of Educational Research and Improvement of the U.S. Department of Education. This study involved case studies of ten predominantly white public universities that experienced above-average success in graduating black, Hispanics, or American Indians. The authors included complimentary data from telephone interviews conducted with 107 Spring 1986 minority graduates of these institutions. Through these open-ended interviews, graduates described in detail their preparation, family backgrounds, and institutional experiences. Four student types emerged: the well-prepared, second generation college-goers with a lifelong commitment to higher education; first generation student who also grew up with a strong belief in education, but whose preparation was inadequate; first and second generation students who questioned the value of education in their lives, despite adequate preparation; and, first generation college students with little preparation who had grown up never intending to go to college. This research indicated that minority students succeeded in a variety of settings when the institution accepted responsibility for improving its environment as well as working to improve the preparation and opportunity orientations of its students.

Sandler, M. (1999). A Structural Model of Student Integration, Finances, Behavior, and Career Development: An Elaborated Framework of Attitudes and Persistence. Paper presented at the Association for the Study of Higher Education annual conference, San Antonio, TX.

A non-recursive structural model adapted from Cabrera, Nora and Casteñeda (1993) integrated model of student retention was elaborated and identified. The study examined the persistence of adult students studying in two-year and four-year degree programs, by combining data from a survey questionnaire and institutional records. Twenty-three variables were included: 12 endogenous and 11 exogenous. The explained variance for intent to persist and persistence were 65 percent and 43 percent respectively.

A career development variable was shown to have a moderate direct effect on intent to persist and a small indirect effect on persistence.

Seidman, A. (1991). Faculty Can Make A Difference in Student Persistence. Colleague. State University of New York, pp. 21-25

This article explores the importance of faculty-student interaction outside the classroom, and suggests ways to initiate this interaction. Although not a research study, this article provides an overview of the growing literature that documents faculty contact with students is positively related to student persistence. Suggestions to facilitate this interaction included Adopt a Scholar , Adopt a Pro , faculty-student lunches and other social gatherings.

Steele, C. (1997). A Threat in the Air: How Stereotypes Shape Intellectual Identity and Performance. American Psychologist, Vol. 52, No. 6, pp. 613-629

A general theory of domain identification was used to describe achievement barriers still faced by women in advanced quantitative areas and by African Americans in school. The theory contended that sustained school success required identification with the school and its sub-domains and that societal pressures on these groups (e.g., economic disadvantage, gender roles) frustrated this identification. In addition, students from these groups faced the further barrier of stereotype threat, the threat that others' judgments of their own actions negatively stereotyped them in school. Research showed that this threat dramatically depresses the standardized test performance of women and African Americans who were in the academic vanguard of their groups. This offered a new interpretation of group differences in standardized test performance and that it caused disidentification with school. Practices that reduced this threat can reduce these negative effects.

Sydow, D., Sandel, R. (1998). Making Student Retention an Institutional Priority. Community College Journal of Research and Practice, Vol. 22, pp. 635-643

A study was conducted to determine the reasons behind the unusually high rate of student attrition at Mountain Empire Community College of Big Stone Gap, Virginia. The method used was a phone survey of students who officially or unofficially withdrew from the college. The results suggested that work and family conflicts were the primary contributors to attrition.

This article also described the process of how student retention became an institutional priority and how it involved all members of the campus such as faculty, staff, and administrators.

Terenzini, P. (1982). Designing Attrition Studies. In E.T. Pascarella (Ed.) New Directions for Institutional Research: Studying Student Attrition, No. 36, pp. 17-28, San Francisco, Jossey-Bass

This chapter attempted to provide some ideas on how best to collect and analyze data on attrition. It suggested to the need to have a clear definition of attrition and that this will subsequently shape the design and methodological considerations that follow. Time period was another consideration and weighing the choice between short-term or long-term periods of withdrawal. Target population was another important consideration and interest in the specific group of students and their attrition/retention patterns. Finally, designing a study is to some extent a series of compromises and this chapter attempts to describe some of the more common compromises in these types of studies.

Tharp, J. (1998). Predicting Persistence of Urban Commuter Campus Students Utilizing Student Background Characteristics From Enrollment Data. Community College Journal of Research and Practice, Vol., 22, pp. 279-294

This article summarized the results of a longitudinal retention study where variables in the student database were used to predict dropout. The purpose of the study, which was conducted at a four-year, urban commuter institution, was to determine if differences in student background characteristics could distinguish persistence rate differences between associate and baccalaureate degree students. The results of this research showed that students enrolled in two-year degrees had better persistence rates than bachelor's degree students. Two particular variables, first semester hours and first semester grade point average, were significant in their ability to predict dropout. A review of the literature indicated that student background characteristics might be the most reliable variables in studying dropout at urban commuter institutions where the student is primarily nontraditional.

Tierney, W. (1992). An Anthropological Analysis of Student Participation in College. Journal of Higher Education, Vol. 63, No. 6, (November/December 1992), pp. 603-618

In this article, Tierney took issue with Tinto's widely accepted theoretical model that viewed college participation as if it were a rite of passage where academic and social integration was essential for student persistence. Tierney argued that Tinto misinterpreted the anthropological notions of ritual. He deconstructed the discourse of two college administrators who were part of a two-year investigation pertaining to the college-going patterns of American Indian college students. His assumption was that the ideas and discourse that administrators utilized influenced the actions that occurred on their campuses. And in large part, those actions and policies were ineffectual in stemming the tide of minority student departure in general, and Native American leave-taking in particular. Tierney concluded by suggesting an alternative model for student persistence as looking at universities as multicultural entities where difference should be highlighted and celebrated.

Tinto, V. (1997). Classrooms as Communities: Exploring the Educational Character of Student Persistence. Journal of Higher Education, Vol. 68, No. 6, (November/December 1997), pp. 599-623

This article presented the results of a multi-method, quantitative and qualitative, study of the efforts of one college, Seattle Central Community College, to alter student class room experience through the use of learning communities and the adoption of collaborative learning strategies. The study sought to ascertain to what degree such strategies enhance student learning and persistence and if so, how they do so. The campus setting that was studied was nonresidential and the students had a multiplicity of obligations outside of the college. In the quantitative portion, students in the Coordinate Studies Program (CSP) reported greater involvement in a range of academic and social activities and greater perceived developmental gains over the course of the year than did students in the comparison classes of the regular curriculum. CSP students persisted at a significantly higher rate than did similar students in the regular classes to the following spring and fall quarters. Five variables proved to be significant predictors of persistence. These were participation in CSP, college grade point average, hours studied per week, perceptions of faculty and the factor score on involvement with other students. In the qualitative portion, it was evident that participation in a collaborative or shared learning group enabled students to develop a network of support that helped bond students to the broader social communities of the college while also engaging them more fully in the academic life of the institution. It was also apparent that students were influenced by participating in a setting in which sources of learning came from a variety of perspectives beyond that of one faculty member. These findings revealed that it was possible to promote student involvement and achievement in settings where such involvement was not easily attained. This research was relevant for modifying current theories of student persistence in order to account more directly for the role of classroom experiences in the process of both student learning and persistence.

Tinto, V. (1993). *Leaving College: Rethinking the Causes and Cures of Student Attrition*, 2nd Edition, Chicago: University of Chicago Press

The intent of this edition was to take a look back on recent evidence and to what degree past understandings should be changed to better reflect the current body of knowledge and experience on student retention. Based on the extensive body of research on student departure, Tinto proposed a theory that focused on the role that institutions play in influencing the social and intellectual development of their students. Drawn from studies of suicide and rites of passage to community membership, this theory provided a view of student leaving and institutional action that stressed both the limits of institutional action and the unique responsibility institutions shared in the education of their students. Tinto's theory of departure was most tested in the student retention research. This book also intended to show what could be done to increase student retention in higher education. It proposed a course of action, a way of thinking about student dropout that could be employed in a variety of settings to confront the phenomenon of student departure.

Tracey, T., Sedlacek, W. (1987). Prediction of College Graduation Using Noncognitive Variables by Race. Measurement and Evaluation in Counseling and Development, Vol. 19, January 1987, pp. 177-184

The purpose of this study was to examine the validity of non-cognitive dimensions for predicting college graduation. These non-cognitive dimensions included positive self-concept, realistic self-appraisal, understanding of and ability to deal with racism, preferences of long-range goals over more immediate, short-term needs, availability of a strong support person, successful leadership experience and demonstrated community service. This study was an attempt to validate the non-cognitive dimensions with respect to graduation for both Black and white students. Because many students did not graduate in four years, graduation after five and six years was examined. Freshmen were sampled who entered a predominantly White, eastern state university in 1979 and a random selection of those freshmen who entered in 1980 and attended summer orientation. The Non-cognitive Questionnaire (NCQ) was administered to these students. For both years, Black students had a significantly lower rate of graduation than did Whites. Also, graduation rates within race and across year were found to differ significantly. For the Black samples, the most predictive subscales were Self-Assessed Academic Motivation, Perseverance, Support for Academic Plans, and Community Service. For the White students, only Academic Self-Concept and Expected Difficulty were related to graduation. The results of this study indicated that student attitudes and expectations at matriculation were related to graduation 5 and 6 years later. The non-cognitive dimensions assessed by the NCQ were found to be significantly related to graduation but the traditional measures of academic ability (e.g., SAT scores) were not.

Xiao, B., (1999). The Impact of Freshman Year Academic Success on Student Persistence and Bachelor's Degree Completion. Paper presented at the Institutional Research Annual Forum.

A longitudinal study was conducted for fall 1990 and fall 1991 of new freshmen cohorts in a Midwest four-year public university to investigate freshmen year academic success on student persistence and degree completion. 6,593 students were followed for six academic years. Correlation and stepwise regression analysis showed that freshmen year academic success (cumulative GPA) was a very good indicator of later retention and degree completion. Also, high school class percentile was a better predictor than the ACT composite score in predicting undergraduate academic success, retention and degree completion. This study intended to look at the best academic indicators available from the students' data file to predict student retention and graduation.

Ybarra, R. (2000). Latino Students and Anglo-mainstream Instructors: A Study of Classroom Communication. Journal of College Student Retention, Vol. 2, No. 2, pp. 161-171

A study using ethnographic techniques was carried out to observe and analyze communication patterns of two Latina students. A factor that may be contributing to dropout from colleges among Latino students is that little is known about how differences

in language use affect these students in the classroom. This analysis provides a basis for evaluating communication patterns and communication breakdowns in a classroom setting. And it provides an assessment of whether these communication breakdowns have any bearing on the poor performance of Latino students and other minority students in writing composition classes at the college level.

Desire to finish college: An empirical link between motivation and persistence. *Research in Higher Education*, 40(4), 461-486. Allen, D. F., & Nelson, J. M. (1989). Tinto's model of college withdrawal applied to women in two institutions. *Journal of Research and Development in Education*, 22(3), 1-11. Allen, D., & Nora, A. (1995). International student persistence: Integration or cultural integrity? *Journal of College Student Retention: Research, Theory & Practice*, 8(1), 57-81. Andrade, M. S. (2008-2009) The value of a first-year seminar: International students' insights in retrospect. *Journal of College Student Retention: Research, Theory & Practice*, 10(4), 483-506. Andreu, M. (2002). Therefore, motivation affects students desire to learn differently. Some students forget to take into consideration external factors such as past experiences, fatigue, and difficulty of the specific task. This article also emphasizes the importance for a teacher to know her students, their needs, capabilities, and differences when teaching. One way to increase motivation is to have students participate in open-ended questions. The purpose of this research was to see the relationship between motivation and self-regulation when it comes to academic achievement. Thirty-three students from two different classrooms in the same school completed this 2-month experiment. *Modeling Student Retention: A Summary of Empirical Methods from Literature*. The vast majority of the literature related to the empirical estimation of retention models includes a discussion of the theoretical retention framework established by Bean, Braxton, Tinto, Pascarella, Terenzini and others (see Bean, 1980; Bean, 2000; Braxton, 2000; Braxton et al, 2004; Chapman and Pascarella, 1983; Pascarella and Terenzini, 1978; St. John and Cabrera, 2000; Tinto, 1975) This body of research provides a. Within the context of work that related to theoretical validation and empirical modeling, some interesting findings merit discussion. Caison, Amy L. *Analysis of Institutionally Specific Retention Research: A Comparison Between Survey and Institutional Database Methods*. *Desire to finish colleges: An empirical link between motivation and persistence*. *Research in Higher Education*, 40(4), 461-485. Google Scholar. Bean, J. (1982). Conceptual models of student attrition. In E. T. Pascarella (Ed.), *New directions for institutional research: Studying student attrition* (Vol. 36, pp. 17-28). San Francisco: Jossey-Bass. Google Scholar. Gandara, P. (1995). Commuter college students: What factors determine who will persist and who will drop out? *College Student Journal*, 31(3), 323-333. Google Scholar. Kember, D. (1995). *Open learning courses for adults: A model of student progress*. New Jersey: Educational Technology. Google Scholar. Larose, S., Robertson, D., Roy, R., & Legault, F. (1998).