
Cited by 1205

This conceptual path model of the dropout process, developed prior to proliferation of online learning, defined non-traditional students as older (age 25 or over), part-time commuter students, a population overlooked by previous social integration models of student retention proffered by Spady (1970) Tinto (1975), and Pascarella (1980). The authors built on the previous models, retaining the background and academic integration variables expected to impact retention for non-traditional students. Their model addressed the greater impact of the external environment on the non-traditional student. The variables in the model were chosen for their predictive ability and include academic performance, intent to leave, high school GPA, college goals, and environmental factors. Linkages between the variables were based on behavioral theories and the previous models of student attrition.

The model posited that favorable academic and environmental variables lead to persistence. Positive environmental variables compensated for poor academic support, also leading to persistence. However, poor environmental variables outweighed positive academic variables in the decision to leave. Academic outcomes provided compensatory effects, though these affects were mitigated by the perception of low utility, satisfaction, low goal commitment, and high stress levels. For each variable in the model, the authors discussed the direct or indirect impact on retention. They also provided numerous references for results (often mixed) of previous retention studies performed at residential and commuter colleges.


Cited by 189

In this article, Kember reviewed various theories and models of attrition (Kennedy & Powell, 1976; Roberts, 1984; and Thompson, 1984) and pointed out the shortcomings of those models when applied to distance education. He suggested that the best models are those Bean (1982) categorizes as longitudinal process models, with factors that indirectly and directly influence the decision to drop out. Kember asserted that the “commuter” student learning experience is quantitatively and qualitatively different from that of a distance education student, especially concerning student-student and studentfaculty interaction. However, Kember’s description of distance education is more consistent with independent study or correspondence study and may not reflect the extended group and collaborative work and the instructor-student interaction that can occur in online courses. In Kember’s alternative longitudinal model, the academic environment encompassed all points of connection and interaction with the university, including course materials, instruction, and administrative services. The social environment was the student’s home/family and work life. Goal commitment, educational background, and current family/work circumstances determined the degree of adaptation required by the student.

Unlike earlier persistence models, Kember’s model was both iterative and predictive. Kember referred to this as the “recycling loop.” In the final phase of the model, students engaged in cost/benefit analysis, reflecting on whether the benefits afforded by the degree are worth the expense, opportunity cost and on-going time-commitment and decided whether to persist or leave. Changed circumstances and factors that occurred during the other phases of the model weighed into that decision. According to Kember, at-risk students were predicted to return to
this phase more frequently compared to those students who possessed higher levels of commitment. The latter were predicted to return to the cost/benefit analysis phase only after a major change occurred in the circumstances represented by the variables in the other phases of the model.

http://dx.doi.org/10.1016/S1096-7516(02)00158-6  
Cited by 240

Rovai presented a model of persistence and attrition for nontraditional online learners that synthesized the attrition models of Tinto (1975, 1987, 1993) and Bean and Metzner (1985) and the literature on the needs of distance education students. Rovai also discussed self-regulation processes during periods of reduced motivation and adversity (Heckhausen & Kuhl, 1985), psychological behavioral/intent models (Fishbein & Ajzen, 1975), and volition (Corno and Kanfer, 1993) in terms of their influence on the development of persistence models. The composite model developed by Rovai combined the pre-admission student background variables and internal/external variables from the Tinto and Bean and Metzner models with the special skills required for successful online study (Rowntree, 1995; Cole, 2000), including information and computer literacy and strong reading and writing skills. Rovai’s model also included learning and teaching styles (Grow, 1996) and the special needs of distance education students, including self-esteem, accessibility to services, and identification with the school. (Workman & Stenard’s, 1996) Rovai asserted that his synthesized model provides a more accurate description of the factors that may influence the persistence decisions of nontraditional online students.

Cited by 6267 (1987 edition)

In this 1993 update of his seminal book (1997) on college retention, Tinto expands on this theoretical framework to include non-traditional adult students at community colleges and “commuter” colleges. Central to his revised framework was the emphasis on the role of the classroom in fostering the academic and social integration of both traditional and non-traditional students. Tinto distilled the research on student retention, covering the various theories and studies on student departure and he provided recommendations for institutional policy and action. Rather than simply recommending academic affairs initiatives targeting new students, Tinto defined the job of improving retention as institutional, second only to that of providing quality education.

II. Impact of Online Learning on Student Engagement and Retention

Cited by 30

The authors examined the gap between retention models aimed at face-to-face learning versus online. The Community of Inquiry Survey was administered online to all undergraduate students in a single for-profit university system. The authors found that 21.1% of the variance in student retention (re-enrollment) could be accounted for by 19 of the CoI indicators, eight of
which were social presence indicators. The authors suggested that social presence in an online course impacted students’ perceived and actual learning, their satisfaction with the course, and their intent to re-enroll. In summary, 88% of the social presence indicators, 75% of the cognitive presence indicators, and 33% of teaching presence indicators, were found to be statistically significant predictors of re-enrollment. Social presence is accomplished through learners and instructors conveying a sense of themselves through the use of para-language (i.e., emoticons), self-disclosure, humor or other verbal expressions of personal emotions and/or values. These behaviors are believed to result in the open communication, trust, and group cohesion and identity necessary for effective collaboration. The results also suggested a greater degree of harmonization between the construct of academic socialization and integration expressed in Tinto’s seminal model (Tinto, 1975, 1987, 1993) and the social and teaching presence that occurs in online classrooms.

Cited by 66

The authors found that the use of web-based technologies positively impacts student engagement and self-reported learning outcomes, based on their analysis of a filtered dataset of 17,819 first and final year students who completed questions about their online learning courses attached to the end of 2008 National Survey of Student Engagement (Indiana University Center for Postsecondary Research, 2008a). Only 2.1 % of the sample were enrolled in fully online course, the researchers also found that:

- The use of learning technology was positively linked to traditional measures engagement, including academic challenge, collaborative learning, student-faculty interaction.
- Racial and ethnic minorities, part-time students, seniors majoring in professional fields and first-year business students were more likely to take courses online.
- Students who use web-based learning technologies tended to report higher gains in personal, social and academic development and more engagement in reflective and integrative learning.

**Persistence Factors In Online Courses**

Various studies that examined persistence factors in smaller samples of online students found that:

- Students in undergraduate and graduate business administration courses who experienced low satisfaction with online learning, especially those in the early stages of their degree programs, were significantly more likely to drop out, regardless of their academic locus of control (Levy, 2007).
- Student motivation had a significant impact on completion rates in general education undergraduate courses and students who earned a grade of C or above (successful completers) demonstrated significantly higher levels of participation and time on task than course completers with lower grades and those who dropped the course (Morris, Finnegan, & Wu, 2005).
- External factors, including family and organizational support of the students’ academic efforts, played a major role in determining intent to persist and that course satisfaction and perceived relevance to students’ daily lives was a significant source of motivation to persist (Park & Choi, 2009).

**III. Institutional Practices Found to Impact Retention and Student Success**

Cited by figures current of 10/1/13 as reported via Google Scholar
This paper examined the Student Achievement and Retention Project (Project STAR), an initiative by a large Canadian university aimed at improving the success of first-year, full-time undergraduate students. A randomized group of students participated in the study, which compared and contrasted the use of a "service based" versus a "merit based" model of incentives, both of which were thought to have a positive impact on student academic performance. The "service based" model offered student support services such as academic advising and goal development. The merit model provided financial incentives and scholarships for at risk and average students with the concept that these financial incentives will ultimately lead to increased academic success. Students were placed into either a "service-based" group, a "merit-based" group, a combination "service and merit" group, or a control group with neither of the two incentive strategies being offered. Student performance was tracked over a two-year period to determine the impact of these strategies.

Neither strategy appeared to result in substantial academic improvements for the male participants. Female participants fared much better, with the combined "service and merit" group having higher GPAs than those in the control group. The improved performance continued into the second year despite not having the same incentives as the first year. Use of student services was much higher for women and was also found to be higher for the "service and merit" group as compared to the "service (only) based" group. Overall, the combined strategy of providing both student services and financial incentives had greatest impact on student performance, but for women only, even after the incentives were removed.


This study examined the use of financial incentives, specifically performance based scholarships, to facilitate a change in student learning behaviors, such as effort and time commitment, and to improve student academic performance and outcomes. The authors cited several recent studies that showed small to modest improvements on student outcomes, but more limited results in terms of overall persistence. They also proposed a theoretical model through which the potential impact of the incentives could be examined. The researchers used the American Time Use Survey (ATUS), a time diary, as the template instrument. Two post-secondary scholarship programs were implemented, with varying award amounts and edibility periods (number of semesters covered), to determine whether a correlation existed between financial incentives and the amount of time and effort the students invested in their studies. The study found that students receiving performance based financial incentives were likely to spend more time on academic achievement, including writing papers, studying and test preparation, and less time spent on leisure and social activities. However, the authors suggested caution in designing the reward structure of the programs to avoid unintended consequences, such as motivating students to take less challenging classes, asking instructors to re-grade assignments, cheating on tests, or dropping classes in order to meet the GPA requirements of the incentive program.

Kuh recommended that institutions engage students in two intensive learning activities during their first year of the undergraduate study and then another related the students' fields of interest. He described a variety of high-impact practices, which research has suggested may increase student retention and engagement. The eight practices were learning communities, writing-intensive courses, collaborative assignments and projects, undergraduate research projects with faculty, diversity awareness building or global learning opportunities, service or community-based learning activities, work internships, and senior or capstone courses and projects.


This report defined student success as “...academic achievement, engagement in educationally purposeful activities, satisfaction, acquisition of desired knowledge, skills and competencies, persistence, attainment of educational objectives, and post-college performance” (p. 12).

The authors analyzed studies and factors positively influencing student success. A "weight of evidence" approach that relied on multi-institution or national report data was used to improve reliability. Relevant policies and practices were identified, along with institutional and external variables that influence success. Following a discussion of various theoretical perspectives and the foundational elements of student success, the authors proposed a new framework that differs from what they referred to as the prior “pipeline” model. Student behaviors that serve as predictive measures of success were incorporated along with institutional attributes and student support policies. Success outcome indicators and measures were identified, covering the period both the period during college and after. The post-graduate success indicators included positive impact on income level, values, peer status, and overall cumulative impact to the student and society.


The authors reviewed the evidence of practices that have been shown to improve upon student success. Institutions included in the article have adopted an institution-wide focus on improving the asynchronous learning environment, experienced high online growth rates, and reported sustained success over five years or more. Commonalities among the successful institutions were discussed, including having a leadership culture that fosters commitment to student success and institutional policies and practices that incorporate student support services and technological support. Specific practices were also analyzed against the framework of the Sloan-C pillars of success ([http://sloanconsortium.org/5pillars](http://sloanconsortium.org/5pillars)) in terms of their impact on student success. Representative practices associated with the pillars of success included:

- Access – provided access to all online learners and accommodating their needs.
Faculty satisfaction – faculty were actively involved in designing the curriculum and provided training in the use of technology to support online instruction.

Learning effectiveness – outcomes exceeded that of traditional educational industry standards.

Student satisfaction – students were happy with their progress and support received and they perceived that they were learning valuable knowledge

Scale – achieved capacity enrollment, increased educational access, and transferred knowledge with a focus on retention and sustainability.


Cited by 442

Tinto reviewed the body of research on retention and outlined what he believed are the key challenges for closing the gap between what is currently known about retention and the national retention statistics, largely the same despite decades of research and the development of numerous retention models. Tinto asserted that regardless the differences in the models, the underlying factor that appeared to matter most is student engagement, especially during the first year of college. At the heart of the knowing/doing gap was the absence of an effective and sustainable multi-layered model of institutional action, according to Tinto. He suggested that retention should be viewed as the job of all faculty and staff. Development activities must unite what is known about effective teaching/learning and retention in a way that impacts classroom and learning community practices. Faculty and other institutional resources should be allocated with the goal of supporting retention as a mainstream institutional practice. Rewards must follow suit. Tinto also called upon institutions to “... join forces with larger educational movements that seek to restructure the way we go about the task of educating all not just some of our students” (p. 18).

IV: Learning Community


Cited by 58

Citing previous studies (Haythornthwaite, 1999; Dawson, 2008; & Cho et al., 2007) that used social network analysis to examine interaction patterns in online classrooms, Dawson suggested that visualization of classroom interaction patterns can help inform instructors about the their own interaction patterns with the low and high performing students in an online classroom. In this study, Dawson performed statistical and social network analysis (SNA) on the individual networks and interaction patterns of low and high performing students represented by the data streams from online classrooms. His analysis revealed that high-performing students primarily interacted with other high performing students. A similar pattern was found for low-performing students. More importantly, he observed that instructor presence was significantly higher (81.7%) in the individual networks of the high performing students than the low performing students (34.61%), suggesting that students who more assistance did not receive the level of instructor intervention needed to increase learning engagement and outcomes.

Rovai examined whether enabling a strong sense of community within an online educational environment facilitates an increased level of cognitive learning. He also analyzed the intensity and correlation between the two. Based on his review of the literature, Rovai defined classroom community as “...a social community of learners who share knowledge, values, and goals” [p. 4]. This view posits that an increased level of social community intertwined within a classroom setting will increase student satisfaction and persistence; thereby promote an increased level of cognitive recognition and learning. His study involved 314 students enrolled in 26 online courses delivered by an accredited private Virginia university. The students were surveyed using Rovai’s Classroom Community Scale (Rovai, 2002) and a self-reported measure of perceived cognitive learning (Richmond, Gorham, & McCroskey, 1987).

Rovai’s findings were as follows:

- Students were able to feel connected with each other in an online course.
- Perception of higher levels of classroom community correlated with increased levels of understanding and learning.
- Females valued connectivity more and associated it with increased cognitive learning.
- Neither ethnicity nor course content had a significant impact on students’ perception of community.


Rovai reviewed the concept of community as defined in the literature (Bellah, Madsen, Sullivan, Swindler, & Tipton, 1985; McMillan & Chavis, 1986; Graves, 1992) and summarized the most critical components of community as “…mutual interdependence among members, sense of belonging, connectedness, spirit, trust, interactivity, common expectations, shared values and goals, and overlapping histories among members” (Sense of Community Section, para. 2). Echoing Wellman’s view (1999) that community is more about how people interact and do things together rather than where or through what means this takes place, Rovai asserted that the concept of community, as posited by Tinto (1993) does in fact apply to online asynchronous learning environments. He also outlined the role of learning community in promoting student engagement, knowledge flow, support, group cohesion, goal commitment, and persistence in online learning and suggested seven key instructor behaviors that may improve community in online classrooms.


In a study involving a large and diverse sample (N=2314) of online students representing 32 State University of New York colleges in the SUNY Learning Network, 470 instructors, and 581 courses, the researchers found that strong and active instructor facilitation of course discussions had the greatest predictive influence on students’ perception of classroom connectedness and learning. Students’ perception of effective instructional design and organization, both of which are factors associated with “teaching presence” in the Community...
of Inquiry framework, also influenced their sense of learning community, but to a lesser extent. Though female students' perceptions of community were slightly higher, neither gender nor other student demographics were significant predictors. Additionally, semester-length was not a predictor.


The authors' review of the literature and their examination of connectedness and learning among a large (N=1067) random sample of students from 32 different colleges indicated that teaching presence, plays a significant role in developing learning community in online courses. Eighty-eight percent of the students surveyed were enrolled in a completely online course. The remainder were traditional students using the learning management system as an enhancement for classroom activities. Rovai's Classroom Community Index (Rovai, 2002) was used to measure students' sense of community and learning. The authors also developed a “Teaching Presence Scale” to measure student perceptions of effective instructional design, organization, and direct instruction, which were cited as the defining elements of the teaching presence in the CoI framework (Anderson, Rourke, Garrison, & Archer, 2001; Garrison, Anderson, & Archer, 2000).

The authors found no correlation between specific learner characteristics and different levels of satisfaction or sense of community. Students were more likely to experience a greater sense of community when they perceived effective directed facilitation of the discussions by the instructor and to a lesser extent, effective instructional design and organization. Increases in perception of learning community were proportional to increases in the perceived effectiveness of direct facilitation, instructional design and organization. No significant difference was found in total classroom community, connectedness, and teaching presence between the online and classroom-based students. The authors provided several recommendations for online course design, pedagogy, and future research based on their findings.


The researchers attempted to examine and validate the CoI framework as a whole and address methodological weaknesses (self-report surveys) of previous CoI research using a combination of quantitative content analysis and social network analysis to evaluate two business management courses offered by a Northeastern state college specializing in adult distance education. Neither instructor was involved in designing the course. Transcripts of all class discussion topics and responses were reviewed and jointly coded by researchers for the type of CoI presence exhibited (teaching, social or cognitive) in order to identify the causal relationships between student social presence and instructor teaching and social presence and the level of cognitive presence.

The researchers found that the level student social presence is strongly correlated with the level of instructor teaching presence, though the relationship between levels of instructor social presence and student social presence was stronger. Consistent with previous research, the authors found low evidence of indicators of deep and meaningful learning in the discussion
forums. Social Network Analysis (SNA) density and network prestige indicators revealed similar patterns in social presence, leading the authors to conclude that SNA provide a less labor-intensive method of analyzing social presence. As with previous research (Rourke, Anderson, Garrison, & Archer, 1999 & 2001; Swan & Shih, 2005), the authors also found coding specific social presence indicators to be difficult, especially “affect,” which the CoI framework posits as important to developing the community characteristic of trust. Referring to the exclusive examination of threaded discussions as “misguided,” the authors also suggested that a content coding scheme and modifications to the CoI framework may be necessary to assess deeper cognitive presence via case studies, papers and projects.


Cited by 1165

Tinto reported on the longitudinal study of a linked classroom model, the Coordinated Studies Program (CSP) at Seattle Central Community Cottage (Tinto & Russo, 1993), and presented a modified version of the graphic depicting his theoretical framework for persistence. He suggested that for non-residential students and residential students on large impersonal campuses, the classroom, rather than student affairs, must serve as the central driver of academic and social integration. CSP students reported more involvement academically and socially than their non-CSP peers and a more positive view of the school, faculty, courses, and classmates. Their perceived learning gains and involvement were also higher. The researchers also found that retention rates for CSP students were higher than non-CSP students and these rates increased over time. For future research, Tinto suggested supplementing path studies on the persistence process with social network analysis of student interaction patterns both inside and outside of the classroom.

**IV. The Impact of Student Goals, Emotions, Motivation, and Self-regulatory Behaviors on Engagement and Retention**


Cited by 17

Artino examined the role of motivational beliefs of self-efficacy and task value in student success and persistence in online classrooms. Negative emotions such as boredom and frustration were also examined. The involved 481 second and third year undergraduate students enrolled in a self-paced online course developed by the US Navy. The results showed that students’ motivational beliefs and negative achievement emotions influenced student self-regulations, student learning behaviors, and academic success.


Cited by 3

Artino and Jones explored the relationship between positive and negative achievement emotions, specifically enjoyment, boredom and frustration, and the learner self-regulation (elaboration and metacognition) in a sample of 302 second and third year students taking an online course at a U.S. military academy. Their findings suggested that enjoyment and frustration were both positive predictors of metacognition. Whereas enjoyment was the
strongest predictor of elaboration, and after task value, the strongest predictor of metacognition, frustration was also found to have a positive influence on students’ adaptive learning strategies, after the mediating variables of task value and boredom were added to the predictive model. However, boredom was found to negatively impact students’ ability to employ metacognition and elaboration, though this relationship was fully moderated by enjoyment in the final predictive model. Artino and Jones concluded that the findings support Pekrun’s control-value theory (2006) and the findings from previous empirical research on control theory involving traditional classrooms.


Based on a review of the literature, the authors concluded that institutional commitment is one of several variables, including degree utility, goal commitment, and self-efficacy, that influence academic integration (Belcheir & Michener, 1997; Cini & Hardin Fritz, 1996; Farabaugh-Dorkins, 1991; Hom & Carroll, 1996; Mercer, 1993; Peterson & delMas, 1996; Sandler, 1998). The author also cited the recommendations of Cini and Fritz (1996) regarding student awareness of institutional prestige factors, such rewards, accreditations, rankings, and faculty achievements and their findings that institutional commitment arises from adult student perceptions of fair exchange of time, effort, and money relative to the perceived outcomes and benefits afforded by degree attainment. Additional retention strategies suggested by the authors, based on their literature review, include developing learning communities with features and benefits attractive to adult students, providing first year orientation sessions and special workshops aimed at reducing non-traditional students’ anxieties; and presenting course information in a contextual manner that allows the student to reference his/her existing knowledge base.


Cox found that student perception of “risk of failure” had a significant impact on anxiety levels and significantly influenced level of academic rigor and commitment. The analysis involved six English composition courses at an urban community college campus. Through extended interviews with a sample of the students, Cox found that many students feared not being able to complete the course successfully. The perception subsequently influenced student behavior,
as students attempted to mitigate the embarrassment associated with failure through a variety of self-undermining behaviors, including not committing to success goals, not spending enough time on the course, attending classes, but completing only course work that did not involve assessment of their writing, and dropping out of the course. Some students were able to persist despite their fears, which appeared to be the result of positive encouragement and coaching by external groups, such as family members and the positive coaching style of the instructor. Based on her findings, Cox recommended that colleges employ active intervention and support strategies aimed at addressing the “fear factor” of attending college and helping students build the level of self-confidence and academic commitment needed to succeed in college.


Using a longitudinal methodology, the authors determined that learning and retention increased when participants received regular self-regulatory prompts throughout the online training period. The prompts were presented as reflective questions, with the goal of stimulating self-regulatory behavior. For this study, 479 adults were recruited to receive four modules of free training on Microsoft Excel in exchange for research participation. Participants were allowed several weeks to complete the training at their own pace. Participants were randomly assigned to one of five treatment groups, continuous prompts, early prompts, delayed prompts, pre-training prompt, and control (no prompts). At the end of each module, the trainees completed a quiz and responded to self-regulation questions using a 5-point Likert scale. Time on task data was obtained from the learning management system.

Compared to the control groups, trainees who received prompts throughout the training course had higher learning levels, continued to engage in self-regulation, and were less likely to disengage from training, regardless of learning performance on the previous module. The authors also found that time on task fully mediated the direct relationship between the intervention and learning.