Keys to Success in College: Strategies for Increasing Freshman Year Retention

Karl A. Smith
Civil Engineering
University of Minnesota
ksmith@umn.edu
http://www.ce.umn.edu/~smith

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Retention Progress Report

Talking about leaving: Why undergraduates leave the sciences
by Elaine Seymour & Nancy M. Hewitt

Leaving college: Rethinking the causes and cures
of student attrition (Second edition)
by Vincent Tinto

The Chilly Classroom Climate:
A Guide to Improve the Education of Women
by Bernice Resnick Sandler, Lisa A. Silverberg &
Roberta M. Hall
National Association for Women in Education,
125 pages, 1996.
"Field switching is only the tip of an iceberg: The same set of problems that prompt some science, mathematics, and engineering undergraduates to leave make persistence difficult for those who stay." (Cover jacket).

"Contrary to the common assumption that most switching is caused by personal inadequacy in the face of academic challenge, one strong finding is the high proportion of factors cited as significant in switching decisions which arise either from structural or cultural sources within institutions, or from students' concerns about their career prospects (p. 32)." The four most commonly cited concerns leading to switching decisions (also cited by between 31 and 74 percent of the non-switchers) were:

1. Lack or loss of interest in science
2. Belief that a non-S.M.E. major holds more interest, or offers a better education
3. Poor teaching by S.M.E. faculty
4. Feeling overwhelmed by the pace and load of curriculum demands.
Students' voices:

I do work hard, and my average load over these four years--even when I was transferring out--has been 17, 18 hours a semester, plus a couple of night classes sometimes. It doesn't really bother me to work that hard. But when it's a concept I don't understand and I go to get help from faculty and they just don't give it, that's discouraging. (Male white engineering switcher)

What bothers me is the number of people who know what engineering is about, and really have the capability to do well and be good in the field, but end up going a different way for reasons other than the lack of ability. (Female white engineering non-switcher).

You get people that would probably do well if they were given half a chance, but there's so much competition, and not a heck of a lot of help. (Female black engineering senior).

The first two years in physics are so dull. I mean, they have absolutely nothing to do with what you'll be doing later. I'm afraid that's why you might be losing good students from engineering that are really qualified and have the intelligence. . . .There are ways to make the introductory material interesting so that it doesn't drive away good people through boredom. (Male white engineering non-switcher).
"More students leave their college or university prior to degree completion than stay."

Individual departure from institutions of higher education arises from several major causes or roots:

intention
commitment
adjustment
difficulty congruence
isolation
obligations
finances

Student departure takes two forms, academic dismissal and voluntary withdrawal, the latter being much more common. For most departures, leaving has little to do with the inability to meet formal academic requirements or finances. Student departure primarily appears to result from what goes on in the daily interactions between students and faculty inside and outside the classroom.
"Women as well as men may often treat women in ways that not only discourage their classroom participation but also lessen their self-esteem and vocational aspirations."

Men and women, sitting side by side in the classroom, often have very different experiences, because faculty members may unwittingly treat them differently. Teachers can inhibit women's full participation by such behaviors as:

1. Doubting women's accomplishments, for example, attributing their achievements to "luck" or "affirmative action" but men's to "talent" or "ability"
2. Responding more extensively to men's in-class comments with praise, criticism, or coaching but to women's with "uh-huh."
3. Assuming that women who ask for help do not know the material but that men who ask are smart, inquisitive, and involved.
4. Praising men for their work and abilities and women for their appearance.
Tinto's principles of effective retention:

1. Effective retention programs are committed to the students they serve. They put student welfare ahead of other institutional goals.
2. Effective retention programs are first and foremost committed to the education of all, not just some, of their students.
3. Effective retention programs are committed to the development of supportive social and educational communities in which all students are integrated as competent members.

Commonalities of effective retention commitments:

• enduring commitment to student welfare

• a broader commitment to the education, not mere retention, of all students

• an emphasis upon the importance of social and intellectual community in the education of students.
"Although programs can be most helpful, they cannot replace the absence of a high quality, caring, and concerned faculty and staff. Institutions should therefore not be misled by the use of modern technology and marketing strategies. . . The road to institutional commitment and thus to student commitment does not require very elaborate or high-cost interventions. . . Rather, effective retention calls for sustained effort of the part of all institutional members to give to each and every student serious and honest attention on a daily basis. It requires, if you will, a continuing commitment to the education of students. No technology, however sophisticated, can replace that sort of commitment (Tinto, p. 201)."
Student Retention Requires Maintaining a Creative Tension Between Challenge and Security


Shaping the Future: New Expectations for Undergraduate Education in Science, Mathematics, Engineering and Technology

Goal – All students have access to supportive, excellent undergraduate education in science, mathematics, engineering, and technology, and all students learn these subjects by direct experience with the methods and processes of inquiry.

Recommend that SME&T faculty: Believe and affirm that every student can learn, and model good practices that increase learning; starting with the student’s experience, but have high expectations within a supportive climate; and build inquiry, a sense of wonder and the excitement of discovery, plus communication and teamwork, critical thinking, and life-long learning skills into learning experiences.
The Harvard Assessment Seminars – Richard J. Light

All the specific findings point to, and illustrate, one main idea. It is that students who get the most out of college, who grow the most academically, and who are the happiest, organize their time to include interpersonal activities with faculty members, or with fellow students, built around substantive, academic work.
Environmental Factors That Enhance Students’ Academic and Personal Development and Satisfaction


**Student-student interaction**

**Student-faculty interaction**

A faculty that is very student-oriented

Discussing racial/ethnic issues with other students

Hours devoted to studying – **Time on task**

Tutoring other students

Socializing with students of different race/ethnicity

A student body that has high socioeconomic status

An institutional emphasis on diversity

A faculty that is positive about the general education program

A student body that values altruism and social activism
Challenging and Supportive Learning Environments

A Cooperative Learning Model
Cooperative Learning

Kurt Lewin - Social Interdependence Theory

1. The essence of a group is the interdependence among members (created by common goals) which results in the group being a "dynamic whole" so that a change in the state of any member of subgroup changes the state of any other member or subgroup.

2. An intrinsic state of tension within group members motivates movement toward the accomplishment of the desired common goals.
Cooperative Learning is instruction that involves people working in teams to accomplish a common goal, under conditions that involve both positive interdependence (all members must cooperate to complete the task) and individual and group accountability (each member is accountable for the complete final outcome).

Key Concepts

- Positive Interdependence
- Individual and Group Accountability
- Face-to-Face Promotive Interaction
- Teamwork Skills
- Group Processing
# Cooperative Learning

## Positive Interdependence

**Task Interdependence**
- Factory-line
- Chain Reaction

**Identity Interdependence**
- Mutual identity (name, motto, etc.)

**Resource Interdependence**
- Limit resources (one set of materials)
- Jigsaw materials
- Separate Contributions

**Environmental Interdependence**
- Designated classroom space
- Group has special meeting place

**Duty (Role) Interdependence**
- Assign each member a role and rotate them

**Fantasy Interdependence**
- Hypothetical interdependence in situation
  - "You are a scientific/literary prize team, lost on the moon, etc."

**Reward/Celebration Interdependence**
- Celebrate joint success
- Bonus points
- Nonacademic rewards
  - Food, free time, etc.
- Single group grade (when fair to all)

**Outside Challenge Interdependence**
- Intergroup competition
- Other class competition

**Goal Interdependence (essential)**
- All members show mastery
- All members improve
- Add group member scores to get an overall group score
- One product from group that all helped with and can explain

## Individual Accountability

**Ways to ensure no slackers:**
- Keep group size small
- Assign roles
- Randomly ask one member of the group to explain the learning
- Have students do work before group meets
- Have students use their group learning to do an individual task afterward
- Everyone signs: "I participated, I agree, and I can explain the information"
- Observe & record individual contributions

**Ways to ensure that all members learn:**
- Practice tests
- Edit each other's work and sign agreement
- Randomly check one paper from each group
- Give individual tests
- Assign the role of **checker** who has each group member explain out loud
- Simultaneous explaining: each student explains their learning to a new partner

## Face-to-Face Interaction

**Structure:**
- Time for groups to meet
- Group members close together
- Small group size of two or three
- Frequent oral rehearsal
- Strong positive interdependence
- Commitment to each other's learning
- Positive social skill use
- Celebrations for encouragement, effort, help, and success!

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**Karl A. Smith**
University of Minnesota
(612) 625-0303
ksmith@umn.edu
http://www.ce.umn.edu/~smith

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The main effect of small-group learning on achievement, persistence, and attitudes among undergraduates in SMET was significant and positive. Mean effect sizes for achievement, persistence, and attitudes were 0.51, 0.46, and 0.55, respectively.
Literature search on studies of small-group (predominantly cooperative) learning in postsecondary science, mathematics, engineering, and technology (SMET) produced 383 reports from 1980 or later, 39 of which met the rigorous inclusion criteria for meta-analysis. The main effect of small-group learning on achievement, persistence, and attitudes among undergraduates in SMET was significant and positive. **Mean effect sizes for achievement, persistence, and attitudes were 0.51, 0.46, and 0.55, respectively.** “The 0.51 effect of small-group learning on achievement reported in this study would move a student from the 50th percentile to the 70th on a standardized test. Similarly, a 0.46 effect on students’ persistence is enough to reduce attrition in SMET courses and programs by 22%.”