Solving the Problem: Improving Retention in Higher Education*

As our nation looks ahead in this new century, an educated workforce is more important than ever. Yet college retention is a major problem. Last year, for the first time in 20 years, retention to the sophomore year dropped in the nation's four-year colleges (Bushong, 2009). For minority students on predominantly white campuses — that is, most four-year colleges and universities—the graduation rate is unacceptably low. For example, less than half of black males graduate from four-year college programs within six years, which is 20 percentage points less than their white peers (Carey, 2008). And student persistence in community colleges is chronically low, circling at about 50% (Lederman, 2009).

Solving this problem has become a high priority for the Obama administration, which views student retention, particularly in community colleges, as a cornerstone for ensuring a strong American economy in the 21st century. The American Graduation Initiative, announced last July by President Obama, will support a variety of efforts designed to ensure higher student retention rates. The goal of this initiative is to double the number of community college graduates by 2020.

The key questions are: *"What works? What are the most effective ways to retain students?"* Traditionally, the answer has been viewed as a set of multi-level initiatives, including increased faculty/advisor involvement, intensive pre-college sessions, extensive skills-building, tutoring, as well as discipline-specific learning communities. The problem is that – even with all of these services and support systems in place – increased student retention rates are scattered and incremental. In fact, the national data suggests that we are moving backward in retaining college students.

What might be done to change that in the next ten years?

In this paper, we will discuss the promise of one possible answer to this question: Learning to Learn (LTL), a system of research-based learning strategies. We will present evidence of this program's dramatic and sustained impacts on the *academic achievement and retention of both average college students and high-poverty, first-generation, educationally disadvantaged minority students.*

Evidence of Efficacy: Educationally Disadvantaged College Students

A recent study on LTL's efficacy was conducted with first-generation, primarily minority, Title IV students at the University of Texas-San Antonio. The study compared one-year retention rates for first-semester freshmen enrolled in (1) Learning to Learn, (2) an Extended Orientation course or (3) No Seminar. The two treatment seminars both offered 3 academic credits. Students in both groups were equivalent in previous academic achievement, scores on college entrance test, number and type of courses taken, age, race, and sex (Ryan and Glenn, 2007).

Logistic regression analysis showed that *nearly 30% more students were retained* if they enrolled in LTL vs. Extended Orientation; and *students receiving "No Seminar" were retained at a higher rate than were Extended Orientation students.*

One-Year Student Retention Rates

Learning to Learn	Extended Orientation	No Seminar
74% (N = 77)	47% (N = 66)	56% (N = 1354)

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U.S. Department of Education-validated studies

Earlier studies on Learning to Learn's efficacy were validated by the U.S. Department of Education's Joint Dissemination Review Panel. For more than twenty years, the U.S. Department of Education funded a panel of research and program design experts who evaluated the effectiveness of educational programs at all levels. The panel met monthly to evaluate promising programs at every level of education. Program assessment was rigorous. *LTL is the only postsecondary program* this panel found that reliably produces both *significant increases in economically/educationally disadvantaged college students' (1) grade point averages in all content areas and (2) retention in college through graduation* (U.S. D.O.E, 1996).

The U.S. Department of Education's approval of LTL for national dissemination was based on data from studies at Boston College (BC) and Roxbury Community College (RCC). At both colleges, the target population was Student Support Services students: first-generation college students who were educationally and economically disadvantaged relative to the college population as a whole. At RCC, the treatment group entered the program *reading at the sixth grade level*. At BC the treatment group's mean *combined SAT was 812*, as contrasted with a mean SAT score of 1060 for normally-admitted freshmen at the university.

The BC and RCC studies controlled for the following variables: college entrance test scores, previous semester's grade point average, race, sex, age, year in school, number and types of credits taken. Experimental and control groups were equivalent on all of these dimensions. The dependent variables were grade point average, rate of course completion, and retention through graduation. The LTL course grade was not included in the data analysis. Further, content course instructors were not aware that some of their students were receiving LTL instruction.

These studies showed significant impacts of LTL on all measures when treatment groups were compared with control groups.

Results are summarized below:

Boston College Students	**Roxbury Community College Students**
LTL Students' Mean GPA: 2.44 Control Students' Mean GPA: 1.97 N = 74 $F(1,76) = 4.616$, $p<.035$	LTL Students' Mean GPA: 2.89 Control Students' Mean GPA: 2.22 N = 62 $F(1,56) = 5.939$, $p<.018$
Credits completed by LTL Students: 15.10 Credits completed by Controls: 12.60 F test significance: $p< .001$	Credits completed by LTL Students: 10.45 Credits completed by Controls: 7.40 F test significance: $p< .001$

These studies indicate that LTL students achieved significantly higher grade point averages, while they also completed more course credits. Students in the control groups dropped the courses they were failing, thus *the difference in grade point averages is even higher than it appears.*

2. Follow-up Retention Studies

Roxbury Community College: Retaining Students in an Urban Community College

Treatments:

Participation in a 3-credit Learning to Learn course vs. 45 hours of subject-matter tutoring.

Three semesters after completing LTL, 70% of the former LTL students were either still at RCC or had graduated, as compared with 40% for students receiving subject-matter tutoring.

Replications

Six replications of this study with new student cohorts. In each of these replications, the controls maintained 40% retention rates 18 months after of tutoring intervention; and *LTL students were retained at a level of 80%.*

Boston College: Retaining Educationally Disadvantaged Minority Students on a Predominantly White Campus

Student Support Services students (Title IV, first-generation, educationally disadvantaged, primarily minority) were enrolled in a 3-credit LTL course. *Three semesters after completing LTL, 100% of these students were still at BC and performing well academically.* These results are striking at BC, a private, Jesuit institution. At the time this study was conducted, BC was 90% Caucasian, with normally admitted students' SAT's at 1060, the majority of students being second-generation college students.

Boston College Students:
LTL Students 3 Semesters After Completing LTL

% Minority: 75%	Combined SAT: 812	GPA: 2.58	Retention at BC: 100%

Boston College Students:
Normal-admit, Non-LTL Students After 3 Semesters

% Minority: 10%	Combined SAT: 1060	GPA: 3.00	Retention at BC: 80%

The LTL students, while significantly more disadvantaged than normally-admitted Boston College students, performed nearly as well academically and *their retention was significantly higher:* Retention for the non-LTL students, who were normally-admitted, predominantly white, second-generation college students, was 80%.

A six-year follow-up study showed that Student Support Services students taking LTL at Boston College had a 98% retention rate through graduation, while the normally-admitted BC students maintained an 80% retention rate.

In fact, the success extends beyond those six years. LTL has been offered to Student Support Services students at Boston College since 1982. A recent review shows that ***98% of these students*** — first-generation, high-poverty, primarily minority college students — ***graduated*** from BC.

Studies Conducted at LTL-Adopting Colleges and Universities

A number of colleges and universities have conducted their own in-house studies on LTL's impacts on GPA and retention. In addition to the study conducted by the University of Texas-San Antonio, several other colleges have conducted their own studies on LTL's efficacy.

West Virginia University

A study conducted at West Virginia University (WVU) confirms the BC and RCC studies' findings on LTL's impact on student academic performance. As a *longitudinal* study focusing on academic achievement, the WVU study provides additional *evidence of LTL's lasting impacts on student learning.* In this study, 70 freshmen were trained in LTL via a 3-credit freshman seminar course; an alternate treatment was not provided. Instead, a matched group of freshmen was given No Treatment. The grade-point averages of both groups were followed each semester through the students' senior year. Each semester, the LTL students attained significantly higher GPAs than did controls. In their last semester as graduating seniors at WVU, the GPA difference between LTL students and controls was $p < .03$ (Haught, 1996). (In the West Virginia study, there may be some bias towards persistent students in both groups, since necessarily only those students who remained in college could be assessed as upper-classmen.)

Controlled Studies: LTL vs. Extended Orientation

Like the University of Texas-San Antonio, several colleges have conducted controlled studies comparing the impact of a 3-credit LTL course to a 3-credit course using a widely-used Extended Orientation textbook. In all these studies, both groups of students were equivalent in (1) previous academic achievement, (2) scores on academic aptitude tests, (3) number and type of academic credits taken, and (4) age, race, and sex. Extended Orientation (EO) classes include standard study skills (test-taking strategies; study "tips," perhaps one or two traditional reading skills), lifeskills (relationships, health issues, career planning) and Human Potential Movement-inspired attempts to instill greater student self-esteem through "empowerment" and "trust-building" exercises.

Shorter College

When Shorter College, a small, historically black, open-admissions, two-year college, changed from an EO program to *Learning to Learn* in a 3-credit freshman seminar course, student retention to the sophomore year improved by 46% (Guy, 1996).

Eastern New Mexico University

ENMU conducted both controlled retention and GPA studies (Walsh, 1995).

ENMU Retention Study

When compared with Extended Orientation and No Treatment, LTL students had significantly higher retention rates.

"No Treatment" resulted in a slightly higher retention rate than did Extended Orientation.

Student Attrition Rates Between Freshman and Sophomore Years

Learning to Learn	Extended Orientation	No Treatment
18.6%	28%*	26.9%*

Difference between LTL and EO:

F value: 4.61 Level of Significance: .0012

N = 514

*No significant difference between Extended Orientation and No Treatment

ENMU Grade-Point Average Study
LTL students had significantly higher grade-point averages than did Extended Orientation students.

Difference between LTL and EO:
F value: 8.13 Level of Significance: .0001
N = 514

The level of significance in this study is remarkable, and worth re-stating in layman's terms: *The .0001 level of significance means that the same result would occur in 999 of 1000 replications of this study*.

Discussion

These studies point to three major findings:

(1) Learning to Learn has a significant impact on both (a) grade-point average across the curriculum and (b) student retention. Results hold for both economically/ educationally disadvantaged Student Support Services students (BC and RCC) and normal admits in public 4-year institutions (ENMU; UT-San Antonio).
(2) LTL provides a very high level of difference in academic achievement. (See BC, RCC, WVU, and ENMU studies.)
(3) Offering a 3-credit freshman seminar course that does not focus on effective learning strategies may lead to lower retention than No Treatment. (See UT-San Antonio and ENMU studies.)

What are the implications of these findings?

Not surprisingly, an intervention with an emphasis on academics has a strong impact on student retention. That is, in an institution where the yardstick is academic success, helping the student achieve that success has great currency. Success in a key area provides strong reinforcement: If you learned how to hit a lot of home runs, you'd want to play a lot of baseball.

Yet it is not simply LTL's *emphasis* on academics that counts. In the study at Roxbury Community College, both treatments focused on academic achievement, and students in both groups invested the *same amount of time* in a given treatment: LTL was a 3-hours-a-week course in a 15-week semester; and the control students received 45 hours of subject-matter tutoring during the same 15-week semester. The difference is that with LTL, students acquired strategies that made them more *active learners*. By contrast, students receiving subject-matter tutoring are in a largely passive learning mode. (Studies as far back as the 1960s show that tutoring has a stronger impact on the achievement of *tutors* than it does their tutees (Deering, 1968)). What is needed is not just an emphasis on academics, but an *effective* emphasis on academics that gives the learner new, lasting skills. That is, we need interventions where the learner survives not because he has been given a fish, but has been taught *how* to fish.

What are we to make of the fact that in unrelated institutions (UT-San Antonio and ENMU), not only was LTL superior to Extended Orientation – but *No Treatment was more effective than Extended Orientation?* After all, by all accounts many students report that they enjoy Extended Orientation courses. The answer may be that such a course offers a respite from the serious, focused content of academics – but provides a poor life-raft when the student faces the very real challenges of collegiate academic rigor. In some cases, a well-intended, but failing "helping hand" may be more harmful than inattention. Perhaps the "No Treatment" student who

survives on his own finds his own resources; while the student given ineffective support may become discouraged, blaming himself for his inability to succeed.

But there is a more intriguing question. In most of these studies, the LTL students had come to college following many years of marginal academic survival: For example, at RCC entering LTL students were reading at the 6th grade level, and at BC the LTL students had a combined SAT of 812. Yet in all the LTL studies, in one semester these very real skill limitations were largely overcome, and these students did well academically in standard, non-remedial, college courses. Further, the change was apparently lasting: Follow-up studies at Boston College's Learning to Learn program have shown that that *former LTL students' grades improve over time as students take more advanced courses*. Yet after taking the LTL course, these students do not receive additional instruction in LTL strategies.

It should also be noted that content-area faculty did not know which students were enrolled in any of the support services, so there was no possibility of faculty awarding higher grades to either treatment group.

Significance of the Findings

We are suggesting one solution to two important problems faced in higher education:

(1) Improving the academic achievement and retention of educationally disadvantaged, first-generation minority students on majority campuses (BC); and
(2) Doubling the graduation rates of community college students (RCC).

Yet the intervention is only one 3-credit learning strategies course. The key question here is, *How can such a dramatic and lasting change occur in such a short period of time?*

In the following section, we will explore how and why such long-lived and comprehensive learning changes can occur. We will address the questions,

• *How and why is LTL so effective?*
• *What are the components of an intervention that produces such strong and lasting results?*

What is Learning to Learn, and why does it work?

First, let us note what LTL is *not:* LTL is not a "study skills" system. Study skills typically contain the following: they promote rote learning, often offering mnemonic strategies for memorizing facts; they offer test-taking tips, like avoiding "all/none" choices on multiple-choice tests; they prescribe pre-structured ways of organizing information, like outlining lecture notes; their reading strategies have time-consuming, multiple steps – and are thereby unlikely to become part of the student's ongoing repertoire of learning. Further, each study skill is independent of the next one; study skills do not build towards a larger, integrated, *system* of learning. That is, study skills originate from the *materials* to be learned – they do not focus on the *process* of learning.

By contrast, Learning to Learn is an integrated system of learning strategies building towards a central goal: *Moving the student from rote-memory learning to inquiry-based learning.* These strategies are derived from our research on the learning practices expert learners.

We found that the core learning strategy of expert learners is having an *ongoing internal dialogue with new information.* The LTL strategies work together to produce that internal conversation in learners who have previously struggled academically. But these students are not a tabula rasa: They have a long history of using their natural learning and thinking skills to

negotiate the wider world, *outside* the classroom. With LTL, we have helped these students access their natural thinking skills for academic use.

The Origins of Learning to Learn: Identifying Learning Strategies of Expert Learners

As noted, Learning to Learn (LTL) is an integrated system of learning strategies that derive from our field-based research on the learning behaviors of *successful* learners.

The theoretical underpinning, early research and initial development of LTL began in the late 1960s with the work of a group of graduate-student researchers and learning practitioners at the University of Michigan's Reading Improvement Service. The author was a member of that group. Working under the direction of Donald E. P. Smith and Dale M. Brethower, we looked at learning from a new perspective: Rather than focusing on remediation, we looked at the observable learning strategies of expert learners – viewing these strategies as a set of **criterion behaviors** that – once identified – might be taught to novice learners (Heiman, 1987).

It was found that there was a **central skill** continuously used by experts across all academic disciplines: engaging in an *ongoing, internal dialogue* with new information. This skill appeared to be a *natural learning skill* – a cornerstone of problem-solving in both formal and informal learning. Further, when engaged in this internal dialogue, expert learners typically use *four inter-related metacognitive strategies*:

- Generating questions;
- Looking for feedback, and modifying questions based on new feedback;
- Breaking down complex concepts into component parts;
- Working towards explicit learning goals, taking feedback on progress toward reaching these goals, and generating more refined questions.

These are also the core learning strategies used by persons who can successfully navigate daily living activities. For example, crossing a street in traffic involves using all four of these thinking tools. Engaged in an ongoing *internal dialogue*, the pedestrian crossing a street in traffic:

- Asks himself *questions*: "How far away are the cars and how quickly are they traveling? Will I make it safely across the street if I cross now, or should I walk to the corner and cross at the light?"
- By formulating these questions, the pedestrian is *breaking a complex task into smaller parts* and finding the most important aspects of the situation.
- His behavior is *goal-directed:* He wants to get across the street.
- Crossing the street, he pays attention to *feedback, asking new questions,* modifying his behavior based on new information.

We found that these *natural learning strategies* were continuously used by *experts at daily living*, whether they are literate or not. From this perspective, *people who are successful academically may not necessarily be more intellectually talented than others.* The difference may be that they find ways to adapt their natural learning strategies to formal learning.

Changing Habits of Mind

We have just suggested that intellectual talents may not be limited to the "gifted" few. Further*, we are positing that the academic gains made by an effective intervention, like LTL, are not the effects of "study tips," but are deeply rooted in complex intellectual activity.*

That is, it may be that LTL students' academic gains are so strong and persistent because – building on students' natural thinking skills – *we are permanently changing habits of mind,*

helping low-achieving students adapt their non-academic problem-solving skills to formal learning activities. In a sense, we are not teaching these students anything new, as we noted, they have many years of using these skills outside school. But once used academically, these "old" skills are not "forgotten." They seem to remain in the students' permanent repertoire. (A former LTL student once said to me — with a kind of mock despair — "I can't read *anything* now without generating questions.")

Key Forms of the Internal Dialogue

These learning behaviors relate to both ***verbal*** and ***visual*** learning.

Expert learners continuously use learning modes that incorporate:

- Verbal learning strategies that produce *active, inquiry-based learning*.
  Expert learners engage in an ongoing, internal dialogue with new information. They continually generate questions about new information, seeking answers, revising concepts based on feedback, generating new questions, etc.
  LTL students learn to generate increasingly more complex questions from their lecture notes and readings. From the student's perspective, he/she is learning to predict exam questions. From the educator's viewpoint, the student is learning to think about the questions asked by the academic disciplines he/she is studying.

- Visual learning strategies promote long-term recall – when they are constructed by the learner in response to questions he/she has generated.
  For example, ***expert learners in physics*** create visual representations of new information, revising them as they gain new information.
  LTL physics students learn to create their own visual representations, which they then internally "see" as answers to questions they have generated.

For more than three decades, through continuous field-based research later refined through controlled studies, the core LTL strategies have evolved into a set of skills that promote active learning across academic disciplines.

Examples

We found that expert learners used different reading strategies for different disciplines:

- In the *social sciences,* the expert learner often generates a comprehensive question before reading, and modifies the question based on information gained in the reading process;
- In the *physical sciences,* the expert learner focuses on "reading" exemplar problems and diagrams, using the surrounding text only as a reference;
- In *computer science,* the expert learner may interrupt his reading by creating his own variations of the method presented.

In our field-based research, we have translated those strategies into steps that can be readily used by less-than-expert learners.

Developing new, field-specific, LTL strategies: LTL Math

A brief overview of the process of developing new LTL strategies should give the reader a clearer view of LTL. For example, in the last eight years we have developed new LTL strategies for learning math.

(1) Working with expert learners

The process started by working with expert learners – undergraduate and graduate math and physics majors at MIT and Harvard. Watching these students solve math problems — from a first review their class notes to solving a complex problem in theoretical math — we asked

them to tell us what they were thinking in process. We found that *verbalizing math* is a central activity, even for experts working at advanced levels. That is, when they got "stuck," they slowed down, verbalizing the problem — out loud or internally. (For experts, math is its own language, and they can speed ahead without translation; when puzzled, they use their native spoken language to work through the problem.)

(2) Working with failing students; single-subject research

With this as a clue, we worked with students who were failing math in the freshman year of college and in high school. We discovered that failing math students view math as a set of abstract symbols to be memorized. Their approach to math is rote, and almost non-verbal.

We had seen that expert math learners verbalized their math when encountering new information. So our hypothesis was that math-verbal translation is required for success in math. Working with single subjects, college freshman who failed their first calculus exam, we taught math-verbal translation. When several of these students earned an A or B as a final calculus grade, we felt our hypothesis was confirmed — and we added math-verbal translation to LTL, for more widespread use.

(3) Changes required in instructional practice

The following year, we adapted this practice for use in failing urban high schools. Our initial attempts failed: There were over-riding problems related to student motivation, teacher training, and multiple math skills gaps. However, we found solutions to each of these problems, as exemplified in our pilot program of *Learning to Learn Algebra* at Boston's Brighton High School in spring, 2004. Most of the students in the pilot had *failed every Algebra test since September*. (Many of these students had also failed end-of-year state math tests in the 6^{th} and 8^{th} grades.)

Since these students had been failing Algebra since the beginning of the school year, they started with the first Algebra skills with *Learning to Learn Algebra* – on March 8, 2004. By June 8, these students scored as well on Boston's district-wide Algebra 1 final exam as did students who had been achieving B and C grades since September. And *these students — without additional LTL instruction — continued to do well in subsequent math classes. This fall nearly half of them entered their junior year of college*. Thus our initial hypothesis was borne out: Given an effective instructional design, math-verbal translation is central to learning math.

LTL Course Structure & Effective Implementation

LTL may contain effective learning strategies. But won't most students resist using these strategies, since new ideas and practices are often rejected out of hand?

Yes, which is why we have adopted a carrot-stick approach to implementing LTL. You can provide a great swimming pool, and excellent instruction. But you won't get swimmers unless you can get your charges into the water.

Effectively used, LTL is a 3-credit, A – F graded class, where no "Cs" are given. In order to earn an A or B in LTL, the student must apply all the LTL strategies to all their homework for two or more content (non-remedial) college courses. Students' applications of the skills are checked weekly by college work-study students trained in LTL methods. This means that LTL is an easy A or B — if you do the work. And, if you don't, it's an easy way to receive another failing grade — and flunk out of school.

The LTL skills are structured so that the first skills have a quick and strong pay-off. For this reason, early in the semester, students who have begun to use the skills on a daily basis report unexpected gains on early tests. The possibility of success — and the fear of

failure along with continual LTL skills monitoring — means that most LTL students actually use the skills as required by the LTL curriculum.

As noted earlier, the data strongly suggest that, once the student has acquired and practiced the LTL skills for a semester, these skills will become an integral part of the students' learning process.

Implications for College Retention Efforts

We recognize that, even with strong data, it may be difficult for college administrators and educators to believe that there is a simple, inexpensive, lasting solution to the problem of collegiate drop-outs. We are mindful of the "Semmelweis Effect," referring to the 19th century experience of Ignaz Semmelweis, who discovered that childbed fever mortality rates could be reduced ten-fold if doctors washed their hands. His colleagues' rejection of Semmelweis's ideas and data have entered the language as a metaphor for the rejection of new knowledge because it contradicts entrenched norms and beliefs. But the words of a student may have more strength than any amount of data. Marionette Peavy, an African American graduate of Roxbury Community College, had this to say about her experience with LTL:

> *"Learning to Learn has helped me in many ways, in school and out of school. I'm not only using the techniques in school, but also I'm using them outside to take care of personal business.*
>
> *As far as my future, well, I always had the feeling that I wanted to be a lawyer, but I never liked reading. I hated reading. And to become a lawyer you have to read. So I'd always say, 'Okay, I want to be a lawyer, but I can't stand reading, so I'll be something else.' But once I got into Roxbury Community College, and took the Learning to Learn program, I feel that I can be a lawyer, a doctor. I can be anything I want. I can read with understanding now. I can understand exactly what's going on, and say, 'Okay, I can take care of this. I understand this.' "*

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