Learning to Learn

Applying techniques used by successful learners, previously unsuccessful high school and college students are staying in school and earning higher grades.

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When I was in high school I hated school. I never read nothing, never did no school work. I dropped out of school as soon as they let me.

I couldn't get no job, so I decided to see if college was better. I went for my GED, and came to Roxbury Community College. I didn't do good my first semester here—I failed two courses. Then I took Learning to Learn, and things really changed. I had to think about my schoolwork. Reading was like playing some game—looking for the answers to my questions. I'm a business major, and now I can do even hard subjects like economics and accounting. It's like I think better. Math was a jumble for me. Now I see how to do the parts and how they fit together.

Used to be I couldn't see no future for me. Now I can see my way to a four-year college education. I just wished I took Learning to Learn in high school, so I didn't need to waste no time like that.

—student at Roxbury Community College

During the 1960s, a group of researcher-clinicians at the University of Michigan took a nontraditional approach to improving students' learning strategies. Rather than using a diagnosis-and-remediation model, which at best results in only a year's gain in a year's time, the Michigan group sought to discover skills that are critical to successful learning. If skills of successful learners could be identified and translated for use with less successful students, the group felt that learning gains might be more rapid.

Over a period of several years, these researchers observed the learning behaviors of successful students as they verbalized their thinking while solving a variety of complex academic tasks. They found that good learners:

1. "Program" their learning for content courses—identifying the component parts of complex principles/ideas and breaking down major tasks into smaller units.

2. Ask questions about new materials, engaging in a covert dialogue with author or lecturer, forming hypotheses, and reading or listening for confirmation.

3. Devise informal feedback mechanisms to assess their own progress.

4. Focus on instructional objectives, identifying and directing their study behaviors to meet course objectives.

The Michigan group translated these skills into a series of exercises that students could apply directly to their academic work. I joined the group in 1967. Since then, as director of a number of college learning centers, I have sought ways to apply the four general skills to a wide range of

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Figure 1. Overview of Learning to Learn

	General Skills	Subject-Specific Skills
Input Stage	Generating questions from books, lectures, notes, and handouts	Reading to solve problems in chemistry
	Reading for examples	Reading diagrams in biology
	Reading graphs, tables, and diagrams	
	Developing editing checklists for math and grammatical composition	
Organization Stage	Constructing information maps and flowcharts	Constructing an information map comparing the cultures of two countries, using student-generated questions derived from class discussion
	Using a tasks/skills checklist	Constructing flowcharts to improve the structure of written assignments
Output Stage	Writing to answer questions	Using a student-constructed information map to study for an objective exam in geography
	Systematic problem solving	Using a five-step approach to solving word problems in geometry
	Constructing mock exams	
	Writing key-word diagrams	

academic areas and to adapt the techniques to students of varying entry skill levels. In 1979, I was joined in this work by Joshua Slomianko, who has helped put the skills into the framework of a cohesive system and found applications to new contexts. The resulting combination of skills and instructional materials constitute Learning to Learn (LTL).

Learning to Learn has three stages: *input* (gathering information), *organization* (arranging information for further analysis), and *output* (student demonstration of mastery of the material). Students learn to build general learning skills and subject-specific skills into their daily school work (see Figure 1). After a few months of adapting these skills to their coursework, most students report that they become involved with school work and that they begin using the skills automatically. For example, one student said, "I used to fall asleep in class and over my books. Now I want to know what's going on. I ask myself, 'What's the teacher after now? Is he answering my questions, or is this something new?' " As students begin to "play" with the material in their courses and discover their own variations of the skills, they increasingly view the skills as aspects of two central learning tools: generating questions and breaking down complex ideas and tasks into simpler, more comprehensible parts.

As a result of work done with educationally disadvantaged college students reading as low as the 5th grade level, the U.S. Department of Education's Joint Dissemination Review Board approved Learning to Learn for national dissemination. Data from controlled studies show that the program has significant, long-term effects on students' grade point averages, the number of academic credits they complete per semester, and their retention in school. For example, a study conducted with students reading at the 6th grade level at Roxbury Community College showed that LTL students

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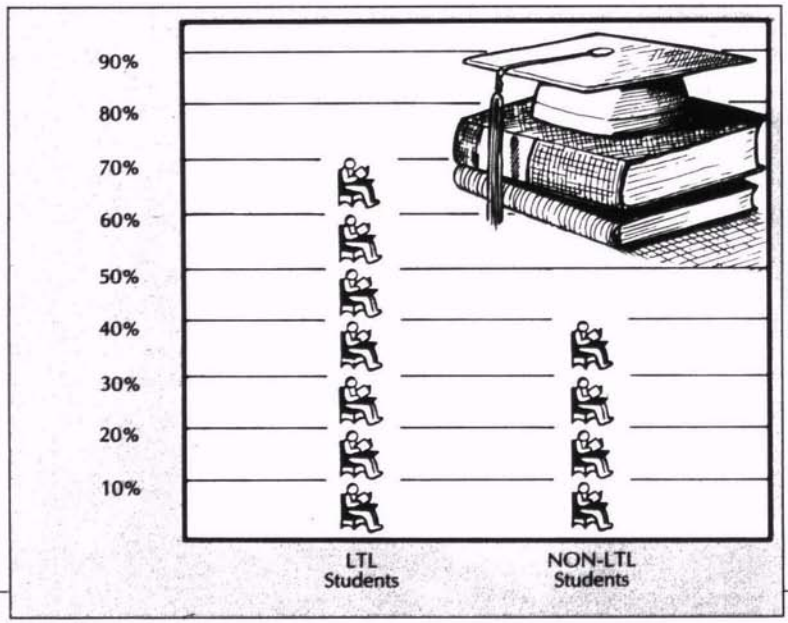

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earned a 2.9 grade point average; comparable students who received traditional remediation (for example, content-course tutoring or basic skills support) earned a 2.2 grade point average (Heiman, 1983). LTL students also completed significantly more academic credits per semester. Three semesters after treatment was completed, 70 percent of the LTL students were still in college or had graduated, as compared with 40 percent of non-LTL students.

Learning to Learn in Secondary Schools

Learning to Learn has now been piloted by teachers in several Boston-area high schools. In 1985–86, the program is being fully implemented in a number of schools, including Winchester High School, West Roxbury High School, and the Massachusetts Pre-Engineering Program at Boston Latin High School in Massachusetts; Kings Park Junior and Senior High Schools in Long Island; and Taft High School in Cincinnati.

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Learning to Learn is most effectively built into students' academic work in two ways:

1. *In the content classroom*. In both junior and senior high schools, teachers incorporate LTL skills directly into their classroom teaching. The following vignettes illustrate this process:

- Robert Stone's 10th grade chemistry class has been assigned Chapter 7, which discusses the relationship among temperature, pressure, and volume of gasses. Students work in pairs, generating questions from the text and using an active method of reading to solve problems. In this regard, their chemistry texts become "dictionaries" that help them solve the sample problems presented in the text.
- Amy Anderson's 6th graders will be studying a unit on Africa. Working in small groups, they have identified questions to which they would like to find answers. Their questions will be the basis of small-group "research" projects, in which they will find answers to their questions in an encyclopedia. Each group has at least two "resource" persons who read at the 4th grade level or higher.
- Albert Hart has just given a brief lecture on Greek city-states to his 9th grade social studies class. Students took notes on his lecture. Later, working in pairs, students will help each other fill in missing notes and generate questions from those notes. They will then use their questions to read-to-find-answers in the textbook chapter on Greek city-states.

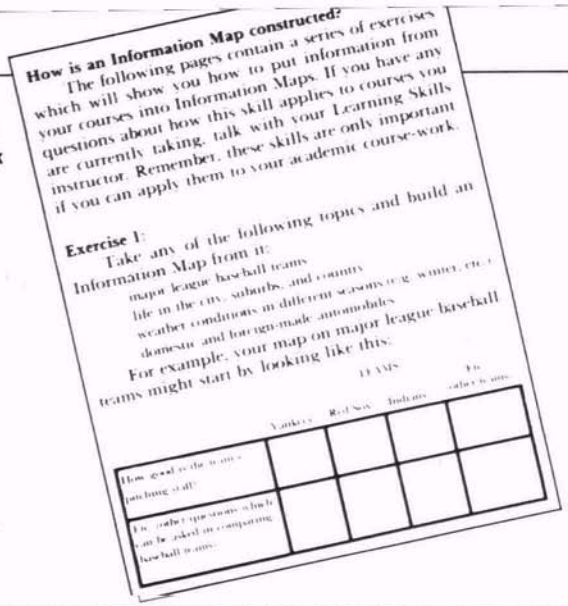
As these illustrations suggest, Learning to Learn has a wide range of applications for content classrooms. Classroom management problems are minimal because student motivation is high. By looking for answers to their own questions and breaking down complex ideas into manageable units, students gain a sense of mastery over their academic work. Their information search becomes personal, as they are working to achieve goals they have set for themselves.

2. *As a credit course*. In the senior high school, Learning to Learn is also offered as a year-long credit course. Students are required to adapt the appropriate LTL skills to content-area courses taken concurrently with LTL. Students learn how the skills relate to each other by learning principles on which they are based and how to vary the skills for a wide range of academic tasks. The course is designed to make students independent learners in any academic course, whatever its structure.

Learning to Learn is available to schools through a combination of training workshops and instructional materials. Content-area teachers receive field-relevant instructor manuals, which review those skills most suited to a particular discipline, suggest ways of using the skills as classroom activities or homework assignments, and provide sample lesson plans. Manuals are available for teachers of social studies, English, mathematics, physical science, and biology/earth science. In addition, student workbooks are available in these areas (such as *Learning to Learn Social Studies*).

A detailed manual provides teachers of the LTL credit course with step-by-step instruction in the content and structure of the course. In addition, a student workbook gives students practice in using LTL skills and suggests ways to adapt them for use with content classwork. (Figure 2 shows a sample page from the student workbook.)

Figure 2.
Sample Page from Student Workbook



How is an Information Map constructed?

The following pages contain a series of exercises which will show you how to put information from your courses into Information Maps. If you have any questions about how this skill applies to courses you are currently taking, talk with your Learning Skills instructor. Remember, these skills are only important if you can apply them to your academic course-work.

Exercise 1:

Take any of the following topics and build an Information Map from it:

major league baseball teams
life in the city, suburbs, and country
weather conditions in different seasons (e.g. winter, etc.)
domestic and foreign-made automobiles

For example, your map on major league baseball teams might start by looking like this:

	Yankees	Red Sox	Indians	
How good is the team's pitching staff?				
Etc. (other questions which can be asked in comparing baseball teams)				

Positive Outcomes

Learning to Learn has positive outcomes for students, teachers, and school administrators. Students become more actively engaged in their work and can improve their basic skills (primarily in reading, writing, and listening), content-course grades, and reasoning skills. Improved student motivation and a higher level of student classroom participation, in turn, have a positive effect on teacher morale. Schools that fully use the system can expect to realize some of the following results: improved student scores on competency exams, improved student retention through graduation, and more students going on to post-secondary schools.

One reason for the system's effectiveness is that it provides students with an environment conducive to active learning. Students are not simply advised to improve their organization, motivation, and interest in school. Rather, as the student quoted in the beginning of this article suggested, students develop tools for turning academic work into a kind of "game" in which they predict questions and answers. The dichotomy between "real world learning" and "book learning" begins to diminish for many students as they see the relationships between the kinds of learning they do in daily life and in academic settings.

The useful effects of Learning to Learn appear to be a product of its basic approach to higher-level learning: the skills that are central to the system (generating questions, identifying essential parts of complex situations, looking for feedback on progress, directing behavior toward clear goals) are part of *all* learning. Learning to Learn works because we are teaching children to bring their own highly developed intellectual strategies into a setting—formal education—that has often seemed alien ground.□

Reference

Heiman, M. "Learning to Learn," Joint Dissemination Review Panel Submission. Washington, D.C.: National Diffusion Network, 1983.

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