Chapter One
Understanding the SI Model

Overview

Supplemental Instruction (SI) is a student academic assistance program that increases student academic performance and retention. The SI program targets traditionally difficult academic courses—those that have a 30% or higher rate of D or F final course grades and/or withdrawals—and provides regularly scheduled, out-of-class, peer-facilitated sessions that offer students an opportunity to discuss and process course information. SI does not identify *high-risk students*, but rather identifies *high-risk classes*. SI thus avoids the remedial stigma ofte.. attached to traditional academic assistance programs.

SI is open to all students in the targeted course; therefore, pre-screening of students is unnecessary. The program also provides academic assistance during the critical first six-week period of class. SI is often attached to traditionally difficult, high-risk courses that serve first and second-year students. However, each institution may develop its own definition of "high-risk courses."

Assistance begins in the first week of the term. The SI leader introduces the program during the first class session and surveys the students to establish a schedule for the SI sessions. The SI sessions are open to all students in the targeted course, and attendance is on a voluntary basis. Students of varying abilities participate, and no effort is made to segregate students based on academic ability. Since SI is not perceived to be remediation, many underprepared students that might otherwise avoid seeking assistance will participate since there is no stigma attached.

SI focuses on both *process* and *content*. Therefore, learning/study strategies (e.g., note-taking, organization, test preparation) are integrated into the course content during the SI sessions. SI sessions provide immediate practice and reinforcement of these acquired skills. SI collaborative sessions capitalize on the use of the "teachable moment" to apply the learning strategies to the course material. Educational researchers (Dimon, 1988; Keimig, 1983) have concluded that it is difficult to teach transferable study skills in isolation from content material. SI enables students to master course content while they develop and integrate effective learning and study strategies.

SI Addresses Common Factors in Student Attrition

Nationally, high rates of student attrition among first-year college students continue to be a trend (American College Testing Program, 1992). Tinto (1987) predicted in 1986 that, of the nearly 2.8 million students who entered higher education for the first time, over 1.8 million would leave without receiving a degree. Tinto identified four significant factors in student attrition (Spann, 1989; Tinto, 1987):

1. Many students feel socially isolated on campus.

2. Students have difficulty in adjusting to the new environment.

3. Students are not able to link the knowledge received from class lectures to what they already understand.

4. Students experience difficulty in the college environment.

SI addresses these four factors. The SI review sessions provide a safe environment within which students can discuss and process the course material with others. SI students become acquainted with one another as they interact. The SI leader facilitates the discussion so students can make adjustments, discuss what they do not understand, and discover strategies that

unlock the mystery of learning at college. SI participants experience more academic success in target courses than their non-participating peers.

Development and Evolution of the Supplemental Instruction Program

SI was initiated in 1974 by Deanna C. Martin at the University of Missouri-Kansas City (UMKC), an urban public university of nearly 12,000 students at which nearly half the students are enrolled in graduate or professional schools. SI was first piloted in courses in the UMKC Schools of Medicine, Dentistry, and Pharmacy. Pilot programs were funded with local and federal grant monies.

Unlike most student assistance programs that target undergraduate, and particularly first-year students, the SI program was initially developed for professional school students. These students did not show predisposing academic weaknesses when they were admitted to the professional schools. Most had excellent academic records at the high school level and scored well on college entrance examinations. However, many of these students had academic difficulty with certain "high-risk courses" even though they were not "high-risk students." The academic rigor of these courses exceeded the academic preparation by even these well prepared students. After demonstrating that the SI program was successful with professional school students in rigorous courses, the staff was awarded local grants to extend the program to undergraduate courses.

One of the unusual features of the SI program is that it has been successful with both males and females from all ranges of previous academic achievement and ethnicity. Another feature of SI is that its effectiveness is not limited to specific disciplines. It has been effectively used at all levels of the institution (undergraduate, graduate, and professional school) and in a variety of academic disciplines.

Validation of the SI Program by the U.S. Department of Education

In 1981, the SI program became one of the few postsecondary programs to be validated by the U.S. Department of Education as an *Exemplary Educational Program*. The program was then eligible to request national dissemination funds from the National Diffusion Network (NDN) of the U.S. Department of Education. Since 1984, the NDN has awarded UMKC approximately $70,000 each year to assist other institutions in implementing the program. The model was recently revalidated in March 1992 by the Program Effectiveness Panel (PEP) of the NDN. The SI Program is one of only two programs that are officially recognized by the U.S. Department of Education as contributing to increasing student graduation rates.

Current Scope of Supplemental Instruction Programs

SI is currently being used at approximately 200 institutions throughout the United States and has also been adopted by institutions in the Arctic Circle, the United Kingdom, Puerto Rico, Grenada, and South Africa. SI programs range from modest pilot programs of one or two courses to more ambitious programs of 60 (University of Louisville, Kentucky) and 120 courses (Weber State University, Utah). Refer to the appendix for a complete list of institutions that have developed SI programs.

Features of Supplemental Instruction that Contribute to Student Success

The impact of Supplemental Instruction can be quantified by positive differences in student performance and retention rates. A number of features of the SI model operate to influence higher levels of student academic performance. The following factors are most often mentioned by SI staff as well as by participating faculty and students:

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The service is proactive rather than reactive. SI schedules are set during the first week of class, allowing students to obtain assistance before they encounter academic difficulty. Most "early alert" retention programs are not triggered until the student has already earned a D or F on a major examination .

The service is attached directly to specific courses. Reading, learning, and study skills instruction is offered in the context of course requirements and as an outgrowth of student questions and concerns. Instruction thus has immediate application. While many students may self-report their need for academic assistance, only a small group will voluntarily attend workshops that feature instruction in isolated study skills.

To facilitate SI, SI leaders attend all class sessions. Such attendance contrasts sharply with the more common tutorial practice of providing instruction based largely upon the student's perceptions of what occurred in class. Student perceptions are often distorted as well as time consuming to report during the academic assistance sessions.

SI is not a remedial program. Although SI is effec: ve with underprepared students, it is not viewed as remedial. In fact, the students who are most likely to volunteer initially are those who tend to be better prepared academically. The willingness of this group to participate encourages the participation of less able students who often find it difficult to admit that they need assistance.

SI sessions are designed to promote a high degree of student interaction and mutual support. Such interaction leads to the formation of peer study groups and facilitates the mainstreaming of culturally diverse as well as disadvantaged students. SI has relied upon the power of group study for the past 20 years, long before the current trend of promoting collaborative learning groups in higher education.

SI provides an opportunity for the course instructor to receive useful feedback from the SI leader concerning the kinds of problems students encounter. Students generally hesitate to be candid about academic concerns to course instructors for fear of demeaning themselves. They will, however, openly acknowledge their problems to the SI leader whose duty it is to assist in such matters and whose responsibility does not include assessment of their course performance. It is difficult to predict which students will drop out and which students will persist. It is much easier to predict those classes which provide a formidable hurdle for students.

Situations in which Supplemental Instruction May Be Less Effective

While success varies among and between SI programs, we are not in possession of data that would suggest that SI has any major limitations. We do know, however, that conducting SI is more challenging in content areas where prerequisite skills are a key variable. For example, if students do not remember any algebra, they will have a particularly difficult time in chemistry. SI can be and is effective in these areas. However, SI leaders must invest more time in planning. SI sessions will often need to last longer than 50 minutes in order to cover additional material and provide additional time for students to practice with and master the course material and study strategies.

It has been our experience that SI is least effective when it is attached to remedial classes. First, students may refuse to attend SI sessions if they do not perceive the course to be demanding. Second, SI has not been effective for students who cannot read, take lecture notes, write, or study at the high school level. Therefore, we stress to adopting institutions that they utilize SI in non-remedial settings with high-risk, demanding courses.

We have also found that the SI model needs to be slightly modified in courses that are problem based and involve practice for mastery. In those circumstances, SI sessions need to be more frequent and sometimes longer in length. For

example, a three credit-hour accounting course might require sufficient SI sessions to allow for the review of various types of problems, or a calculus class might require extended sessions to allow time for modeling and practice so that students become proficient problem solvers.

Placement of Administrative Responsibility for SI

Placement of the administrative responsibility for SI varies from institution to institution. In some smaller institutions the SI program director reports directly to the president or chancellor. Such an arrangement has the clear advantage of immediate contact with the final authority with respect to budgetary support and programmatic decision making.

The most common practice is to place administrative responsibility within either the division of academic affairs or the division of student affairs. Each arrangement has its own advantages and disadvantages. Placement within academic affairs results in greater line authority with respect to faculty involvement and budget. However, faculty are sometimes more hesitant to allow access to their courses if the SI program director reports to the academic dean. Faculty also may be more reluctant to support program funding if such funding competes with their own departmental requests.

Placement of SI within a division of student affairs has several advantages. Faculty may be more willing to invite student affairs personnel than academic affairs administrators into their classrooms to observe class lectures as they assist the SI leader to prepare further sessions. Though student affairs budgets are proportionally smaller, the SI program can earn a higher funding priority within student affairs than may be possible within the priorities of academic affairs. However, there are several potential drawbacks to placement of SI with student affairs. Student affairs budgets are often quite low, and there is rarely enough flexibility within the available resources to accommodate program expenses once faculty requests for the

service escalate. Faculty may view the SI program as ancillary or as a "frill" since it is not based within academic affairs or tied directly to their academic department.

Key SI Program Personnel

There are key persons involved with SI on each campus--the SI leaders, the SI supervisor, and the course instructors. Each plays an important role in creating the environment that allows the SI program to flourish.

SI Leader. The SI leader is a student who has successfully completed the targeted class or a comparable course. It is ideal if the student has taken the course from the same instructor for whom he or she is now providing SI assistance. The SI leader is trained in proactive learning and study strategies and operates as a "model student," attending all course lectures, taking notes, and reading all assigned materials. The SI leader conducts three or more out-of-class SI sessions per week during which he/she integrates "how to learn" with "what to learn."

On campuses that implement Supplemental Instruction, SI leaders participate in pre-term training workshops that emphasize the following topics:

    ○ Theoretical bases of learning,

    ○ Teaching methods and forms of learning assistance that are useful in helping students assimilate the course content,

    ○ Study strategies to integrate course material review into the SI sessions,

    ○ Possible problems that might be encountered during SI review session, and

    ○ Actual practice sessions using the SI learning strategies with prerecorded lectures of professors.

SI leaders receive continued training through regular meetings with the SI supervisor. Informal training occurs through the supervisor's observation of the SI leader while she or he conducts SI review sessions. Feedback and specific suggestions for improvement are given by the supervisor at that time.

The SI leader is a *facilitator*, not a *mini-professor*. The role of the leader is to provide structure to the study session, not to re-lecture or introduce new material. The SI leader should be a "model student" who demonstrates how successful students think about and process course content. He or she facilitates a process of collaborative learning, an important strategy since it helps students to empower themselves rather than remain dependent as they might in traditional tutoring. In fact, research suggests that tutoring relationships do not always promote transfer of needed academic skills (Dimon, 1988; Keimig, 1983; Martin, et al., 1990, 1983a, 1983b, 1982, 1981; Maxwell, 1990).

A central responsibility of the SI leader is to integrate study skills with the course content. As someone who has performed well in the course, the SI leader has demonstrated mastery of the course material. However, it is important for the SI leader to share his/her learning strategies with the other students in the SI sessions. If the students only learn content material and not the underlying study strategies, they will have a high probability of experiencing academic difficulty in succeeding courses.

SI Supervisor. The SI supervisor is an on-site professional staff person who implements the SI program and supervises the SI leader. The supervisor is responsible for identifying the targeted courses, gaining faculty support, selecting and training leaders, and monitoring and evaluating the program. Supervisors meet with SI leaders weekly during the term as a group or individually. Supervisors of most programs have formal meetings with all SI leaders together at least three times during the term for follow-up and problem-solving.

The SI supervisor provides the vital organizational link between a number of individuals on campus who administer important program components: the faculty member of the targeted course, department chairperson of the faculty member, college registrar who provides needed data, academic and student affairs administrators, and coordinators of campus facilities used for SI review session meetings.

After initial development and use by several SI programs in the field, the *Student Assistant SI Supervisor* has became an official part of the SI model. Student assistants provide much more flexibility at a lower cost for large programs. Critical qualities needed by such student assistants are a successful record as a Supplemental Instruction leader and the maturity to observe, assist, and supervise other SI leaders effectively.

SI supervisors attend a three and one-half day training workshop covering the areas of implementation and management, training, supervision, evaluation, and study strategies. Continued professional development is available through professional development seminars.

Faculty Members. The third key person in implementing SI is the *faculty member* who teaches the course in which SI is offered. Faculty screen SI leaders for content competency and approve leader selection. Faculty cooperation is an essential ingredient of the SI model. For this reason, SI is *only* used in classes where professors understand and support the concept. A Supplemental Instruction program should be careful not to intrude into classes where the instructor is an unwilling participant. This policy holds true even if department chairs a. ̄ deans request that SI be attached to certain classes.

If the SI model is presented clearly and in its entirety, professors generally agree that the addition of Supplemental Instruction to their classes can result in the following benefits:

Professors have a mechanism for referring students for additional help. In large classes, professors are

rarely able to give as much individual help to students as they would like. Therefore, faculty members are generally pleased to know that the SI leader is available to assist students who need additional support.

Professors are generally quick to admit that they feel less than competent to help students whose problems are skill-based rather than content-centered.

Professors receive feedback from the SI leaders about questions that students bring to the SI sessions. This feedback can be a useful indicator of the effectiveness of particular teaching methods and can provide professors the opportunity to alter their instructional approach if they are inclined.

Faculty frequently receive higher student ratings on class evaluations when Supplemental Instruction is attached. This phenomenon occurs because students attribute the benefits of the service to the professor. They feel less anxiety and frustration in their efforts to master the material and appreciate the opportunity to receive assistance that is both convenient and effective. Students are grateful to the professor for providing them with an avenue to achieve at a higher level than might otherwise have been possible.

Funding for SI Programs

Most SI programs have been initiated either directly through external support or by reallocating existing resources such as tutorial funds or resource personnel. Grant requests through Title III, Special Services, Health Careers Opportunity Program, Public Health Service, and the Fund for the Improvement of Post Secondary Education have been among the most productive funding sources. Local foundations in some areas have also been willing supporters. Ways in which this program has been supported from internal institutional resources include the following:

Work-Study Support. Student SI leaders can be assigned and salaried for the SI program through the federal work-study program.

Generally, SI leaders are required to have a high GPA and, most importantly, a strong academic background in the discipline or course for which they are being considered. Students who view themselves as potential teachers or academicians are particularly good candidates. Institutions with their own self-funded work-study program have more flexibility since they do not have to follow the income restrictions that the federal work-study program imposes.

Joint Appointments for Professional Staff. As professional staff are selected, it may be possible to arrange a joint appointment with one of the academic departments. On the UMKC campus, such arrangements exist on a non-tenure track basis with the stipulation that the professional staff member teach one class a semester for the department. Salary responsibility is shared between the units.

Departmental Support. Departments that desire continued or additional SI services sometimes agree to pay for the service. This is a frequent occurrence once the service has demonstrated cost effectiveness. Sometimes departments assign a teaching assistant position to the SI program. Cooperative financing will develop over time depending upon the way in which academic departments regard the SI program.

Community Projects. At UMKC, the Supplemental Instruction staff participates in varied community projects which generate income. Special teaching projects, faculty development in the public schools, summer programs for young people, and consulting services to businesses and private individuals are some of the most common income-producing activities. Money paid to the Supplemental Instruction staff is deposited into a revolving account that funds special equipment and activities. Some of this money augments the regular University funding for the SI program and allows for the addition of SI sections if the need is present and University funds are unavailable.

Alternative Compensation for SI Leaders. At a few institutions, SI leaders receive academic credit

(e.g., three hours of general education credit) for their work in lieu of receiving a salary. This option gives official recognition to the educational value of the SI experience to the SI leader. In some cases the academic credit comes from the School of Education. This experience can be used as an early teaching experience for education majors. Depending on the institution's tuition and fees, receiving college credit may be more financially attractive to the student than the monetary stipend.

Cooperation With Academic Advising

While Supplemental Instruction is used by a full range of students, it is particularly important for institutions to increase the likelihood that newly admitted, high-risk students will participate. At UMKC, academic advising and the SI program work together to accomplish this objective.

Academic advisors receive a list of high-risk students from the registrar. (At UMKC, students designated as high-risk are those who score below the 33rd percentile on standardized entrance exams and rank in the lower one-third of their high school class.) During the advising period, the advisors urge students who appear on the high-risk list to enroll in one or two courses that have SI sessions attached. If the student agrees, the advisor schedules the class and reserves the hour on the student's schedule for the SI session. Students do not formally enroll in SI, nor are they required to accept the advisor's recommendation. However, most students are eager to enroll in the course and section suggested by the advisor.

At UMKC, peer counselors assist academic advisors with preparing schedules. Since many of these peer counselors have participated in Supplemental Instruction, they are helpful in answering students' questions about SI and can attest to its benefits firsthand.

Other advisors to special groups of students, such as athletes and scholarship students, also recommend that their advisees select classes that are paired with SI. Thus, it is likely that the

students appearing in the classes and in the SI sessions will vary widely in their academic preparedness.

Creating Awareness and Generating Support for SI on Campus

Gaining acceptance for any new student support program has historically been a difficult undertaking, especially in times of limited resources. Additionally, since the impetus for new academic support programs often comes from administrators or student affairs staff, there is the risk of a potential opposition among the faculty.

Our experience, as well as reports from other institutions which have adopted SI, leads us to the following three suggestions for generating on-campus program support:

1. *We strongly recommend a pilot program approach.* The best way to generate on-campus support is to have a successful pilot in place. Faculty members who have had positive experiences with SI become the program's strongest advocates.

2. *Begin a pilot program by eliciting the support of one or two faculty members who are well respected among their peers and who teach entry level courses that are traditionally difficult for students.* These faculty should have reputations as excellent instructors who have both rigorous and fair grading standards. They should also be willing to assign a higher than normal distribution of A, B, and C grades if students demonstrate increased levels of performance on examinations.

3. *After conducting the pilot program, it is critical to prepare and disseminate final reports on the outcomes.* Present the findings to other faculty who may be interested in attaching SI to their courses. We suggest that faculty again be approached individually, in small groups, or in departmental meetings. Invite the instructors who were involved in the pilot to be part of these presentations.

When Supplemental Instruction has been implemented on other campuses without a pilot program to generate initial on-campus support, the service has been less than successful. Feedback from these institutions reveals that faculty raise concerns about the following issues:

○ Whether the program will be cost-effective,

○ Whether it is appropriate for an agency other than an academic department to offer course-specific content assistance,

○ Whether the implementation of SI will result in increased faculty workloads,

○ Whether and how SI will affect academic freedom,

○ What the criteria will be for selecting courses, and

○ To what extent such selection will be viewed as a condemnation of teaching performance.

Once such concerns are made public, it is difficult to address them adequately, and attempts to do so are often viewed with skepticism. On the other hand, if SI is willingly piloted within a school or department, the program will generate its own support.

One final note: *While the UMKC SI program has not been able to retain all the students with whom we have worked, we have yet to lose a faculty member!*