Supplemental Instruction

**MISSION STATEMENT**

Purdue University’s Supplemental Instruction (SI) Program develops academic support communities of higher level thinkers and self-empowered learners. This self-selecting, course-specific, peer-led program seeks to promote active, collaborative learning involving critical thinking and transferable study skills. Its efforts are aimed at helping students pass these courses at a higher rate and thus improving their retention rate.

**VISION STATEMENT**

SI at Purdue will help students enrolled in historically challenging courses succeed at higher rates and continue their education in a timely manner. SI at Purdue will become an exemplary, effective academic assistance model through which students will engage in success-oriented behaviors, and by which other institutions can benchmark and through which the greater Purdue community can understand and accept the validity of SI.

**PROGRAM GOALS**

SI will:

1. Focus on large courses with high rates of D, F and withdrawal (DFW) grades to link with the SI Program
2. Help students earn a higher course grade than their peers who did not attend, in particular, those students who attend the study sessions weekly
3. Reduce the DFW rates for students attending SI study sessions
4. Contribute to the improvement of retention rates for students attending the SI study sessions by providing an active, engaging, inclusive learning environment that promotes critical thinking and shared, transferrable study strategies
5. Reinforce student leaders’ knowledge of course material and leadership abilities, as well as develop creative thinking skills
6. Build strong relationships with SI-linked faculty by helping them to appreciate the benefits of SI as well as the struggle students may have with the course material

**LEARNING OUTCOMES**

As a result of participating in SI, students will:

1. Increase their understanding of course concepts, apply them to different sets of problems, and understand how concepts from different disciplines connect (science, technology, and math; integrative knowledge)
2. Develop critical thinking skills that mature beyond memorization in a way that enables them to evaluate, analyze, and demonstrate evidence of their learning (critical thinking, quantitative reasoning)
3. Acquire transferrable study skill behavior which will allow students to become more confident in their approach to mastering future difficult material (self-efficacy, self-advocacy)

As a result of serving as Supplemental Instruction facilitators, student leaders will:

- Develop creative thinking skills as they design study session plans that involve taking risks, navigating challenges, providing a variety of activities, and enhancing collaboration (creative thinking)
• Enhance critical thinking skills as they set and assess learning objectives for their study sessions based on Bloom’s Taxonomy of higher level thinking (critical thinking)
• Develop professionally by improving their oral and written communication skills as they attempt to explain concepts and organize activities (oral communication)
• Build their leadership skills as they facilitate group participation and collaboration, and as team leaders organize and conduct discipline-specific team meetings around sharing best practices (leadership and teamwork)

**ASSESSMENT PLAN**

To improve SI and ensure that progress is being made toward the aforementioned goals and desired learning outcomes, a comprehensive assessment plan is conducted. The following assessment practices will be initiated and/or continued this year:

- Report comparisons of course grades for the SI attendees according to the number of times they attended the study sessions (0, 1-2, 3-4, 5-7, and 8 or more)
- Report comparisons of DFW grades for those who attended SI study sessions versus those who did not
- Examine students’ perception of understanding of course material having attended SI study sessions through the end-of-spring survey
- Examine students’ perception of their acquisition of transferrable learning strategies through the end-of-spring survey
- Examine the professional growth of SI leaders and their creative thinking skills through reflection journals and portfolios
- Examine mid-course surveys before major exam periods in order to determine why some students only attend sporadically
- Examine the most recent Summer DFW rates to determine which courses are most in need of SI
- Utilize focus groups to see whether students find SI useful and to determine what aspects of an SI session help them improve
- Examine SI-participants vs. non-participants within overall at-risk student population to compare academic performance
- Compare academic outcomes of SI participants and non-participants who have similar characteristics within individual courses

**CONTRIBUTIONS TO STUDENT SUCCESS**

SI contributes to the institutional goal of enhancing retention rates, graduation rates, GPA success, and satisfaction levels of Purdue students by:

- Offering peer-led, weekly academic study sessions for students enrolled in challenging courses, allowing them possibility of graduating at a faster pace
- Providing an environment where students learn to ask thoughtful, course-specific, conceptual questions of themselves and each other, and become more invested in their own learning
- Increasing students’ confidence in attacking tough course material by being aware of how they study and how those strategies can apply to other courses
- Enhancing leadership skills, job opportunities, and professional interactions for students
- Provide workshops on study strategies and create an inclusive learning environment for the two-day pre-semester SI leader training
- Encouraging faculty to:
  a. Understand the function and best practices of the SI program
  b. Consider linking their course with the SI program
  c. Help with the interviewing and selection of student leaders
d. Participate in the faculty social events before and following the semester

- Communicating with academic advisors to solicit suggestions on SI course links
- Promote the study sessions by presenting at the following events: SPAN Plan Orientation, Science Bound Orientation, New Advisor Training, McCutcheon Faculty Fellow Events, Exploratory Studies College Welcome, BGR Resource Fair, Black Cultural Center Boiler Fest, Agricultural Freshman Seminar, Rainbow Callout, Advisors Resource Fair, Multicultural Student Welcome, and Computer Science CS 291 Seminar Course.
- Sharing space with the University Residences Support Center (URSC in Shreve Hall) for weekly study sessions

**CONTRIBUTIONS TO THE UNIVERSITY’S DIVERSITY ACTION PLAN**

The Supplemental Instruction Program contributes to the Provost Advisory Committee on Diversity Items in the following ways:

- Training its SI leaders to make their study sessions all-inclusive through workshops, guest speakers, and classroom inclusion techniques
  a. Christopher Munt, Diversity Resource Office – Fall 2011
  b. Jeff Karpicki, Psychology Master Teacher – Spring 2012
  c. Christopher Munt, Diversity Resource Office – Fall 2012
  d. Sara Carvell, Counselor, Office of Dean of Students – Spring 2013
  e. George Hollich, Psychology Master Teacher – Fall 2013
  f. Lowell Kane, Director of Lesbians, Gays, Bisexual, Transgender, and Queer (LGBTQ) Center – Spring 2014
  g. Lowell Kane, Director of LGBTQ Center – Fall 2014
  h. Marti Green, Psychologist for Counseling and Psychological Student Services – Spring 2015
  i. Jim Russell, Organizational Leadership Style Professor and owner a local company
  k. Dr. Kim Plake, Pharmacy Psychology Professor – Fall 2016
- Continuing to represent the program at presentations and academic resource fairs such as BoilerFest, Rainbow Callout, and the Multicultural Orientation event
- Assessing the participation of underrepresented minorities (URM) students and their re-enrollment
  l. Retention reports continue to show that URM participation in SI study sessions increases the likelihood of their reenrollment for the next year.
  m. URM students who attended SI in 2011-1013 (129 in 2011, 146 in 2012, 201 in 2013) reenrolled their second year at Purdue at a rate of 10 percentage points higher than the URM students who did not attend SI
  n. Sharing any job openings with the Multicultural Directors who in turn can share with students or on job sites such as the National Association of Black Cultural Centers

SI aspires to contribute to the Provost Advisory Committee on Diversity Items in the following ways:

- Partnering with programs that serve diverse students
  a. Horizons – could work with their tutors and do some redirecting training with them
  b. Minorities in Engineering – could partner with them for large reviews and for recruiting SI leaders
  c. Purdue Bound – do an interactive presentation with them to welcome the new students
  d. LGBTQ Center – could ask Lowell to lead another training workshop on Safe Space or Ally training
  e. International Center – we could have a representative lead a workshop to help the leaders to encourage international students to ask for help, how to communicate and
not become frustrated when they don’t quite understand the language, and to enlighten us on cultural norms and behaviors.

f. Disability Resource Center – could invite the director to hold a workshop for SI leaders to demonstrate a social justice model, helping them to be more sensitive to students with hearing and physical limitations, for example

- Requiring the Intercultural Development Inventory (IDI) as part of the pre-semester training for SI leaders, and making that conversation part of the actual training

**NOTABLE CHANGES FROM 2015-2016**

- Receiving an endowment from John and Marcy Towns (Ph. D. ’91 and Purdue Ph. D. ’94), with a matching amount from The Lilly Foundation, for supplementing foundational and non-foundational high risk courses and adding leaders to existing courses with burgeoning attendance
- Hiring two new Assistant Directors for SI – Ryana Munford and Shannon Kleier

**OUR DATA**

**Fall 2015 SI Attendance**

<table>
<thead>
<tr>
<th></th>
<th>No Sessions</th>
<th>1-2 Sessions</th>
<th>3-4 Sessions</th>
<th>5-7 Sessions</th>
<th>8+ Sessions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong></td>
<td>29%</td>
<td>*26%</td>
<td>29%</td>
<td>29%</td>
<td><strong>35%</strong></td>
</tr>
<tr>
<td>B or better</td>
<td>59%</td>
<td>57%</td>
<td>61%</td>
<td>62%</td>
<td><strong>71%</strong></td>
</tr>
<tr>
<td>C or better</td>
<td>82%</td>
<td>82%</td>
<td>83%</td>
<td><strong>86%</strong></td>
<td><strong>93%</strong></td>
</tr>
<tr>
<td>DFW</td>
<td>18%</td>
<td>18%</td>
<td>17%</td>
<td><strong>14%</strong></td>
<td><strong>7%</strong></td>
</tr>
<tr>
<td>Total Students</td>
<td>18142</td>
<td>2205</td>
<td>465</td>
<td>323</td>
<td>370</td>
</tr>
</tbody>
</table>

Significance: **= p<0.01  * = p<0.05**

Of those who attended eight or more times, 93% earned a C or better; 71% earned a B or better; and 35% earned an A. The DFW rate was 11 percentage points higher for those who never attended when compared with those who attended 8 or more times. Of students enrolled in SI eligible courses, approximately 16% participated.
Spring 2016 SI Attendance

<table>
<thead>
<tr>
<th></th>
<th>No Sessions</th>
<th>1-2 Sessions</th>
<th>3-4 Sessions</th>
<th>5-7 Sessions</th>
<th>8+ Sessions</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>25%</td>
<td>*19%</td>
<td>*19%</td>
<td>22%</td>
<td>*35%</td>
</tr>
<tr>
<td>B or better</td>
<td>55%</td>
<td>*51%</td>
<td>52%</td>
<td>58%</td>
<td>*68%</td>
</tr>
<tr>
<td>C or better</td>
<td>80%</td>
<td>79%</td>
<td>83%</td>
<td>*88%</td>
<td>*94%</td>
</tr>
<tr>
<td>DFW</td>
<td>20%</td>
<td>21%</td>
<td>17%</td>
<td>*12%</td>
<td>*6%</td>
</tr>
<tr>
<td>Total Students</td>
<td>15047</td>
<td>1629</td>
<td>382</td>
<td>250</td>
<td>378</td>
</tr>
</tbody>
</table>

Significance: * = p<0.05

Of those who attended eight or more times, 94% earned a C or better; 68% earned a B or better; and 35% earned an A. The DFW rate was 14 percentage points higher for those who never attended when compared with those who attended 8 or more times. Of students enrolled in SI eligible courses, approximately 15% participated.

Retention Data
- Retention data from year one to year four continues to suggest that there is a correlation between SI participation and the re-enrollment of students. The significance is p<0.01 when comparing students who attended SI and those who did not.
- For the 2012 cohort, the four-year graduation rate is 5 percentage points higher for students who attended one or more SI sessions than for those who never attended SI.

Retention and Graduation Rates by SI/Non-SI Cohorts

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>Cohort</th>
<th>One Year Retention Rate</th>
<th>Two Year Retention Rate</th>
<th>Three Year Retention Rate</th>
<th>Four Year Graduation Rate</th>
<th>Five Year Graduation Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>SI</td>
<td><strong>95.15%</strong></td>
<td><strong>90.80%</strong></td>
<td><strong>87.56%</strong></td>
<td><strong>56.32%</strong></td>
<td><strong>82.20%</strong></td>
</tr>
<tr>
<td></td>
<td>Non SI</td>
<td><strong>89.77%</strong></td>
<td><strong>83.21%</strong></td>
<td><strong>79.79%</strong></td>
<td><strong>50.64%</strong></td>
<td><strong>72.79%</strong></td>
</tr>
<tr>
<td>2012</td>
<td>SI</td>
<td><strong>94.38%</strong></td>
<td><strong>90.80%</strong></td>
<td><strong>88.36%</strong></td>
<td><strong>59.54%</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non SI</td>
<td><strong>89.98%</strong></td>
<td><strong>84.66%</strong></td>
<td><strong>81.26%</strong></td>
<td><strong>54.73%</strong></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>SI</td>
<td><strong>95.11%</strong></td>
<td><strong>91.50%</strong></td>
<td><strong>87.27%</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non SI</td>
<td><strong>91.64%</strong></td>
<td><strong>86.17%</strong></td>
<td><strong>81.99%</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>SI</td>
<td><strong>95.05%</strong></td>
<td><strong>92.61%</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non SI</td>
<td><strong>92.17%</strong></td>
<td><strong>86.85%</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>SI</td>
<td><strong>94.37%</strong></td>
<td><strong>90.30%</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non SI</td>
<td><strong>90.30%</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**difference in percentages significant at p<0.01 (Fall beginners who attended SI in their first semester)**
End-of-Spring Survey Results from spring 2016:
In order to understand the impact of SI on student achievement, the Supplemental Instruction Spring Survey was distributed to 10,000 students who enrolled in SI eligible courses. 773 students responded the survey for a response rate of 8%. The survey is constituted of multiple choices that investigates SI’s impact on 1) homework, 2) exams, 3) stress control, 4) problem-solving skills, 5) networking, and finally 6) students’ reason for (lack of) SI attendance.

Survey results revealed the following themes. 1) regarding (no or low) attendance, session scheduling was the most common reason that students only visited SI once or twice; over 50% of participants reported they did not attend SI because they believed they did not need help, and 41% had issues with day/time scheduling. 2) regarding SI’s impact on exams, homework and problem solving skills, around 75% of students responded positive that SI sessions helped improve their grade; around 50% of students reported they used knowledge gained from SI in other courses. Finally, even more (84%) said they would recommend SI sessions to a friend.
The survey also used open-ended questions to investigate the usefulness of SI. Students’ comments centered around SI leaders and session content. The major findings include 1) SI leaders: (a) helpfulness (b) knowledge, (c) frustration that leaders did not give them answers to problems; 2) sessions: (a) positive classroom atmosphere, (b) CHEM and PHYS courses were praised most frequently, (c) the usefulness of practice problems, and (d) frustration over pairing with other students (who did not know solutions either) and leaders would not help.

Students’ suggestions involves expanding SI to include 1) more upper level courses 2) summer courses 3) more sessions during exam period 4) more day options and convenient locations, and possibly 5) online options.

OUR STORY
In Fall 2010, Provost Tim Sands directed Student Access, Transition and Success Programs (SATS), now Student Success Programs, to establish Supplemental Instruction (a proven, evidence-based form of peer-led academic assistance) as a student success initiative at Purdue University. The program was implemented in the fall of 2011. Fall 2016 is the 11th semester for SI.

Forty-two student leaders are currently hired to supplement twenty-seven different courses for fall 2015. Faculty members of SI-linked courses are becoming more involved in the selection of leaders for their courses by participating in the interviewing process, and by allowing the student leader more visibility and advertising in the lectures. A noticeable correlation between professor endorsement and involvement, and higher attendance at the study sessions, continues to exist.

The program was awarded Outstanding Program of the Year, 2014, at the International SI Conference at the Chicago Marriott on Friday, May 23, 2014. The letter of notification said, “This recognition acknowledges the extraordinary contribution that you and your staff have made to the international SI community due to outstanding success that has been achieved with your program.” Evaluation criteria for this award included evidence of success by recognition from students, program staff, faculty, and campus administrators; evidence of successful program outcomes in student learning, increased graduation rates, and reduced attrition; and evidence of successful marketing of the program.

A student leader from biology was awarded International Outstanding SI Leader of the Year. Several former SI leaders have been accepted into the Indiana University School of Medicine.

Our current MA 153 student leader will be teaching that course as an Undergraduate Teaching Assistant next fall. A former chemistry leader and a former computer science leader are mentoring and supervising the new leaders in their particular disciplines this fall.

The implementation of team leaders has been a way for seasoned leaders to develop their leadership skills and to provide nurture for the new leaders. Eight teams were formed around common disciplines, and leaders for each team call them together for sharing best practices and troubleshooting. This organization appears to be working well as they hold each other accountable and inspire each other with new ideas for structuring their study sessions. Any problems that need immediate attention can be addressed and funneled back to the supervisors for support. Additionally, the leaders are divided up to function as committees. The Professional Development/Social Committee plans workshops for professional growth as well as some social events. The Pre-Semester Training Committee makes online training videos and brainstorms for pre-semester training activities and guest speakers. The Marketing Committee proposes ideas for marketing and distributes advertising materials such as bookmarks, posters, and flyers to increase attendance and to recruit new leaders.
The implementation of student leader portfolios in which the leaders showcase their best practices has become a great resource for new leaders and is a way of inspiring the leaders to develop their creative thinking skills. A revised rubric looks at the four goals for leaders: taking risks, navigating challenges, providing a variety of activities, and enhancing collaboration. Session plans, observations, best practices and best tips are entered into the portfolios throughout the semester. Journal reflections at the beginning, middle and end of the semester are also part of the portfolios, but are kept separate for privacy purposes. Evaluation looks at the recurring themes in all these documents to make an assessment of their improvement and development of critical thinking.

With two Assistant Directors, and two Senior Leaders, new leaders were observed weekly the first four or five weeks to help them develop their collaborative pedagogy skills. Team leaders tried to observe each of their team members two or three times throughout the semester as well.

A new award called the “Professor’s Recognition Award” was established in the fall 2016 semester. This award gives faculty linked with the SI Program the opportunity to nominate a leader whom they feel is going above and beyond in the role of SI Leader. This semester three SI Leaders are receiving this award.

Presentations at Conferences:
- The 9th International Supplemental Instruction (SI) Conference, Kansas City, KS, May 2016:
  - “Supplemental Instruction Teams: A system of investment and support”
  - “The Student Leadership Experience Carries Forward”
  - “Learning Objectives: Writing them is as easy as A-B-C”

Consultations with other campuses:
- University of the Fraser Valley, British Columbia – Navneet Sidhu, Coordinator, Supported Learning Groups Program
- Ohio State University, College of Engineering, Columbus, OH – Edwin Lee, Program Manager for Retention, Diversity, Outreach and Inclusion – campus visit
- Michigan State University, East Lansing, MI – Samuel Drake, Learning Resources Center Director
- American University, Washington DC – Ricardo Maisonneuve, Coordinator of Supplemental Instruction, Academic Support, and Access Center, Mary Graydon Center
- Middle Tennessee State University, Murfreesboro, TN – Brian P Hinote, PhD, Administrative Fellow, Office of Student Success
- Indiana University, Kokomo IN – Ashley Shoaff, Coordinator Career and Accessibility Center, Kelley Student Center – campus visit
- Eastern Michigan University, Ypsilanti, MI – Tiffany Browne, EMU Honors College, Holman Success Center
- Metropolitan State University Denver, CO - Mark A. Baccei, PhD, Coordinator, Supplemental Instruction
- Simon Fraser University, Vancouver, British Columbia – Ruth Silverman, Learning Services Coordinator, Student Learning Commons
- Universidad Del Norte, Barranquilla, Columbia – Dr. Alberto Mario De Castro Correa, Dean of Humanities and Social Sciences

**YEARLY CYCLE & TIMELINE**

<table>
<thead>
<tr>
<th>Event</th>
<th>Month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recruitment for next semester’s leaders</td>
<td>March or October</td>
</tr>
</tbody>
</table>
### Event | Month
--- | ---
Group Interviews | March or October
Individual Interviews | April or November
Hiring Completion | December or May
Pre-semester Leader Training | Thursday and Friday prior to the start of classes
Monthly Leader Training | Monday evenings beginning the 3rd week of the semester and then every 3 weeks
Semester Report Completion | Two months following the end of the semester
Recruitment of In-need SI Courses | September and February
End-of-academic year Celebrations | May – during exam week
Faculty Interviews | Mid-semester
Leader Observations and Follow-up | Throughout the semester
Training Planning and Preparation | December and July

**BENCHMARK PROGRAMS**

Supplemental Instruction benchmarks against the following programs:

- University of Missouri at Kansas City (UMKC) – International Headquarters of SI
- Texas A&M University (TAMU) – similar in size to Purdue with similar challenges
- Kent State University, Kent OH – Ryana Mumford, current Assistant Director of SI, comes from that university, has worked with their SI Program, and contributes some of their best practices

Supplemental Instruction aspires to benchmark against the following programs:

- PASS: Peer Assisted Study Sessions: University of Manchester, England – this university has over 900 SI leaders who volunteer their time just to have the experience on their resumes
- Some of the University Innovation Alliance (UIA) universities such as Arizona State and California Riverside – best practices from their SI programs

SI also utilizes the following resources to stay up-to-date on research and best practices:

- International Center for Supplemental Instruction: UMKC
  - David Arendale’s Annotated Bibliography: [http://www.arendale.org/peer-learning-bib/](http://www.arendale.org/peer-learning-bib/)
- SI Listserv: UMKC – International Center for SI
- Academic Peer Learning Listserv: Global listserv originating in Manchester University, UK
- LSAC membership and listserv: Learning Specialists Association of Canada
- CRLA membership and listserv: College Reading and Learning Association
- FYE listserv: First Year Experience
- NASPA membership and listserv: National Association of Student Affairs Professional Administrators
- ACPA membership and listserv: American College Personnel Association
- PACADA membership and listserv: Purdue Academic Advising Association
- Journal: *Research in Higher Education*
OPPORTUNITIES FOR FUNDRAISING AND DEVELOPMENT

- Expand the program by two or three courses and five leaders in the fall 2017 semester (each leader costs $2,200 per semester) in some higher level major-specific courses such as CHM 255 and 256, MA 261 and 262, ME 270 and 274, BIOL 231 and 241
- Employ a graduate assistant to help with observing the evening study sessions and to help with training the new leaders (a graduate assistant would cost around $30,000 figuring wages and benefits)
- Continue cost-sharing partnerships with academic departments who express a desire to have leaders in some of their major-specific tough courses
- Improve and expand the online training for student leaders so that the two-day training can be almost entirely experiential – $2,000 for leaders to make instructional videos

LEGEND

- SI – Supplemental Instruction
- UMKC – University of Missouri at Kansas City
- URSC – University Residences Support Center
- DFW rate – Letter grades of D, F, or Withdrawal
- N – Number of Individual Students
- SPAN Plan – Returning Adult Student Support
- BGR – Boiler Gold Rush Orientation