

A general overview of the SI model is provided, including the SI philosophy, essential components, program structures, key roles, outcomes, and evaluation. A review of what we learned about the importance of planning SI sessions, providing ongoing training for leaders, conducting regular SI program assessments, and implementing effective and essential learning strategies is also provided.

Basic SI Model

Maureen Hurley, Glen Jacobs, Melinda Gilbert

Supplemental Instruction (SI) was developed by Dr. Deanna Martin in 1973 at the University of Missouri at Kansas City in order to increase the performance and retention of students in high-risk classes. SI is an academic support program that provides regularly scheduled, out-of-class, peer facilitated sessions that are open to all students in the course. The students attend the sessions on a voluntary basis. The sessions are facilitated by SI leaders who are students that have demonstrated competence in this or a comparable course and who have taken part in an intensive two-day training session. The SI leaders attend all class sessions, take notes, read all assigned material, and conduct three or more 50-minute SI sessions each week. The SI leaders guide students in learning appropriate applications of study strategies such as note taking, graphic organization, questioning techniques, vocabulary acquisition, and test preparation, as they review content material. The program also has an SI supervisor. The SI supervisor identifies the targeted courses, is responsible for gaining faculty support, selects and

trains SI leaders, monitors SI sessions for quality, and evaluates the program (University of Missouri-Kansas City, 2004).

Philosophy of the Model

The philosophy behind the SI model is made up of a collection of learning theories. SI borrows several behavioral learning principles from Skinner (1982), Bandura (1977), Ausubel (1967), and Herbart (1895). The first behavioral learning principle the SI model utilizes is: behavior is based on positive reinforcement. When students learn a new study strategy that helps them do well on a test, the students will continue to use that strategy. The second behavioral learning principle is: breaking down complex tasks into their component parts. When a student does not understand a complex task the SI leader teaches the student how to break it down into smaller parts. Working on a task piece by piece can be less overwhelming and can help a student better understand a concept as he or she goes along. The third behavioral learning principle is: emphasize cause and effect relationships. Good study strategies result in good performances. The final behavioral learning principle is: modeling is important. SI leaders need to model good study strategies for their students.

SI borrows several cognitive developmental principles from Bruner (1968), Piaget (1973), and Flower and Hayes (1981). The first cognitive developmental principle SI utilizes is: cognitive structures develop little by little as learning is built through organization and assimilation of new information and experiences. If the SI leader can help students learn how to organize and integrate new information and experiences, then the students will be able to absorb and actually store the information for future knowledge. The second cognitive developmental principle is: learners think differently about a concept as they assimilate knowledge. SI leaders help students learn how to think critically about a concept. The third cognitive developmental

principle is: prior knowledge is used while learning new knowledge. SI leaders help students learn how to relate their prior knowledge to new concepts in order for better understanding and absorption of information. The final cognitive developmental principle is: cognitive development is stimulated when conflict arises during social interaction. SI leaders encourage students to discuss topics with peers outside of the classroom. When students find that there is a conflict in their information, finding out the answer to the conflict causes the students to expand their cognitive development.

SI borrows several social interdependence principles from Geertz (1983), Vygotsky (1986), Bakhtin (1993), Doyle (1978), and Erickson (1982). The first social interdependence principle is: learners actively build knowledge. Students have to take responsibility for their own learning by voluntarily attending SI sessions. The second social interdependence principle is: working together cooperatively and interdependently. Students in SI learn to work together to reach common goals. When students work together, everyone's individual knowledge contributes to the task at hand and the students will benefit from everyone in the group. The third social interdependence principle is: knowledge is more thorough when it is produced, not simply distributed. The SI leaders do not lecture at the students; they guide students in different study strategies that can be employed on their own. The fourth social interdependence principle is: knowledge and understanding are constructed in dialogue with others, and facts are "true" in that social situation. As mentioned earlier, the students learn from each other. The final social interdependence principle is: learners are able to do in group effort today what they will be able to do autonomously tomorrow. The knowledge students gain in SI can be used in other classes and in different settings in the future.

Finally, SI borrows several interpretive/critical principles from Freire (1988), Apple (1988), and Kozol (1967). The first two interpretive/critical principles SI borrows are: learners to take control of their own learning processes when empowered by good pedagogy; and education's goal should be liberation rather than domination. SI leaders work on getting students to a point where they do not have to rely on their professors for answers. The final interpretive/critical principle is: a motivation for educational programs should be to overcome the learner's "culture of silence." Some students who do not understand a concept stay quiet because they feel like they may be the only one. SI works to help students break their silence and understand that if they are struggling than others may also be struggling.

How/Why it Works

One reason why and how SI works is that SI sessions are proactive and participatory rather than reactive and passive. SI strives to break what is called the Dependency Cycle or "learned helplessness." The Dependency Cycle is a pattern of learned behavior that allows students to remain dependent upon an authority figure (instructor or tutor) for learning. Relying too heavily on repetition, drill, and memorization encourages this dependency. These techniques cause students to fall back into a mode of memorizing isolated facts which is time-consuming and ineffective. Students with sophisticated learning strategies that allow them to convert information into meaningful knowledge will learn with this format, however, students without this sophistication, especially those new to a discipline, will have problems. When these students have problems, they will ask questions, which may lead to their professor telling them again, usually more slowly the second or third time. Being told the same information more slowly does not correct the problem. The students' failure in one situation may lead them to feel as though they cannot learn new, complicated information at all. SI works to help students use new

learning strategies so they are less dependent on being told information. It enjoys a non-remedial image while offering academic support to all students enrolled in historically difficult courses (University of Missouri-Kansas City, 2004).

Another reason why and how SI works is that, besides higher grades and effective learning skills, SI provides students with peer collaborative learning experiences which promote assimilation into campus culture. SI makes efficient use of study time and provides an opportunity for students to develop relationships with other students and staff, an important factor in retention (University of Missouri-Kansas City, 2004).

Program Structure

There are a number of important decisions to be considered when organizing and maintaining an SI program.

Key People/Roles. There are four key people in the program: the SI leader, the SI supervisor, the students, and the faculty. Each person plays a key role. The SI leader attends training before classes start, attends the targeted class, takes notes, does homework and reads all assigned materials. The SI leader conducts at least three to five SI sessions throughout the week, chooses and utilizes appropriate session strategies, supports faculty, meets with their SI supervisor regularly, and assists their SI supervisor in training other SI leaders (University of Missouri-Kansas City, 2004).

The SI supervisor assists SI leaders in doing their job as SI leaders. The SI supervisor provides on-site supervision of the SI program; assists SI leaders with attendance, surveys, scheduling, and faculty relations; and promotes the SI program. SI supervisors also identify weaknesses or problems in the current SI program and solve or make recommendations for their solution (University of Missouri-Kansas City, 2004).

The students voluntarily attend SI sessions for targeted classes and participate in sessions as much as wanted or needed. The faculty makes grades from exams available to the SI supervisor as a means of determining whether or not students coming to SI are performing at a higher level than those students not attending. The faculty allows SI leaders to attend class; allows SI leaders a few minutes at the beginning of class to make announcements about the program; meets with SI leaders on a regular basis during office hours; and shares reactions to the SI program (University of Missouri-Kansas City, 2004).

How Classes are Chosen

SI targets classes with 30% or higher rates of D's, F's, and Withdrawals. These classes must also have the support of the instructor, and have a size large enough to adequately support SI. The instructor is usually demanding, but fair and SI is assigned to a course because of what is being taught, not because of the manner in which it is being taught. SI does not focus on the student or the professor; it focuses on the difficult course material (University of Missouri-Kansas City, 2004).

Marketing SI

Marketing sessions is a way to ensure that students are constantly reminded of the sessions. There are several ways that SI can be marketed. SI leaders can announce the program in the first class of the semester. This is a good time for an awareness video to be shown that explains and promotes SI. SI bookmarks and stickers can be made and handed out to the students as reminders. SI leaders can put up information on an overhead projection before class begins so that students can see it as they walk in. This is useful for showing the class the results of exam scores and for advertising concepts that will be covered in the next week's sessions. It can also include an exam score analysis chart showing SI verses non-SI mean grades; the concepts

covered in the next session, and all of the session times/days/locations. SI leaders can also write the daily SI times and locations on the board during each class (University of Missouri-Kansas City, 2004). It is also helpful to promote the SI program through academic advising, new student orientation programs and other means before the academic term begins.

Outcomes of SI

Studies show the benefit of attending SI sessions. SI is proven to increase mean final course grades for students of all levels of ability, regardless of prior achievement. A study showing the grades of students from the fall of 1997 to the fall of 2003 showed a significant difference between those who attended SI sessions and those who did not attend SI sessions. Those who attended SI sessions had lower percentages of DFW's than those who did not attend. The skills learned for the class that provides SI can also be carried over to other classes (University of Missouri-Kansas City, 2004).

Students are not the only ones who benefit from the program. SI leaders benefit by learning material better for their own discipline, by learning effective study skills, and by learning how to talk about what they know. SI leaders also benefit by learning leadership skills that are positive additions to a resume. The administrators also benefit by the increased retention produced by the program. The program provides faculty more time for research since students will need to stop by the office less often because they are no longer the main source of information for students (University of Missouri-Kansas City, 2004).

Program Evaluation and Reporting

It is important for SI to be evaluated regularly. The evaluation should be completed at the end of each term after final exams and final grades have been determined. The SI program is evaluated each academic term in order to continuously improve overall quality of the program.

Information about its strengths and weaknesses is gathered to inform college administrators about the overall impact of the program. The program is evaluated by assessing institutional outcome measures such as final course grades, course withdrawal rates, institutional drop out rates, and institutional graduation rates (University of Missouri-Kansas City, 2004).

In addition to finding the program's strengths and weaknesses and assessing the impact of the program, these evaluations help faculty and administrators know how many students the program serves, whether or not students say it is beneficial to them, and it keeps the program on the faculty and administrators' minds. Assessment is also important because it can have a direct link to funding (University of Missouri-Kansas City, 2004).

What Have We Learned? What Worked? What Did Not Work?

We have learned a number of things in our 30 plus years of providing SI on our own campus as well as from feedback in the field. Lessons learned focus on several elements which include: 1) the role of the faculty, supervisor, and leader; 2) planning the SI sessions; 3) the importance and structure of ongoing training; 4) SI program assessment; and 5) effective and essential learning strategies. Some of these topics have been touched on at the beginning of this chapter, but will now be discussed in greater detail.

The Role of the Faculty, Supervisor, and Leader

The role the faculty play in the success of students has become more and more critical as we look at a team approach to producing the most positive outcomes for SI participants. Faculty must be supportive of the SI model and of how the peer-led sessions can help students learn more effectively. They can help coach and mentor the leaders in terms of what course content is most critical for students to understand. Being available to meet weekly with the leaders can help

guide the structure of the sessions. They also can receive feedback on what is particularly challenging for the students.

Before the term begins faculty visit with the supervisor about what their role entails. It is important that professors are highly enthusiastic about SI and its potential benefit to students. Their lectures cover a good deal of content but often they do not have time to help students grapple with the nuances of the key elements and important concepts. By encouraging all students in class to take advantage of SI, they play a major role in motivating them to participate in the sessions. Faculty on our campus and at other institutions say that telling students SI is a continuation of the class results in greater SI attendance. If leaders are having difficulties with attendance they can ask the professor to share the benefits of SI with the students. It is critical that the faculty do not say SI is for students who are struggling, because once they perceive it as remedial, they will not come to sessions.

We also ask faculty to send the first exam grades to the supervisor. That way the data can be analyzed and the mean grade for SI and non-SI participants can be calculated. This can provide a strong incentive for students to learn that SI participants did better than their counterparts.

The supervisor's responsibilities are quite time-intensive. They need to interact with administrators in order to show the value of the program in terms of number of students served, cost effectiveness, course completion, re-enrollment and graduation rates, higher course grades, and lower D,F, and Withdrawal rates. National data is available on studies completed that show outcomes supporting these elements. Administrators are aware of the cost of recruiting new students vs. retaining current ones. As SI is a group learning model, more students are served in SI sessions than in individual tutoring sessions.

Once the administrators are on board, it is part of the supervisor's role to initiate contact with deans, department chairs, and individual faculty to discuss the value of attaching SI to selected courses which have a high percentage of D, F, and withdrawals. Supervisors need to look for faculty who are open and receptive to interventions that would help students learn more effectively.

In starting a program it is essential to select senior faculty who are well-respected by their peers and well-liked by students. The supervisor can ask them to recommend a few students who have taken their course and would be good leaders. Next, the supervisor interviews prospective leaders and makes a selection based on students who would have good rapport with participants and have the time to carry out the duties.

The supervisor and other staff are responsible for booking rooms, producing surveys, organizing training, securing funds for salaries and other expenses, conducting evaluation, keeping in touch with faculty, assisting leaders with planning, observing and debriefing SI sessions, and producing reports. Sufficient release time for the supervisor is critical for the quality and success of the program.

Leaders are essential members of the SI team. Their time commitment is considerable and includes class attendance, session planning, conducting SI sessions, and meeting with faculty and supervisors. Their training before the term and during the semester will focus a good deal on effective learning strategies for their course. They need to set up the sessions in such a way that the students are actively engaged with the material, work with one another, and take away some clear understanding of the content. It is important that leaders are open to suggestions and that they focus on the needs of the students. They do not re-lecture but instead provide activities that allow students to think critically, teach each other the material, and learn effective strategies that

work for deeper understanding and test preparation. They must provide a dynamic session that will capture the students' attention and make them feel this was a worthwhile use of their time.

Planning the SI Session

The written session plan must be well thought out. Planning sheets should be utilized and must contain session objectives, content to be covered, and processes to be used. The leader needs to devise a plan for each session based on the most difficult concepts from the lectures that need to be addressed. Leaders work with both the supervisor and the faculty member to assist them with their session plan. The plan is based on key concepts that were covered in the weekly classes. The objective should state clearly what needs to be accomplished in the session based on critical elements from the lectures. Estimated time for each activity should be listed so that the leaders can use the planning sheet as a guide to help stay on task.

Sessions should include setting the agenda, providing group work that utilizes one or two learning strategies, and a closing activity. During the session the leaders need to briefly describe the content to be covered and the learning strategies to be used to accomplish the objectives. It is important for students to feel that their voice is heard, that they have learned something valuable, and that they are comfortable enough to ask questions and work with other students. Leaders can also be available during an office hour to meet with students individually.

The first day of class is critical for leaders to talk with the students about SI. Their presentation should be planned and delivered in such a way as to motivate students to attend. By being present in class each day and taking notes, the leaders can show their interest and involvement in the course. They need to be approachable and should talk with students and encourage them to participate in SI.

The Importance and Structure of Ongoing Training for Leaders

We have found that as important as initial training for leaders is, holding regularly scheduled training meetings throughout the term is as essential. The focus of these sessions is on both the process and methodology most closely aligned to course content (University of Missouri-Kansas City, 2004). The International SI Center recommends that supervisors hold bi-weekly meetings with leaders to provide them an opportunity to receive regular feedback that can shape their continual session planning. The leaders share their concerns regarding how their sessions are going, and the group, with the supervisor's guidance, problem solve and determine ways that the difficult concepts from the lectures can best be approached.

Some training meetings can be led by the leaders. We recommend that leaders in similar content areas design a session plan and present it to the larger group for critique and discussion. Leaders can share the specifics of a session plan they used and tell the group what worked well and what didn't.

New leaders may particularly feel insecure or lost in the beginning of the term. They especially benefit from feedback from veteran leaders as to how they planned and conducted sessions, what learning strategies worked especially well, and how they dealt with difficult issues that arose within the sessions.

Just as the SI model is based on the tenets of collaborative learning, the ongoing training meetings should utilize those same kinds of strategies. Some activities can be done with a partner or in a small or large group discussion. It is always important to allow for report back from the groups so that there is the opportunity for the leaders to explain what they did and how they processed a learning strategy. We have found that without these frequent meetings, leaders may revert to re-lecturing, answering the groups' questions, or relying on the same strategies for each session. This can have a negative impact on the learning that takes place and on attendance.

SI Program Assessment

An evaluation should be completed at the end of the term after the posting of final grades. The rationale for assessing the program is to compare the final course grades and the percentage of D, F, and withdrawals of SI and non-SI attendees. These outcomes help determine the success of the program and provide evidence that give administrators a reason to continue financing the program (University of Missouri-Kansas City, 2003).

The program assessment measures both learning and retention. Lowering the rate of DFW grades results in a higher percentage of students completing the course. Studies at UMKC have shown that this also contributes to higher re-enrollment and graduation rates.

Administrators want to know the overall success of the program in terms of number of students served, academic progress of students, and cost effectiveness. Faculty are interested in how students did in their course, who attended SI, and how students rate the program in terms of satisfaction. It is critical to regularly send reports to faculty and administrators that contain data outcomes as well as narratives regarding program results. This reminds them that the program is serving a number of students and is contributing to their academic success.

After the first exam faculty are asked for a list of student grades so that the results of SI and non-SI participants can be compare. The mean grade of SI attendees should generally be in the range of one-half to a full letter grade higher than non-SI attendees. Having the leader share this information with the class can motivate all students to attend SI sessions.

Effective and Essential Learning Strategies

Learning strategies are at the core of SI. In developing SI, Dr. Deanna Martin based the model on the results of leading research. She placed it in the conceptual framework of Piaget's model of cognitive development (Blanc, DeBuhr, and Martin, 1983). This theory considered that many university students arrive with a deficiency in abstract reasoning and in the critical thinking skills needed to help them process information from a lecture. These students may also be lacking in the skills to effectively read and comprehend key concepts in a textbook (Hurley, 2000). This type of cognitive development, known as constructivism, espouses the theory that students should construct their own knowledge. SI includes the active engagement of students in the learning process. This is achieved by following specific processing guidelines.

Students who study together learn more by teaching each other (Johnson, Maryuyama, Johnson, Nelson, and Skon, 1981). In the SI sessions it is important for the leader to employ one or more proven learning strategies that allow students to work together (University of Missouri-Kansas City, 2004). It is effective to vary the strategies so that students do not become bored. Some techniques are applicable to learning content in any course. Other strategies work more effectively in problem based classes such as science and math or in information based classes such as history or philosophy.

Redirecting Questions is a strategy central to all types of SI sessions. The goal of this process is to provide a structure in which students interact with one another rather than directing all of their comments and questions to the leader. This may sound simple but is surprisingly difficult for some leaders to master. It is based on the idea that we learn more effectively if we explain something to someone else (Riley, 1981). It is counter-intuitive for a leader to not answer a question asked by a student about content in which they are knowledgeable. Therefore, the SI supervisor needs to provide opportunities in the training meetings for leaders to practice this

strategy. It is helpful if the supervisor models the process and then has the leaders practice the redirecting in pairs, followed by demonstrations for the large group. Examples of this technique can be found in the CAD Leader Resource Manual (University of Missouri-Kansas City, 2004).

Use of wait-time is another essential strategy that occurs in the time that elapses between an SI leader question and the student answer or response (University of Missouri-Kansas City, 2004). It is important to distinguish between the kind of wait-time that happens after the leader asks a question and the wait-time after a student first responds. This process is the key to conducting any SI session. The literature on learning suggests that there is a correlation between the level and depth of student responses and the use of at least three seconds of wait-time before the person asking the question says anything else (Rowe, 1974). Students need time to think critically and formulate a meaningful answer.

The second kind of wait-time (used after a student response to a question) seems to have an even greater impact on the quality of the response as it allows students more time to organize information which results in a deeper processing and engagement in formulating their thoughts. More students tend to join the discussion when this kind of wait-time is used. Again, leaders need to practice this strategy so that it becomes natural for them to utilize it in SI sessions. They will find that the quality of student responses will improve by using this technique.

Checking for understanding is essential in determining whether students really understand the course content. If the leader simply asks the students if they have any questions or if they had trouble understanding a difficult concept, they may simply say no. However, the leader should not assume that the response is accurate. Therefore, the leader needs to devise a strategy that engages the students in demonstrating what they know and how they know it. The leader can ask open-ended questions that require students to explain in their own words that they

understand a difficult concept before the leader moves on to the next topic. This strategy can be employed by asking students to summarize the concept that was just covered, write the main points or steps to a problem on the board, give an application of the concept, or write an demonstrate a similar problem (University of Missouri-Kansas City, 2004).

Problem Solving SI Strategies

Courses such as math, chemistry or physics may present major challenges for students. They may not know where to start in solving a problem, or it may have been many years since they last took this kind of course. Faculty may not have the time or opportunity to address effective problem-solving strategies in class. Therefore, SI can provide an environment in which students can grapple with difficult problems and work together to improve their skills. SI has the benefit of collective thinking and problem-solving. Students can share what they do know, ask the leader for input if needed, and collaboratively come up with the sequence of steps and usage of formulas to arrive at the correct answer to a problem.

Board work is essential in processing the steps and arriving at a solution. Student pairs can write on small white boards to work through a problem and then demonstrate the problem for the whole group. Always include enough time for the student teams to present how they thought about the problem, the steps involved, and how they arrived at the solution. The CAD Leader Training Manual (2003) contains a board-work model that clearly illustrates the techniques described above.

Humanities and Social Sciences SI Session Strategies provide a method of understanding course content that is different from problem-solving techniques (University of Missouri-Kansas City, 2003). Some of the strategies that can effectively be used employ analyzing the complexity of a concept or the linkage between various theories or thought processes. While verbalizing or

writing may be the common currency in a humanities presentation, organization of vast amounts of material may be more essential in a social sciences course. Therefore, the leader needs to structure the SI session plan in such a way that students engage with the material in a way that the professor wants to think. The SI leader has usually taken the course from the professor and has mastered strategies that work effectively. Those are the kinds of techniques that should be utilized in the SI sessions. It is a good idea for leaders to share how they think about a concept. This modeling can help students apply critical thinking and analysis for themselves.

Organizing information from both the lectures and textbooks is key to mastering content in social science courses such as history. Providing handouts such as matrices or other visual models and having students use them to think about and process information with a partner or in a small group forces them to use their notes, discuss key elements, and demonstrate an organizational pattern that clearly illustrates their understanding of the content.

Conclusion

SI, through its peer collaboration component provides students the option to continue the learning that begins in the classroom and take ample time to struggle with concepts and ideas, work through difficult material, develop effective thinking and processing strategies, and benefit from the synergy of the group working together to solve problems and more effectively engage with difficult course content. This model which has been used for more than 30 years still yields strong results in terms of student learning, higher final course grades and lower DFW rates across disciplines, types of colleges, and ethnicities. It is a viable retention model which has been recognized by the United States Department of Education (1983) as exemplary in supporting student academic success and continues to be a solid intervention used in colleges and universities across the world.

References

- Apple, M. *Teachers and Texts*. New York: Routledge, 1988.
- Ausubel, D.P. *Learning Theory and Classroom Practice*." Toronto, Ontario, Canada: Ontario Institute for Studies in Education, 1967.
- Bakhtin, M. *Toward a Philosophy of the Act*." Translated by V. Liapunov. In V. Liapunov and M. Holquist. (eds). Austin: University of Texas Press, 1993.
- Bandura, A. *Social Learning Theory*. Englewood Cliffs, NJ: Prentice – Hall, 1977.
- Blanc, R. A., DeBuhr, L., and Martin, D. C. "Breaking the Attrition Cycle: The Effects of Supplemental Instruction on Undergraduate Performance and Attrition." *Journal of Higher Education*, 1983, 54 (1), 80-89.
- Bruner, J.S. *Processes of Cognitive Growth: Infancy*. Worcester, MA: Clark University Press, 1968.
- Doyle, W. "Academic Work." *Review of Educational Research*, 1983, 53 (2), 159-199.
- Erickson, R. "Taught Cognitive Learning in its Immediate Environment: A Neglected Topic in the Anthropology of Education." *Anthropology and Education Quarterly*, 1982, 13, 149-180.
- Flower, L., and Hayes, J.R. "A Cognitive Process Theory of Writing." *College Composition and Communication*, 1981, 32, 365-387.

Friere, P. *Pedagogy of the Oppressed*. New York: Continuum, 1988.

Geertz, C. *Local Knowledge: Further Essays in Interpretive*

Anthropology. New York: Basic Books, 1983.

Herbart, J.F. *The Science of Education, its General*

Principles Deducted from its Aim and the Aesthetic Revelation of the World. Translated by H. Felkin and E. Felkin. Boston: D.C. Heath, 1895.

Hurley, M. "Video-based Supplemental Instruction (VSI): An

Interactive Delivery System that Facilitates Student

Learning." Unpublished Doctoral Dissertation, Department of

Urban Leadership and Policy Studies in Education, University of Missouri-Kansas City,

2000.

Johnson, D., Maryuyama, G., Johnson, R., Nelson, D., and Skon, L.

"The Effects of Cooperative, Competitive and Individualistic Goal Structure on Achievement: A Meta-analysis."

Psychological Bulletin, 1981, 89, 47-62.

Kozol, J. *Amazing Grace: The Lives of Children and the*

Consciousness of a Nation. New York: Crown, 1995.

Piaget, J. *The Moral Judgment of the Child*. New York: Free Press,

1973. (Original work published 1932)

Riley, J.P. "The Effect of Preservice Teacher's Cognitive

Questioning Level and Redirecting on Student Science

Achievement." *Journal of Research in Science Teaching*, 1981,

11 (2), 81-94.

Rowe, M.B. "Wait-time and Rewards as Instructional Variables, Their Influence on Language, Logic, and Fate Control: Part 1—Wait-time." *Journal of Research in Science Teaching*, 1974, 11 (2), 81-94.

Skinner, B.F. *Skinner for the classroom: Selected papers*. R. Epstein, (ed.). Champaign, IL: Research Press, 1982.

University of Missouri-Kansas City. *The Supplemental Instruction Supervisor Manual*. Kansas City, MO: Curators of the University of Missouri, 2003.

University of Missouri-Kansas City. *Supplemental Instruction Leader Resource Manual*. Kansas City, MO: The Curators of the University of Missouri, 2004.

Vygotsky, L.S. *Thought and Language*. Translated by A. Kozulin. Cambridge, MA: Massachusetts Institute of Technology Press, 1986. (Original work published 1934).

Maureen Hurley, Ph.D., is Associate Director of and a Certified SI Trainer for the Center for Academic Development & the International Center for Supplemental Instruction at the University of Missouri-Kansas City.

Glen Jacobs, D.Ed., is Director of and a Certified SI Trainer for the Center for Academic Development and the International Center for Supplemental Instruction at the University of Missouri-Kansas City.

Melinda Gilbert is a Masters of Counseling and Guidance student and Graduate Intern at the Center for Academic Development and the International Center for Supplemental Instruction at the University of Missouri-Kansas City.